





**MANGALORE REFINERY & PETROCHEMICALS LTD.**  
{ A subsidiary of Oil & Natural Gas Corporation Ltd – (ONGC) }  
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**E-TENDER NO. : 3200000490**

**DATE : 26.02.2021**

**OPEN DOMESTIC TENDER  
FOR  
CIVIL AND STRUCTURAL WORKS (LSTK-B PACKAGE)  
MRPL MARKETING TERMINAL PROJECT  
AT  
DEVANGONTHI, BANGALORE  
MARKETING INFRASTRUCTURE PROJECTS, MRPL**



	<b>MRPL Marketing Terminal Project at Devangonhi, Bangalore</b> <b>Marketing Infrastructure Projects, MRPL</b>	
	<b>LSTK-B : CIVIL AND STRUCTURAL WORKS</b>	

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## **PART I : TECHNO-COMMERCIAL**

### **NOTICE INVITING TENDER**



	<b>MRPL Marketing Terminal Project at Devangonhi, Bangalore</b> <b>Marketing Infrastructure Projects, MRPL</b>	
	<b>LSTK-B PACKAGE: CIVIL AND STRUCTURAL WORKS</b> <b>VOLUME I : COMMERCIAL</b>	

## NOTICE INVITING TENDER (NIT)



Nauvata Engineering Pvt. Ltd. (Nauvata) on behalf of Mangalore Refinery & Petrochemicals Ltd. (MRPL), invites e-bids from eligible Bidders in complete accordance with the following details and Tender document.

Salient features of the tender are as below:

Sl.No.	Description	Details
1	Tender Number	<b>3200000490</b>
2	Brief Description of the Tender	<b>LSTK-B Package for Civil and Structural Works required for Marketing Terminal Project at Devangonhi, Bangalore</b>
3	Type of Tender	E-Open Domestic
4	Type of Bid	Two Bid
5	Mode	Electronic Procurement System (EPS)
6	Bidding document fee	Not applicable
7	Tender Document download start date	26.02.2021
8	Bid closing date / time	18.03.2021 at 15:00 Hrs
9	Date / Time of Technical Bid Opening	18.03.2021 at 16:00 Hrs
10	Pre-Bid Meeting	<p>Date: 08.03.2021 at 11:00 Hrs.  Venue: Pre-bid meeting shall be held at MRPL Office in Bangalore at  Mangalore Refinery &amp; Petrochemicals Ltd  Opp. KSSIDC A O Building, Rajajinagar Ind. Estate,  Rajajinagar, Bangalore – 560010  Phone: 080 2264 2200</p> <p>Interested Bidders, who would like to join Pre-bid meeting shall send by e-mail to Project Manager at pm.mrpl@nauvata.com, latest by 06.03.2021, 17:00 Hrs</p>

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11	Earnest Money Deposit (EMD)	The requirement of Bid Security/Earnest Money Deposit (EMD) has been waived. However, in lieu of EMD Bid Security declaration to be provided by the Bidder as per <b>Annexure-3</b> to the NIT.
12	Price Bid Opening	Date & time shall be intimated to the qualified and acceptable Bidders.
13	Duration of Contract / Contract Period	<ol style="list-style-type: none"> <li>1. Mechanical Completion within 18 months from date of LOA/PO</li> <li>2. Commissioning within 20 months from date of LOA/PO</li> <li>3. Intermediate Major Milestones time schedules are described in SCC – Annexure I</li> <li>4. Closure of Contract: Within Six Months from Mechanical completion</li> </ol>
14	Purchase Preference for Micro & Small Enterprises (MSE)	Not Applicable
15	Item(s) Splittable	No
16	Purchase Preference for PP-LC	Applicable
17	Relaxation in BQC (Financial Turnover & Past Experience) for Start-up Companies	Not Applicable
18	Offer Validity	120 days from Bid Closing date
19	Price Adjustment for Slippage in Completion	Applicable
20	Security Deposit	3% (Three percent) of the Total Contract Value
21	Defect Liability	Applicable
22	Integrity Pact	Applicable
23	Contact details - Technical Queries	<p>Mr. ANIRUDH S NADIGER  Project Manager  Email Id: pm.mrpl@nauvata.com  Ph. No. +91-080-67209100 (extn:131)</p>



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24	Contact person for Commercial Queries bid closing extension etc.	Mr. ANIRUDH S NADIGER Project Manager Email Id: pm.mrpl@nauvata.com Ph. No. +91-080-67209100 (extn:131) Mobile : +919 9113904331
25	Contact person for Queries related to E-tendering (registration and bid submission)	Mr. Dilip Ranganath, & Mr. Jayaprakash K Email: <a href="mailto:eps@mrpl.co.in">eps@mrpl.co.in</a> , <a href="mailto:jayaprakash.k@etenderwizard.com">jayaprakash.k@etenderwizard.com</a> Phone No. 0824-2882248 / 2882298
26	Alternate Contact details for E Tendering (registration and bid submission)	Mr. Prabhuswamy, <a href="mailto:prabhuswamy@etenderwizard.com">prabhuswamy@etenderwizard.com</a> Phone No. 080 – 4048 2100
27	Address for submission of Original documents in physical form required as per ITB	Nauvata Engineering Pvt. Ltd. #42, "A" Block, 6th Floor, Brigade Software Park, 27th Cross Rd, Banashankari Stage II, Bengaluru, Karnataka - 560070 (Please mention the Tender number on the envelope)

<p><b>Contact details for Site visit:</b> Mr. ANIRUDH S NADIGER Project Manager Email Id: pm.mrpl@nauvata.com Ph. No. +91-080-67209100 (extn:131) Address: Nauvata Engineering Pvt. Ltd. #42, "A" Block, 6th Floor, Brigade Software Park, 27th Cross Rd, Banashankari Stage II, Bengaluru, Karnataka - 560070</p>
<p>Bidders are requested to visit MRPL website <a href="https://www.tenderwizard.com">https://www.tenderwizard.com</a> as well as on <a href="http://mrpl.co.in">http://mrpl.co.in</a> regularly to keep themselves updated on the Tender. All replies to pre-bid queries, updates, corrigendum, addendum, amendments, extension in last date of submission of bid (if any), clarifications etc to the Tender/Bidding documents will be hosted on above websites only. Bidders should regularly visit above websites to keep themselves updated with respect to this Tender. The Technical &amp; Price Bid Formats should be downloaded, filled &amp; uploaded in the EPS portal <a href="https://www.tenderwizard.com/MRPL">https://www.tenderwizard.com/MRPL</a>.</p>

**Note:**

If any of the dates indicated above happens to be a declared holiday/closed day in MRPL/Nauvata, the next working day shall be considered.

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## 1. INTRODUCTION

Mangalore Refinery & Petrochemicals Ltd (MRPL) operates a 15 MMTPA crude processing refinery with secondary units and Petrochemical complex at Mangalore. MRPL is in possession of a 20 acres plot of land in Devangonithi near Bengaluru. MRPL proposes to utilize this land for setting up a **Greenfield** Petroleum storage & Marketing Terminal to enhance and grow in its marketing business activities.

The proposed **Greenfield** Terminal would cater to requirements of petroleum products for its own expanding Industrial & Retail business, primarily in the state of Karnataka & Kerala. The entire Terminal operations should comply with the applicable statutory regulations and OISD guidelines.

MRPL intends to set up the Petroleum storage & Marketing Terminal by inviting E-Open Tenders for the job on LSTK basis through various EPC packages. This Tender is for LSTK-B package comprising of Civil/ RCC/ Structural / Architectural for all Roads, Drains, Structural Steel & RCC Buildings (Including electrical & plumbing), roofing, Site enabling jobs, Barricading, Topography Survey, Soil Investigation, Tree Cutting, Site grading, Compound Wall, micro-grading, Underground sumps (for water storage, water treatment and for pumps/Vessels) and entrance Arch and all other miscellaneous civil and structural works with associated MEP jobs as defined in the scope of work in the tender including all design and engineering, Supplies, Transportation, Insurance, Storage of all Equipment, Materials, items and other Construction Materials, Construction Management & Supervision, safety, Construction, Erection/Installation, statutory approvals, liaisoning with government departments, Mechanical Completion, Commissioning and Start up assistance.



MRPL has appointed M/s. Nauvata Engineering Pvt. Ltd. (Nauvata) as Project Management Consultant (PMC) for this project.

Nauvata for and on behalf of MRPL invites e-bids in two stage two bid system through e-tendering for LSTK-B package from competent contractors with sound technical and financial capabilities fulfilling Qualification Criteria stated in BQC in this document.

## 2. BRIEF SCOPE OF WORK OF LSTK-B Package CONTRACTOR

The Scope of Work shall be on lumpsum (LSTK) basis of Civil and Structural works involving but limited to Design & Engineering, Procurement, Supply, Construction, Installation/Erection, Hooking-up, Inspection, Testing, Mechanical completion of works, PRECOMMISSIONING and COMMISSIONING and START-UP assistance.

The LSTK-B package shall include the Major works in design, engineering and construction of Admin+ Control room building, Security cabin, Planning room, Entrance arch, DG shed, Sewage treatment plant, Warehouse, Substation, TT locking shed, TLF

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gantry shed, TLD shed, TLF pump house, Sampling room, TT calibration shed, Product Pump house, Fire water pump house and sumps, Raw water treatment plant, Visitors parking shed, OWS (Oil water separator sump), Compound wall with gates, Site grading, Roads and access ways, TT parking area, RCC pavement, Watch tower, EYE moist foundation, Storm water drains, Fencing between operating area and green belt area, Foundations for DG set & other electrical/instrumentation equipment, UG tanks, etc. and other facilities as detailed in various documents in Volume-II (Technical Section).

### 3. COMPLETION SCHEDULE

The Overall Schedule Completion Date(s) for the works described in the bidding documents shall be as below:

<b>Activities</b>	<b>Time schedule for completion</b>
Mechanical Completion of the Project	Within 18 months from date of LOA/PO
Commissioning	Within 20 months from date of LOA/PO
Intermediate Major Milestones time schedules	As Described in SCC – Annexure I
Final Closure of Contract	Within Six (6) months from Mechanical Completion



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#### 4.0 BID QUALIFICATION CRITERIA AND BID EVALUATION CRITERIA

#### 4.1 BID QUALIFICATION CRITERIA (BQC)



##### 4.1.1 Experience Criteria

The Bidder should have experience of having successfully carried out and completed similar work(s)\* during the last 7 years ending last day of the month previous to the one in which this tender is invited, for which experience should be either of the following:

a)	Three similar completed works, each costing not less than	Rs. 9,72,68,636/- (Rupees Nine Crore Seventy Two Lakh Sixty Eight Thousand Six Hundred and Thirty Six Only)
b)	Two similar completed works, each costing not less than	Rs. 12,15,85,795/- (Rupees Twelve Crore Fifteen Lakh Eighty Five Thousand Seven Hundred and Ninety Five Only)
c)	One similar completed work costing not less than	Rs. 19,45,37,272/- (Rupees Nineteen Crore Forty Five Lakh Thirty Seven Thousand Two Hundred and Seventy Two Only).

\*Similar Work(s) shall mean:



- i. Design, Engineering and Construction of Civil and Structural works including RCC and Structural steel (in framing/roof structures) for a Petroleum Terminal or any Industrial Plant.
- ii. In case the Bidder on his own does not meet the criteria specified in Clause (i) above in terms of "Design and Engineering" of Civil and Structural works including RCC and Structural steel (in framing/roof structures) but meets the criteria in terms of "Construction", he can still be qualified provided:
  - a. The Bidder engages a back-up consultant who meets the "Design and Engineering" criteria specified in clause (i) above in terms of Design and Engineering of Civil & Structural works including RCC and Structural steel (in framed/roof structures).
  - b. Bidder's construction drawings (if any) shall be vetted by the back-up consultant.
  - c. The Bidder furnishes along with his bid the MOU / Letter of Agreement / Letter of Consent with the proposed back-up consultant confirming the scope of work as defined under clause ii(a) & ii(b) above and same shall not be changed thereafter. This agreement / MOU / Letter of Consent must remain in force at least till the pendency of the contract.

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- iii. The Bidder furnishes along with his Bid a Corporate Undertaking for the following-
  - a. Bidder shall execute the entire work as per the Scope of Work covered under this Tender on Single Point Responsibility basis.
  - b. Bidder shall be solely and fully responsible for completion of the entire Scope of Work as per the Tender document.
  - c. Bidder shall be solely and fully responsible for all the Warranties and Guarantees for the entire Scope of Work executed by him as per the terms and conditions defined in the Tender document.
- iv. The above clauses shall be read in conjunction.
- v. The contract values as indicated at Clause 4.1.1 above should be exclusive of service tax / GST. In view of this, it has to be ensured that the value of job indicated by the prospective Bidders is exclusive of service tax / GST. However, in case the value of completed job indicated in the completion certificates submitted by Bidders do not have clarity with regard to inclusion / exclusion of service tax/GST, the following shall apply:
- vi. The completion certificate submitted by the Bidder shall separately indicate the service tax/GST amount included in the value of completed job OR a separate certificate from the respective client, mentioning the service tax/GST amount, if any, included in the value of completed job under consideration should be submitted by the Bidder.
- vii. In case service tax / GST amount / component is not specified in the submitted completion certificate, then the amount equivalent to rate of applicable service tax / GST for the year of completion of subject tender shall be deducted from the value of completed job mentioned in the completion certificate to arrive at the value of completed job without service tax / GST.

**4.1.2 Other Criteria:**

- 4.1.2.1 The Bidder shall be a Government Organization / Public Sector Undertaking / Registered Partnership Firm / Limited Company / Private Limited / Limited liability partnership / LLC or equivalent and shall be in existence as on date of NIT. Relevant documents of registration should be submitted as part of the proposal.
- 4.1.2.2 Experience of only the Bidding Entity shall be considered, In-house experience (where for the past experience referred for qualification, the contractor and the Owner belonging to the same organization as on date of the past experience completion date) shall not be considered as a valid experience for the purpose of qualification.

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- 4.1.2.3 A bid made by a wholly owned Indian Subsidiary of a Foreign Company will also be considered provided the Parent Company meets the BQC. In such case, the following shall be complied and necessary documents from parent company shall be submitted.
- a) The work under consideration shall either be executed by the Parent company or shall be executed under the supervision and back-up of the Parent Company.
  - b) The Parent Company shall furnish a corporate undertaking to be jointly and severally responsible with the Indian subsidiary for due, proper and timely performance of the contract and discharge of liabilities of its Indian Subsidiary in the event of award of work to its Indian Subsidiary.
- 4.1.2.4 The Bidder should not be under black-list / holiday list of any state/central government department or undertaking (including PSUs). Bidder shall give a declaration to this effect.
- 4.1.2.5 Bids submitted on Consortium or Unincorporated Joint-venture/ Joint bid basis shall not be accepted for this tender.
- 4.1.2.6 All offers shall be submitted in INR (Indian Rupee) only. Bids Submitted in any other currency shall be rejected. Bidder shall submit a confirmation to this effect with the Techno-commercial bid.
- 4.1.2.7 Bidders, who had been issued work order(s) and Executed work(s) in MRPL during the last 10 years, shall provide satisfactory Completion Certificate(s), for the completed work(s), issued by MRPL.
- 4.1.2.8 Bidders, who have been issued work order(s) and presently executing the work(s) for the same in MRPL, shall provide satisfactory performance certificate(s) for such ongoing work(s), issued by MRPL.
- 4.1.2.9 For experience based on Composite Works: In case Bidder has executed composite work(s) contract which includes qualifying similar work(s) as stated in Clause 4.1 above, then value of such qualifying similar work(s) out of the total value of composite work(s) shall be considered for the purpose of qualification. For composite works, in the event the value of the qualifying similar work(s) cannot be ascertained from the work order / completion certificate submitted by Bidder, copy of Schedule of Prices (SOP)/ Schedule of Rates (SOR), relevant pages of contracts, copy of relevant pages of final bill certified by end client for establishing requirement of BQC or written letter from end client specifying the nature of work with quantities and values can be submitted for qualification.
- 4.1.2.10 A job executed by a Bidder for its own plant / projects cannot be considered as experience for the purpose of meeting requirement of BQC of the tender. 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

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Bidders shall submit these documents in addition to the documents specified in the bidding documents to meet BQC.

4.1.2.11 A job completed by a Bidder as a sub-contractor shall be considered for the purpose of meeting the experience criteria of BQC subject to submission of following documents in support of meeting the “Bidder Qualification Criteria”:

- a) Copy of Work order along with Schedule of Prices (SOP)/ Schedule of Rates (SOR) issued by main contractor.
- b) Copies of completion certificates from the End User / Client / PMC and also from the Main Contractor. The completion certificates shall have details like work order no. / date, brief scope of work, ordered & executed value of the job, completion date etc.
- c) However, in case Bidder is not able to furnish the completion certificates from the End User / Client / PMC in his name, then he shall furnish a copy of the approval by End User / Client / PMC for engaging the Bidder as a Sub-Contractor.



4.1.2.12 Joint venture / Consortium bids shall not be permitted for this tender.

4.1.2.13 Bidder is required to provide the following documentary proof in support of meeting Bidder criteria along with their technical bid:

- i. Annual reports containing Audited balance sheets and Profit & Loss statement, in support of their fulfilling the qualification criteria. (In case the last Financial closing date is within 9 months of bid due date and audited annual report of immediate preceding Financial year is not available, Bidder has the option to submit the financial details of the three previous years immediately prior to the last financial year. Otherwise, it is compulsory to submit the financial details of the immediate three preceding financial years).
- ii. Bidder shall furnish documentary evidence covering similar work mentioned above, but not be limited to:
  - a) Copies of work orders with relevant pages of contract and SOR
  - b) Proof of Completion / completion certificate indicating value of work completed against above order, in support of their fulfilling the qualification criteria.
- iii. Other relevant documentary evidence for all the above-mentioned criteria (As applicable for the tender).
- iv. All documents furnished by Bidder in support of meeting the experience criteria of BQC shall be

EITHER

“Duly certified by Statutory Auditors of the Bidder or a practicing Chartered Accountant (not being an employee or a director or not having any interest in the Bidder(s) company / firm) where audited accounts are not mandatory as per law

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OR

Duly notarized by any Notary Public in the Bidder's country"

**4.1.3 Financial Criteria:**

4.1.3.1 Average Annual Financial Turnover of the Bidder, during the last three years ending March 31st of previous financial years shall be at least Rs 7,29,51,477/- (Rupees Seven Crore Twenty Nine Lakh Fifty One Thousand Four Hundred and Seventy Seven only)

Note A: For any Bidder, as per their company policy if the financial year ending is other than 31st March, then in that case the financial year as followed in their company shall be applicable. In case the last financial year closing date is within 9 months of bid due date and audited annual report of immediate preceding financial year is not available, Bidder has the option to submit the financial details of the three previous years immediately prior to the last financial year. Otherwise, it is compulsory to submit the financial details of the immediate three preceding financial years.

4.1.3.2 Net worth of the Bidder as per immediate preceding year's audited financial results shall be positive.

Note B: Same as Clause 4.1.3.1 Note A above



4.1.3.3 Working Capital:

The minimum working capital of the Bidder as per the immediate preceding year's audited financial results shall be Rs 1,21,58,580/- (Rupees One Core Twenty One Lakhs Fifty Eight Thousand Five Hundred and Eighty Only).

Note C: Same as Clause 4.1.3.1 Note A above

In case Bidder is unable to meet the working capital requirement as above, the Bidder can supplement the working capital with a fund based line of credit from any scheduled bank in India or a commercial bank having net worth more than equivalent INR 1000 million. In such a case, Bidder shall furnish a declaration from the bank (dated any date between the tender floatation and bid due date) for availability of unutilized fund based line of credit for the shortfall in working capital as mentioned above, in the format enclosed as **Annexure 1** to NIT.

4.1.3.4 General:

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- a) Bidder to evidence the meeting of financial criteria shall furnish the complete audited annual reports including auditor's reports, balance sheets, profit & loss accounts statement and all other schedules for the preceding three financial years.
- b) In case a Bidder (a Parent Company) is having wholly owned subsidiaries but only a single consolidated annual report is prepared and audited which includes the financial details of their wholly owned subsidiaries, consolidated audited annual report shall be considered for establishing the financial criteria subject to statutory auditor of the Bidder certifying that separate annual report of Bidder (without the financial data of subsidiaries) is not prepared and audited.
- c) Further, in case a Bidder is a subsidiary company and separate annual report of the Bidder is not prepared & audited, but only a consolidated annual report of the Parent Company is available, consolidated audited annual report shall be considered for establishing the financial criteria subject to statutory auditor of the parent company certifying that separate annual report of Bidder is not prepared and audited.



#### **4.1.4 Documents and Data required with Bid**

- 4.1.4.1 The Bidder shall, in his own interest, furnish complete documentary evidence to justify that the Bidder meets the Qualification criteria as given above
- 4.1.4.2 Bidder shall complete and submit the Experience Record Proforma provided under the Proposal Forms of the Bidding Document (along with supporting documents mentioned) to establish that the Bidder meets the Bidder Qualification Criteria as per Clause No. 4.1 of this document.
- 4.1.4.3 Bidder shall furnish documentary proof of fulfilling the "Bid Qualification Criteria" as mentioned in Clause Nos. 4.1 above. The documentation shall include but not limited to copies of work order(s) / contract agreements(s) / relevant pages of contract document(s), completion certificate(s), fulfilling the qualification criteria, complete annual reports containing audited balance sheets and profit & loss accounts statement etc. PMC/MRPL India reserves the right to complete the evaluation based on the details furnished without seeking any additional information.
- 4.1.4.4 All supporting documents, pertaining to "Bidder Qualification Criteria (Commercial & Financial)" including MSE certificate shall be submitted duly authenticated as follows: Documents shall be submitted duly certified by Statutory Auditor of the Bidder or a practicing Chartered Accountant (not being an employee / Director and not having any interest in the Bidder's company) where audited accounts are not mandatory as per law.

OR

Bidder shall submit documents duly notarized by any notary public / Apostille in the



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Bidder's country or certified true copies duly signed, dated and stamped by an official authorized for this purpose in Indian Embassy / High Commission in Bidder's country.

OR

Bidder shall submit self-certified documents in original from any one out of CEO or CFO or Company Secretary of the Bidder (Limited company only) along with Self-Certification enclosed as in the format enclosed as Annexure 2 to NIT. This option shall not be applicable to Proprietorship / Partnership firms.

- 4.1.4.5 Bidders shall be required to upload the digitally signed authenticated copies of documents for meeting BQC on the e-tendering portal only. Bidders need not be required to submit the original authenticated documents in physical form to PMC/MRPL India. In addition, Bidder shall also confirm that all authenticated documents submitted for meeting the BQC are certified as per the authentication requirement defined in the bidding document.
- 4.1.4.6 Wherever the Bidder has not submitted the authenticated documents through e-tendering as per the requirement of bidding document, Bidder shall submit the original authenticated document in a separate booklet titled as "Documentation against Bidder Qualification Criteria (Commercial & Financial)" with proper index in original within the bid due date.
- 4.1.4.7 It is clarified that if authenticated documents are either not submitted through e-tendering or not submitted in original, in physical form, offer shall not be considered.
- 4.1.4.8 With regards to Financial documents, in case Bidder submits bound published and audited annual financial statements including balance sheet, profit & loss accounts and all other schedules for the preceding three financial years, the same shall be considered without certification of Statutory Auditor / Notarization of Notary Public as per clause above.
- However, in case the Bidder submits either a photo copy of published statement or a translated copy of the published financial statements, the same shall be certified either by statutory auditor or Notary Public, in original as per Clause 4.1.4.4 above.
- 4.1.4.9 Any additional documents if deemed necessary to establish the qualifying requirements may be submitted by the Bidder as required.
- 4.1.4.10 Submission of authentic documents is the prime responsibility of the Bidder. However, Nauvata / MRPL India reserves the right of getting the document cross verified, at their discretion from the document issuing authority. In addition, Nauvata/ MRPL India may verify the credentials of the successful Bidder before award as per their prevailing guidelines.



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- 4.1.4.11 Nauvata / MRPL India reserves the right to complete the evaluation based on the details furnished (without seeking any additional information) and / or in-house data, survey or otherwise.
- 4.1.4.12 Failure to meet the above Qualifying Criteria at 4.1 above will render the bid to be summarily rejected.
- 4.1.4.13 Bidders are required to submit all such past experience(s) (PTR) meeting the BQC along with relevant supporting documents in the first instance itself, along with the bid. However, Nauvata / MRPL India reserves the right to seek any additional supporting documents for meeting the BQC for only those past experiences (PTR) submitted along with the bid. Accordingly, only such past experience(s) shall be considered for qualification, details of which are provided in the bid by the Bidder and subsequently no additional past experience (PTR) shall be sought from the Bidder.
- 4.1.4.14 If Bidder is in the Holiday / Blacklist of any CPSU / State PSU / Central or State Government Undertaking, Bidder shall give a self-declaration to this effect.

## 4.2 BID EVALUATION CRITERIA (BEC)

- 4.2.1 The Bidder should accept in Toto all the Technical & Commercial Specification and Scope of Work given in the tender with no deviations as per the Tender Document
- 4.2.2 Techno Commercially acceptable bids will be evaluated on overall L1 basis. i.e., lowest landed cost to MRPL.
- 4.2.3 The Lumpsum Price quoted by the Bidders in Price Bid Format SP-0 shall be considered for the purpose of evaluation along with the GST quoted and Commercial loading if any.
- 4.2.4 In case of Tie between two or more Bidders at L-1 Position, all the L-1 Bidders shall be asked to submit discount over previous quoted price in a sealed envelope (Priced Bid). The process shall be repeated till final L-1 position is established.



## 5.0 REJECTION CRITERIA

- 5.1 Bidder to quote for all items enlisted in the Schedule of Price otherwise bid shall be rejected.
- 5.2 Bids received after the due date / time shall be rejected.
- 5.3 Techno-commercial offer without Bid Security Declaration shall be rejected. Bid Security Declaration shall be as per **Annexure-3** to NIT. Bids received without Bid Security declaration in lieu of EMD (in original with the Technical Bid), before the bid closing date and time shall be liable for rejection. However, Govt. Dept. / PSUs / firms registered with NSIC / MSE (Micro and Small Enterprise), vendors registered with District Industries Centre (DIC) / any other body specified by Ministry of MSME (MoMSME) / Udyog Aadhaar Memorandum issued by MoMSME, Startups are exempted from submission of

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Bid Security declaration. Such Bidders shall submit relevant documentary proof towards exemption, along with technical bid of the tender.

- 5.4 Non-compliance to any of BQC, BEC clauses shall be rejected.
- 5.5 Non adherence to Technical / Commercial terms, incomplete bids, Unpriced bid and Price bid not in prescribed format and bids with deviation to tender conditions will be liable for rejection.
- 5.6 Bidders failure to enter into Integrity Pact as applicable for the Tender along with the bid duly signed shall be liable for rejection.
- 5.7 If Technical bid & Price bid are submitted together.
- 5.8 Bids found to have been submitted with falsified / incorrect information.
- 5.9 The Bidders who are on Holiday / Negative list of OWNER on due date of submission of bid/ during the process of evaluation of the bids, the offers of such Bidders shall not be considered for bid opening / evaluation / Award. If the bidding document were issued inadvertently / downloaded from website, offers submitted by such Bidders shall also be not considered for bid opening / evaluation / Award.
- 5.10 Consortium / Joint bids shall not be accepted.
- 5.11 Offers not meeting statutory requirement are liable for rejection.
- 5.12 Bidder to quote for all items enlisted in the SOP (Schedule of Price), otherwise bid shall be rejected.

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**Annexure-1 to NIT**  
(On Letter Head of bank)

DECLARATION FROM THE BANK FOR AVAILABILITY OF UNUTILIZED LINE OF CREDIT

Ref: \_\_\_\_\_

Date: \_\_\_\_\_

We \_\_\_\_, a Bank firm having our registered office address \_\_\_\_\_ confirm that the Company, M/s \_\_\_\_\_, having its registered office at \_\_\_\_\_ is having account with our bank.

Presently, the credit limits of the company are as follows:

Fund Based Line of Credit (towards Working Capital like CC Limit)	Amount in INR
Sanctioned Line of Credit	
Utilized Line of Credit	
Balance Line of Credit	

[Bank to specify as applicable]

We declare that we are scheduled bank in India; OR

We declare that we are a commercial bank having Net worth more than equivalent INR 100 CR as per latest audited financial statements.

Yours Faithfully,


Signature:

Name & Designation :

Employee Code :

E-mail ID:

Fax number:

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**Annexure-2 to NIT**  
(on company letterhead)

**SELF-CERTIFICATION**

I, \_\_\_ s/o d/o \_\_\_\_\_ working as CEO/CFO/ Company Secretary (to indicate as applicable) of the Company having \_\_\_\_\_ its registered office at \_\_\_\_\_ certify that all the details including documents pertaining to Bidder Qualification Criteria signed by undersigned vide our offer reference \_\_\_\_\_ against your enquiry document \_\_\_\_\_, are true, authentic, genuine and exact copy of its original.

It is certified that none of the documents are false/forged or fabricated. All the documents submitted has been made having full knowledge of (i) the provisions of the Indian laws in respect of offences including, but not limited to those pertaining to criminal breach of trust, cheating and fraud and (ii) provisions of bidding conditions which entitle the Owner to initiate action in the event of such declaration turning out to be a misrepresentation or false representation.

I further certify that further documents, if any, required to be submitted by our company, shall be submitted under my knowledge and those documents shall also be true, authentic, genuine, exact copy of its original and shall not be false/forged or fabricated.



**DECLARATION**

I, \_\_\_ S/o/D/o of \_\_\_, working as CEO/CFO/Company Secretary (indicate, as applicable) of the Company having its registered office at \_\_\_\_\_ with reference to our bid \_\_\_\_\_ against your enquiry document \_\_\_\_\_, declare that in case, at a later date, any of the document submitted in our bid referred above is found to be false/forged or fabricated, I, shall be held responsible for the same and Owner has every right to take action against me and my company, as deemed fit as per provisions of the bidding documents including Owner's right to put our company on Holiday/Blacklist for future business with Owner.

Specimen Signature of authorized representative

Signature

Name & Designation (CEO or CFO or Company Secretary)

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**Annexure-3 to NIT**

**FORMAT OF BID SECURITY DECLARATION FROM BIDDERS IN LIEU OF EMD**

(On Bidder's Letter head)



I/We, the authorised signatory of M/s \_\_\_\_\_ participating in the subject tender no. \_\_\_\_\_ for the job of \_\_\_\_\_, do hereby declare:

- (i) That I/ We have availed the benefit of waiver of EMD while submitting our offer against the subject Tender and no EMD being deposited for the said tender.
- (ii) That in the event we withdraw/ modify our bid during the period of validity OR I/ We fail to execute formal contract agreement within the given timeline OR I/We fail to submit a Performance Security within the given timeline OR I/We commit any breach of Tender Conditions / Contract which attracts penal action and I/We will be suspended from being eligible for bidding/ award of all future contract(s) of Mangalore Refinery and Petrochemicals Limited for a period of **ONE YEAR** from the date of committing such breach.

Signature and Seal of Authorised Signatory of Bidder

Name of Authorized Signatory

Company Name and seal

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**Annexure-4 to NIT**

**CORPORATE UNDERTAKING (where Bidder is a subsidiary of a Foreign company)**

(On Parent Company Letter head)

**Ref : Tender No. 3200000490 for LSTK-B Civil and Structural Works for MRPL Marketing Terminal at Devangonithi, Bangalore**

M/s.\_\_\_\_\_ (Bidder/Contractor) have in response to the above mentioned tender, submitted their Bid bearing number ..... to MRPL. M/s.\_\_\_\_\_ (Bidder/Contractor) is a 100% wholly owned subsidiary of M/s\_\_\_\_ (Parent Company).

M/s\_\_\_\_ (Parent Company) represents that they have read the terms and conditions and understood the requirement of the above said tender and are capable of and committed to provide all supports as may be required by M/s. \_\_\_\_\_ (Bidder/Contractor) for successful execution of the same.

M/s\_\_\_\_ (Parent Company) hereby gives this guarantee to MRPL and undertakes as follows:

1. M/s\_\_\_\_ (Parent Company) shall be jointly with the M/s. \_\_\_\_\_ (Bidder/Contractor) as also severally responsible to MRPL for satisfactory performance of the Contract that may be awarded to the Bidder / Contractor by MRPL.
2. M/s\_\_\_\_ (Parent Company) unconditionally agrees that in case of non-performance by M/s. \_\_\_\_\_ (Bidder/Contractor) of any of its obligations under the Bid or the Contract that may be awarded in any respect, the M/s.\_\_\_\_ (Parent Company) shall, immediately on receipt of notice of demand from MRPL, take up the job without any demur or objection, in continuation and without loss of time and without any cost to MRPL and duly perform the obligations of the M/s. \_\_\_\_\_ (Bidder/Contractor) to the satisfaction of MRPL.
3. M/s.\_\_\_\_ (Parent Company) agrees that this undertaking and guarantee shall remain valid and enforceable till the satisfactory execution and completion of the work (including discharge of the warranty obligations) under the Contract that may be awarded to M/s. \_\_\_\_\_ (Bidder/Contractor) .
4. M/s.\_\_\_\_ (Parent Company) represents that this undertaking has been issued after due observance of the appropriate laws in force in India.
4. M/s.\_\_\_\_ (Parent Company) represents and confirms that M/s.\_\_\_\_ (Parent Company) has the legal capacity, power and authority to issue this undertaking.



For & on behalf of M/s.\_\_\_\_ (Parent Company)

Signature\_\_\_\_\_

Name\_\_\_\_\_

Designation \_\_\_\_\_


Seal of Company

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## **PART I : TECHNO-COMMERCIAL**



## **INSTRUCTIONS TO BIDDERS (ITB)**



	<p><b>MRPL Marketing Terminal Project at Devangonhi, Bangalore Marketing Infrastructure Projects, MRPL</b></p>	
	<p><b>LSTK-B : CIVIL AND STRUCTURAL WORKS VOLUME I : COMMERCIAL</b></p>	

## **PART I : TECHNO-COMMERCIAL**

## **INSTRUCTIONS TO BIDDERS (ITB)**


	<b>MRPL Marketing Terminal Project at Devangonhi, Bangalore</b> <b>Marketing Infrastructure Projects, MRPL</b>	
	<b>LSTK-B : CIVIL AND STRUCTURAL WORKS</b> <b>VOLUME I : COMMERCIAL</b>	

**PART I : TECHNO-COMMERCIAL**



**INSTRUCTIONS TO BIDDERS (ITB)**

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## 1. GENERAL

Mangalore Refinery & Petrochemicals Ltd (MRPL) operates a 15 MMTPA crude processing refinery with secondary units and Petrochemical complex at Mangalore. MRPL is in possession of a 20 acres plot of land in Devangonithi near Bengaluru. MRPL proposes to utilize this land for setting up a Petroleum storage & Marketing Terminal to enhance and grow in its marketing business activities.

MRPL intends to set up the Petroleum storage & Marketing Terminal by inviting Open Tenders for the job on LSTK basis through various EPC packages. This Tender is for LSTK-B Civil / Structural / Architectural for all Roads, Drains, Steel & RCC Buildings (Including electrical & plumbing), Underground sumps (for water storage, water treatment and for pumps/Vessels) Compound wall and entrance Arch Contract.

The bidder is advised to read the instructions in this ITB and other Bidding documents carefully to ensure that his response complies fully with the requirements of the Tender. Failure to provide the information and documents required by this Invitation to Bid may render the Bid to be unacceptable. Tender should be submitted in the prescribed forms supplied by the MRPL/PMC only.



The bidder shall download the complete set of tender documents from the MRPL's website or [www.tenderwizard.com](http://www.tenderwizard.com) as per the Index of the Tender document, fully read, understand & compile the same as per the various instructions contained herein and in "Instructions to Bidders".

Every bidder must submit bid strictly in accordance with the conditions and specifications prescribed by PMC/MRPL. Special conditions (if any) submitted along with the bid documents by the bidder will not be applicable to this Tender, in case they are in conflict with any of our terms and conditions.

Bidders to note that Physical/ Hard Copy of the Tender Documents shall not be issued from the office of Tender Inviting Authority. Any request in this regard shall not be entertained under any circumstances.

## 2. COST OF BIDDING

The Bidder shall bear all costs associated with the preparation and submission of its bid and PMC / MRPL will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

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### 3. SITE LOCATION / SITE VISIT

3.1. Site Location: Proposed Devangonithi Marketing Terminal will be coming up in Bengaluru, Karnataka State. Site Location details are as under :



- 30KM to the east of the Bangalore City
- 4.2 KM to the north of the National Highway NH 648
- 2.2KM to the north of Devangonithi Railway Station
- 40KM to the South of Bengaluru Kempegowda International Airport
- 4.3KM to the North of Devangonithi village
- 11.28KM to the South of Hoskote town
- 3.9KM to the north of Hosahalli lake.
- Approximate Google Earth coordinates – 12° 59' 20 N, 77° 50' 15 E



3.2. Bidder is advised to visit and examine the site and its surrounding and shall familiarize himself of the existing facilities and environment and shall collect all other information which he may require for preparing and submitting the Bid and entering into the contract. Claims and objections due to ignorance of existing conditions or inadequacy of information will not be considered after submission of the Bid and during the Contract period / after Contract period. All costs for and associated with site visits shall be borne by the bidder. Site visit is planned as indicated in NIT elsewhere in the tender.

3.3. The bidder and any of his personnel or authorised representatives will be granted permission by the PMC / MRPL to enter upon its premises and lands for the purpose of such inspection, but only upon the explicit condition that the bidder, its personnel





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or authorised representative shall be understood to have released and indemnified the PMC / MRPL and its personnel from and against all liability in respect thereof and will be responsible for personal injury (whether fatal or otherwise), loss of or damage to property and any other loss, damage, cost and expenses incurred as a result of such visit.

- 3.4. Bidder may contact the following person for site visit purposes:  
 Attn : Anirudh S Nadiger  
 pm.mrpl@nauvata.com / +91-080-67209100 (extn:131), MOBILE NO:+91 9113904331  
 Nauvata Engineering Pvt. Ltd.  
 #42, "A" Block, 6th Floor, Brigade Software Park, 27th Cross Rd, Banashankari Stage II, Bengaluru, Karnataka 560070



#### 4. TENDER INSTRUCTIONS

- 4.1. The Tender document comprises of following sections:
- a. Notice Inviting Tender
  - b. Instructions to Bidders
  - c. Proposal Forms
  - d. General Conditions of Contract
  - e. Special Conditions of Contract
  - f. Bid Security declaration in lieu of EMD
  - g. Integrity pact, etc.
  - h. BQC Compliance, Deviation statement, declaration, etc.
  - i. Price bid format.
  - j. Scope of work
  - k. All technical Documents, and drawing, etc
  - l. Contract Workers Safety Policy.
- 4.2. The Tender Documents shall always be & remain the exclusive property of the PMC / MRPL without any right with the Bidder to use them for any purpose except for submitting the Bid in accordance with the provisions of these instructions by the prospective Bidders and for use by the successful Bidder with reference to the work. The PMC / MRPL shall have no obligation to return to the Bidder the Tender Documents submitted by the Bidder.
- 4.3. The Tender shall be completely filled in all respects and shall be tendered together with requisite information & annexure. The Bidder is expected to examine the Tender Documents, including all instructions, specifications and drawings in the tendering document. Failure to furnish all the information required by the tendering documents or tender incomplete in particulars or submission of tender not substantially

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responsive to the tendering document in every respect shall result in rejection of the Tender.

- 4.4. It is hereby stipulated that the Tenderers shall not affect any corrections/ alterations/ modifications in the Tender Documents and various formats contained therein. Any correction/ alteration/ modification in the Tender Documents by the Bidder shall make their tender liable for rejection.
- 4.5. Originals of the documents related to the tender should be produced as and when asked for verification, and failure to produce such Original document(s) at specified date, time and place would mean rejection of tender for further evaluation.
- 4.6. When person signing the Tender / agreement is not the sole Proprietor of the company the original Power of Attorney or a Notary certified copy thereof authorizing such person to act and sign on behalf of the company must be enclosed.
- 4.7. Date format should be DD/MM/YYYY (Date/Month/Year).
- 4.8. Bidders should get clarified all the technical doubts and other points related to the tender before submitting the priced and un-priced offer.
- 4.9. PMC / MRPL reserves the right to accept or reject any or all tenders and at any stage of the tender evaluation process at the Company's sole discretion and without assigning any reason thereof.
- 4.10. Any false/fake/incorrect information submitted by the bidder/contractor while submitting the bid will be liable for rejection of bid. Action like cancellation of the Order, forfeiture of Security deposit including Banning/Holiday listing of the Bidder's Company/ Contractor in all ONGC / MRPL establishments.
- 4.11. Any false/fake/incorrect information surfaced out after award of job would lead to action like cancellation of the Order, forfeiture of Security deposit including Banning/Holiday listing of the Bidder's Company/ Contractor in all ONGC /MRPL establishments.
- 4.12. If the successful bidder, backs out during finalization of tender / after award of order, action will be initiated by PMC / MRPL as deemed fit.
- 4.13. The tender terms/ conditions as per SCC (Special Conditions of the Contract) supersedes all similar terms prescribed under GCC / Other Conditions of Contract.
- 4.14. PMC / MRPL reserves the right to seek the Originals if needs or inspect the documents at its premises for verification and shall return the same upon verification. In case, it

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is found that the bidder has attempted to mislead PMC / MRPL on any counts, PMC / MRPL may proceed with any action that is deemed fit.



- 4.15. The item supplied / service provided shall be Environment friendly and Energy efficient.

## 5. CLARIFICATION REQUESTS BY BIDDER

- 5.1. Although the details presented in this Tender document consisting of Conditions of Contract, Scope of Work, Technical Specifications and Drawings have been compiled with all reasonable care, it is the Bidder's responsibility to ensure that the information provided is adequate and clearly understood.
- 5.2. Bidder shall examine the Tender document thoroughly in all respect and if any conflict, discrepancy, error or omission is observed, Bidder may request clarification at any time up to one week prior to the tender closing date. Such clarification requests shall be directed as per the contact details of PMC/MRPL mentioned in the NIT.
- 5.3. Any failure by Bidder to comply with the aforesaid requirements shall not excuse the Bidder, after subsequent award of contract, from performing the work in accordance with the agreement.
- 5.4. Response to queries/ clarifications raised by the bidders will be sent as expeditiously as possible to all who have been issued / downloaded the Bidding Document, through e-mail and also hosted on CPP Portal and [www.tenderwizard.com](http://www.tenderwizard.com). The response shall not form part of the Bidding Document unless issued as an Addendum/ Amendment.
- 5.5. Bidders are expected to resolve all their clarifications/ queries to the Bidding Document and submit their bid in total compliance to Bidding Document without any deviation/ stipulation/ clarification.
- 5.6. Pre-bid meeting shall be organised, if specified in NIT, as per details given in NIT.

## 6. CORRIGENDUM/ ADDENDUM/ CLARIFICATION

- 6.1. PMC / MRPL may, for any reason whether at his own initiative or in response to the clarification requested by the prospective bidder, issue amendment in the form of addendum/ corrigendum/ clarification during the Tender period and subsequent to receiving the Tenders. Any addendum/ corrigendum / clarification thus issued shall become part of Tender document.
- 6.2. For addendum/ corrigendum/ clarification issued during the Tender period, Bidder shall consider the impact in his Tender. For addendum/ corrigendum/ clarification(s)

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issued subsequent to receiving the Tenders, Bidder shall follow the instructions issued along with addendum/ corrigendum/ clarification(s).


- 6.3. Such Addendum / Corrigendum/ Clarification(s) shall be uploaded on the MRPL website <https://mrpl.co.in> / [www.tenderwizard.com](http://www.tenderwizard.com) e-tendering portal and it will not be published in newspaper. Prospective bidders should visit the above MRPL website / MRPL's e-procurement site from time to time to make note of corrigendum/ addendum/ clarification if any. PMC / MRPL is not responsible for non-receipt of any communication / information of addendum / corrigendum / clarification. No press notification shall be given.
- 6.4. All such Addendum / Corrigendum / Clarification(s) issued shall form part of the Tender Documents.
- 6.5. It is incumbent on all the Bidders to view, download, understand and furnish Addendum/ Corrigendum/ Clarification(s) along with his /its /their tender. Any deviation/ clarification due to non-receipt of Addendum / Corrigendum/ Clarification(s) at later stage shall not be entertained. Any bid without copy of Addenda/ Corrigenda/ Clarification(s), if issued, as mark of its acceptance may not be accepted.

## 7. CONFIDENTIALITY OF BIDDING DOCUMENT

- 7.1. All information disclosed to the Tenderers by way of the Tender Documents shall be considered confidential and any person/ Tenderer shall not part with possession of the Tender Documents or copy or disclose information thereof to any party, except as may be necessary for carrying out the work. It is being understood that the Tender Documents have been downloaded by the eligible Tenderer solely for the purpose of bidding. Where it is found that any Tenderer has violated and has disclosed sensitive and vital information impugning on the security of the installation/ national security, necessary action, as may be called for, may be taken against the Tenderer concerned in addition to his being liable to be black listed and/ or barred from participating in future bids.

## 8. LANGUAGE OF BID



- 8.1. The Bid and all correspondence incidental to and concerning the Bid shall be in the English Language. For supporting documents and printed literature submitted in any other language, an equivalent English Translation shall also be submitted. Responsibility for correctness in translation shall lie with the Bidder. In case of any conflict, for the purpose of interpretation of the Bid, the English Translation shall govern.

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- 8.2. In the event of submission of any document / certificate by the Bidder in a language other than English, the English translation of the same duly authenticated by Chamber of Commerce of Bidder's country shall be submitted by the Bidder.



## 9. PREPARATION AND SUBMISSION OF BIDS

- 9.1. 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.
- 9.2. Date & Time of submission: Bid must be submitted by the due date and time mentioned in the Notice Inviting Tender / Letter Inviting Bid or any extension thereof as duly notified in writing on MRPL / e-tender website.
- 9.3. Bidder shall submit the offer in two parts:
- Part I - Techno-Commercial (un-priced) bid and
  - Part II - Priced bid.
- 9.4. Price bid & technical bids if submitted together shall be summarily rejected.
- 9.5. Part I - Techno-Commercial Bid (Unpriced Bid) shall be submitted with all documents that are called for in PDF format only. List of documents as a minimum:
- (i) Bid Forms as per **FORM - A1** (FORM OF TENDER for Commercial Bid) and **FORM - A2** ( FORM OF TENDER for Price Bid)
  - (ii) **FORM - A3** (Information about Tenderer).
  - (iii) Scanned copy of duly authenticated documents in support of meeting the Experience and Financial criteria as per **FORM - B1 & Form - B2**.
  - (iv) Scanned copy of Bid Security declaration from bidder in lieu of EMD as per Clause 14 below.
  - (v) Scanned copy of Power of Attorney in favour of signatory(ies) of the Bid.
  - (vi) Copy of Partnership Deed in case of Partnership Firm or Memorandum & Article of Association in case of Limited Company.
  - (vii) Compliance to Bid requirement as per **FORM - C** or in case of Deviation/ Exceptions (Bidder is requested not to stipulate any deviation), as per proposal **FORM - D**. (Sheet-1 for Commercial Section and Sheet-2 for Technical Section)
  - (viii) Check List duly filled in as per **FORM - E**.
  - (ix) Reply to Commercial Questionnaire as per **FORM - F**.

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- (x) Details regarding PF as per **FORM - G.**
- (xi) Bidder's Queries (Technical) **FORM - H.**
- (xii) Bidder's Queries (Commercial) **FORM - I.**
- (xiii) Declaration by the Bidder as per **FORM - J.**
- (xiv) Submission of Undertaking for non-engagement of child labour as per **FORM - K**
- (xv) Bank details of Bidder as per **FORM - L**
- (xvi) Integrity Pact Agreement along with Affidavit, duly signed & Stamped as per **FORM -M1** & Affidavit as per **FORM - M2.**
- (xvii)** Letter of Waiver on Letter head of Bidder as per **FORM - N**
- (xviii) Technical offer and Engineering details required as per Bidding Document.
- (xix) Project Execution Schedule
- (xx) Unpriced copy (without price/ Percentage BOQ) of Price bid indicating Quoted / Not Quoted, duly signed and stamped.
- (xxi) Any other information required in the Bidding Documents or considered relevant by the Bidder.
- (xxii) Complete copy of Tender document signed & stamped on each page as confirmation of acceptance.
- (xxiii) Declaration by bidder regarding Black listing/Holiday listing as per Performa **FORM - P**
- (xxiv) Declaration/confirmation by bidder that they are not black listed/holiday listed by any Government Department/ Public Sector on the date of submission of bid as per Performa **FORM - P1**
- (xxv) Declaration about any Current Litigation/ Arbitration, if any, in which bidder is involved as per **FORM - Q**
- (xxvi) Signed & Stamped copy of Statement of Credentials as per **FORM - R**
- (xxvii) Declaration about Liquidation/Court receivership as per **FORM - S**
- (xxviii) Cancelled cheque of bidders
- (xxix) PAN card Copy.
- (xxx) Signed & Stamped Copy Undertaking by the bidder.
- (xxxi) Originals in hard copy of following authenticated documents to be submitted to the address provided:



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- Bid Security declaration from bidder in lieu of EMD
- Signed Integrity Pact
- Power of Attorney

The above original documents shall be submitted to PMC at their address mentioned in the NIT within the deadline of submission of Bids. Scanned copy of these documents shall be uploaded as part of Techno-commercial Bid on the e-portal.

**Notes:**

Bidders are required to serially number all the pages being appended by them as part of submission to the Technical bid. Such numbering shall include Covering letter, Technical specifications, Items list being offered, Drawings, bid qualification proof, Testimonials, Certificates, Catalogues, Compliance or Deviation statements, etc. as applicable to this Tender and create an Index Page with headings and corresponding page numbers.

Declaration as per the format of 'Undertaking by Bidders' duly signed & stamped by the bidder in acceptance of having read and understood all the tender requirements and accept all terms and conditions of the tender including all corrigendum / addendum / clarification issued, if any.



In addition to this, all pages of the Tender documents issued by PMC/MRPL shall be signed by bidder on all pages and submitted/uploaded along with the Technical Bid / attachment in EPS system.

- 9.6. Priced bid (Part II) shall be submitted in the same format as mentioned/ included in the Tender document. Otherwise, offer will be liable for rejection.
- 9.7. No assumption, stipulation, deviations from terms and conditions or presumptions, etc. shall be made by the bidder while submitting the offer in the Price Part of the Tender. The liability of obtaining all necessary clarity with respect to the tender, its technical aspects and pricing shall be on the bidder. PMC / MRPL shall be under no obligation whatsoever to entertain any tender bid which is based on any assumption, stipulation, deviations from terms and conditions or presumptions, etc. and would have the option to reject such bid at their discretion.



**10. TENDERS INVITED THROUGH E-PROCUREMENT SYSTEM**

- 10.1. For tenders invited through E-Procurement System, Bids shall be submitted through online (EPS) mode only on the MRPL's e-tendering portal.
- 10.2. Bidders to upload the Un-priced and Price part of their Bids strictly in the Unpriced & Priced folders respectively at the designated place in the e-tender portal. Non-compliance to the same may lead to rejection of their offer.



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- 10.3. Bids submitted in any other form through Telex/ Fax/ Telegram/ E-mail/ Courier/ Registered Post/ manually shall not be accepted
- 10.4. However, documents which necessarily have to be submitted in hard copy (originals) as per Clause 9.5 (xxix) above shall be submitted offline. Nauvata/MRPL shall not be responsible in any way for failure on the part of the Bidder to follow the instructions.
- 10.5. Bidders should avoid the last minute rush to the website for registration of user ID and password, enabling of user ID and mapping of Digital Signature, Sl. no., etc., since this exercise require activities from PMC / MRPL and EPS provider and needs time. In the event of failure in bidder's connectivity with PMC / MRPL / Service provider during the last few hours, bidder is likely to miss the deadline for bid submission. Due date extension request due to above reasons may not be entertained.
- 10.6. Bidders to note that the very act of using Digital Signature Certificate (DSC) for downloading the bids and uploading their offers shall be deemed to be a confirmation that they have read all pages of the bid document without any exception.
- 10.7. E-Procurement System Instructions:
- 10.7.1. Tender is invited on-line on the website [www.tenderwizard.com](http://www.tenderwizard.com) / MRPL portal from the firms having Class IIB or above Digital Signature Certificate (DSC) (with Signing & Encryption Certificate) issued by any agency authorized by Controller of Certifying Authority (CCA), Government of India.
- 10.7.2. Offers received online on the e-procurement portal only will be considered for evaluation.
- 10.7.3. The server date and time as appearing on website [www.tenderwizard.com/MRPL](http://www.tenderwizard.com/MRPL) portal shall only be considered as cut-off time for receipt of tenders. Offers received by any other mode will not be considered.
- 10.7.4. Bidders are responsible for obtaining the digital certificates for participation / submission of bids at their cost.
- 10.7.5. The digital certificate shall be registered on the portal [www.tenderwizard.com/MRPL](http://www.tenderwizard.com/MRPL) portal and bidders shall upload the bid well in time.
- 10.7.6. Bidder shall download the bidding manual, system requirement and vendor registration manual and JRE setup for portal [www.tenderwizard.com/MRPL](http://www.tenderwizard.com/MRPL) portal to get acquainted with the procedures for submitting the online bids and load their Bids well within the time provided for bid submission to avoid last minute hassles.

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10.7.7. MRPL shall not be responsible for any delays occurred due to reasons whatsoever in receiving as well as on line submission of offers, including internet connectivity, document uploading / downloading issues, etc.

10.7.8. Any corrigendum / amendment to the tender will be uploaded on e-Procurement site [www.tenderwizard.com/MRPL](http://www.tenderwizard.com/MRPL) portal and will not be published through other mode. Prospective bidders should visit the above MRPL e-Procurement site from time to time to make note of corrigendum / amendment if any

**10.7.9.** In case of any queries regarding registration, bid submission procedure and system related, the bidder shall contact help desk of our e-procurement service provider M/s. ANTRES SYSTEM Ltd., Contact person **Mr. Dilip Ranganath, Contact no.0824-2882248, Email: [eps@mrpl.co.in](mailto:eps@mrpl.co.in).**

10.7.10. Support details as mentioned below:

Support Location	Name	Contact No.	Email ID
Mangalore	Mr.Dilip Ranganath	0824-2882248	<a href="mailto:eps@mrpl.co.in">eps@mrpl.co.in</a>
Bangalore	Mr. Prabhu Swamy	080-49352000	<a href="mailto:prabhuswamy@antaressystems.com">prabhuswamy@antaressystems.com</a>

## 11.PRICE BID / SCHEDULE OF PRICES (SOP)


11.1. Unless otherwise agreed to in the terms of the Purchase Order, the price shall be firm and not subject to escalation for any reason whatsoever till the execution of entire Purchase order / Contract, even though it might be necessary for the Purchase order / Contract execution to take longer than the Completion period specified in the Purchase order / Contract.

11.2. The SOP shall be read in conjunction with all other sections of Tender document.

11.3. The price quoted by the Bidder shall be firm and fixed for the completion period of the tendered works, unless stated otherwise.



11.4. Amount must be filled in 'Schedule of Price' Price Bid only. In any case, Bidder shall be presumed to have quoted against the tendered description of work and the same shall be binding on the Bidder.

11.5. Bidder shall quote for all the items of 'Schedule of Price' price bid after careful analysis of cost involved for the performance of the completed item(s) considering all parts of the Tender document. In case any activity though specifically not covered in

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description of item under 'Schedule of Price/ price bid' but is required to complete the work as per Scope of Work, Scope of Supply, Specifications, Standards, Drawings, General Conditions of Contract, Special Condition of Contract or any other part of Tender document, the item(s) quoted price will deemed to be inclusive of cost incurred for such activity.

- 11.6. All item(s) of work in the 'Schedule of Price' shall be carried out as per the specifications, and directions / instructions of the Engineer-in-charge and the prices are inclusive of labour, supervision, as well as preparatory, incidental, intermediate / auxiliary / ancillary or enabling works.
- 11.7. The price shall include all expenditure incurred towards mobilisation and demobilisation. All prices shall be quoted in Indian Rupees unless otherwise instructed.
- 11.8. Bidder shall be considered only if the bidder has quoted for all the items of the 'Schedule of Prices / price bid' unless stated otherwise. Tenders which are received with some item(s) left blank / not quoted for all the items of the 'Schedule of Prices / price bid' shall be liable for rejection.
- 11.9. For supply items under the scope of the Contractor supply, the prices quoted by the Bidder shall be all inclusive for delivery of materials at site (F.O.R. destination basis). It shall include Basic Cost, all applicable taxes, duties & levies, inspection charge, transportation charges, transit insurance, auxiliary taxes, etc. as may be applicable. The consignee for despatch of materials shall be the Contractor. However, the Contractor/ Supplier shall be responsible for any incidental consequences arising out during the transit of materials up to destination (site).
- 11.10. Prices quoted by the Bidders shall be strictly in the given Price Bid format. Prices should not be clubbed with any of items in any way i.e. complete break up as suggested to be given after each item for the materials and services covered under the scope of contract, otherwise the bid may be considered as non-responsive.
- 11.11. Unless stated otherwise in the Tender Documents, the contract shall be for the complete supplies, services and composite works as described in the relative scope of supplies, services and composite works.
- 11.12. All Government circulars/ guidelines applicable on tender work would be enforced from time to time and it would be binding on the part of the Bidder/Contractor to abide by the same as per stipulations.
- 11.13. Price Bid shall not contain any conditions whatsoever. In case any condition is mentioned therein, Price bid shall not be considered for evaluation.


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11.14. Any incomplete bid in any of the above requirement shall be considered as non-responsive and shall be summarily rejected without any reference whatsoever to the Bidder.

11.15. Prices to be quoted in Figures & words:

The price quoted by the Bidder shall be checked for arithmetic correction, if any, based on price and amount filled by the Bidder in the standard Price Bid/ format. If some discrepancies are found between the price / amount given in words and figures, the total amount shall be corrected as per the following procedure, which shall be binding upon the Bidder:

- 11.15.1. Prices shall be written both in Words and Figures. In the event of discrepancy between the price in figures and words, the amount entered in words would be taken into consideration for evaluation and finalization of the order.
- 11.15.2. When the price quoted by the Bidder in figures and words tallies but the amount is incorrect, the price quoted by the Bidder shall be taken as correct and amount reworked.
- 11.15.3. When there is difference between the price in figures and words, the price which corresponds to the amount worked out by the Bidder shall be taken as correct.
- 11.15.4. When it is not possible to ascertain the correct price, in the manner prescribed above the price as quoted in words shall be adopted and amount reworked.
- 11.15.5. When Bidder has quoted only in figures and the amount written against the particular item does not correspond to the price written in figures, then the higher of the prices i.e. price worked out by dividing the amount with quantity and quoted price in figures shall be adopted for evaluation purposes and in the event such a Tender is determined lowest Tender, then lower of the prices mentioned shall be considered to award of the works.
- 11.15.6. When Bidder has quoted prices in figures and words but has not calculated the amount and the total contract price, such Tenders shall be rejected forthwith without consulting the Bidder.
- 11.15.7. Bidder shall bear, within the quoted prices, income tax liability of both corporate and Personnel as applicable in respect of their personnel and their sub contractor's personnel, arising out of this contract. Bidder shall also bear, within the quoted prices, the Corporate Tax, as applicable, on the income arising out of this contract.

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11.15.8. The prices quoted by the bidder shall be inclusive of all duties, taxes and levies, etc., Central or State or Local bodies, etc. except GST. The GST shall be quoted separately as mentioned in other Bidding documents.

11.15.9. The prices stated in the Schedule of Price shall not be subject to escalation on any account whatsoever.

## 12. BID CURRENCY



- 12.1. Bidders shall quote firm prices in Indian rupee only. Prices quoted in any other currency shall not be considered.
- 12.2. Bidders shall quote the price for materials and services to be procured indigenously or imported only in Indian Rupees.

## 13. EARNEST MONEY DEPOSIT (EMD) DECLARATION

- 13.1. Bid Security/Earnest Money Deposit (EMD) is not applicable for this tender. Bid Security Declaration in lieu of EMD to be provided by the bidder as per **Annexure-3** to NIT.
- 13.2. Bids received without Bid Security declaration in lieu of EMD (in original with the Technical Bid), before the bid closing date and time shall be liable for rejection.
- 13.3. However, Government Departments / PSUs are exempted from submission of Bid Security declaration. Such bidders shall submit relevant documentary proof towards exemption, along with Technical bid of the tender.

## 14. PRE-BID MEETING

- 14.1. Pre-bid meeting shall be held as per time & at the venue specified in the NIT. In case Pre-bid meeting information is not available in the NIT, the PMC / MRPL shall decide to have a pre-bid meeting to clarify any issues and necessary intimation with adequate notice shall be posted on e-tendering portal.
- 14.2. Bidders shall submit their queries through the / e-mail in the specified formats **FORM H** (Technical) and **FORM I** (Commercial) one day prior to the due date of Pre-bid meeting. The queries shall be replied during the pre-bid meeting or the PMC / MRPL will respond through the e-tendering portal to any request for clarification received by the deadline for submission of queries.
- 14.3. Brief summary of the queries received through e-tendering portal, queries raised by the attending tenderers during pre-bid meeting and the clarifications given by the PMC

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/ MRPL respect thereof, as well as any further information which the PMC / MRPL choose to furnish to the tenderers, shall be posted on e-tendering portal in the form of Minutes of the Meeting or Addendum, which shall form part of the Tender Documents, unless otherwise specified.

14.4. The tenderer or their representatives with necessary authorisation letter can be present during the Pre bid conference.

## 15. LATE BIDS

~~15.1. Any bid received by PMC / MRPL after the deadline for submission of the bids (including any extension(s) thereof) shall be declared "Late" and shall not be considered for evaluation.~~

15.2. In case the documents to be submitted in Original hard copies are not received within the deadline, the Bids shall be declared "Late" and not be considered for evaluation

## 16. MODIFICATION AND WITHDRAWAL OF BIDS (APPLICABLE FOR E-TENDERS ONLY)

16.1. The Bidder may modify, re-submit or withdraw his e-bid after the bid uploading/submission, provided the same is uploaded on e-tender website prior to the deadline prescribed for submission of Bids. Only the latest bid submitted shall be considered and the one which is submitted prior shall stand cancelled.

## 17. BID OPENING

17.1. UN-PRICED (TECHNO-COMMERCIAL) BID OPENING

17.1.1. Techno-Commercial (Un-priced) Part (Part-I) shall be opened on the scheduled date and time as mentioned in NIT



17.1.2. Bidders can also witness bid opening by logging on to the E-Tendering website through their system using their valid digital signature/certificate.

17.1.3. During the opening of Un-Priced Part (Part-I), only the names of agencies who have quoted and furnished Bid Security Declaration in lieu of EMD shall be considered and declared.

17.1.4. Clarification of Bids

Bidders are requested to submit NO DEVIATION Bid, strictly as per terms and conditions of the bidding document. Bidder is required to confirm the same in the



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proforma provided in the bidding documents. Stipulation or any derivation may render the bid liable for rejection.

PMC / MRPL expect the Bidder to comply with the requirements of the Bidding Document without any deviation and submit substantially responsive bid. PMC / MRPL reserves the right to proceed with the evaluation if adequate nos. of techno-commercially responsive bids have been received without raising any Commercial/Technical deviations. Therefore, it is expected that bidders submit total compliance bid.



The deviation, if unavoidable, should be furnished as per specified **FORM-D**. Exception/ Deviations submitted elsewhere in the offer shall not be considered. If any exception/ deviation is acceptable to PMC / MRPL, the same shall be issued to all bidders through an Amendment. Bidders shall withdraw all other deviations/exceptions, not incorporated in Amendment, failing which offer of such bidders shall not be acceptable.

If a bidder takes any further deviations other than those agreed, while submitting the revised price bid/ price implication (if any), his bid shall be rejected outright without any reference. In case any deviations are found in the revised price bid/ price implication, such deviations shall not be taken into cognizance.

## 17.2. PRICE BID OPENING

- 17.2.1. Price part of only those bidders, whose bids are considered techno-commercially acceptable, shall be opened. Bidders selected for opening of their price bids shall be informed about the date of price bid opening.
- 17.2.2. The Price Bid opening shall be done of e-tender portal and Bidders can also witness bid opening by logging on to the E-Tendering website through their system using their valid digital signature / certificate.
- 17.2.3. Any unsolicited reduction in price offered by a bidder within the bid validity by way of discount or revised prices, subsequent to the bid due date, shall not be taken into account for comparison. However, such reduction in price shall be taken into account for ordering if such bidder happens to be recommended as per the originally quoted prices.
- 17.2.4. In the event of any unsolicited price increase sought by any bidder, subsequent to the bid due date, the bid of such a bidder shall be rejected, in case the bidder does not agree to withdraw the price increase. However, in case the unsolicited price increase is known only after price bid opening and the bidder's comparative ranking changes by withdrawal of the price increase, the Bidder shall not be allowed to withdraw the price increase and the bid shall be rejected outright. But,



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if such a bidder is lowest with or without the price increase, the order shall not be placed with price increase and if the bidder does not



## 18. BID EVALUATION AND AWARD CRITERIA

18.1. The PMC / MRPL reserves the right to consider/ evaluate only substantially responsive tenders. A substantially responsive tender is one, which, in the opinion of the PMC / MRPL (which shall be final and binding on the Tenderer(s)), substantially conforms to all the terms, conditions, specifications and requirements of the Tender Document without material deviations or reservations in respect of any of the following:

- Scope, Quality or Performance of the work.
- The PMC / MRPL's rights or the Tenderer's obligations under the contract as per the tender documentation.
- Such deviations the correction of which would affect the competitive position of other tenderers, who have submitted substantially responsive bids.
- Any Bid unaccompanied by the Bid Security Declaration in lieu of EMD in a form which is not acceptable as per the Tender Documents, or falling short of the requirement of the Tender Document, shall be liable for rejection.
- PMC / MRPL reserves the right to use in-house information for assessment of capability of bidder and their performance on jobs completed / in progress for evaluation purpose.
- Directives issued by Government. of India from time to time shall be given due consideration during Bid evaluation.

18.2. The following provisions of the bidding document must be adhered to without deviations, failing which the bid shall be considered to be non-responsive and liable for rejection.

- (i) Bid Security Declaration in lieu of EMD
- (ii) Bid Validity
- (iii) Security Deposit
- (iv) Cancellation of Contract
- (v) Suspension of work
- (vi) Price Adjustment/ Price Reduction for delay in completion
- (vii) Defect Liability period
- (viii) Termination of Contract


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- (ix) Time Schedule
- (x) Scope of Supplies
- (xi) Scope of Work
- (xii) Proforma of all Bank Guarantees
- (xiii) Arbitration
- (xiv) Integrity Pact

- 18.3. Expressions like "can offer if required / will be submitted later / will be taken up during detailed engineering after order is placed / noted etc." will be construed as "Total Non-Compliance" and the Bid shall be deemed "Non-responsive and Incomplete" and may be summarily rejected.
- 18.4. Prior to detailed evaluation of bids, the PMC / MRPL shall determine whether each bid is substantially responsive to the requirement of bidding documents. If the bid is not substantially responsive to the requirements of the Tender Documents, it will be rejected by the PMC / MRPL, and may not subsequently be made responsive by the Bidder having corrected or withdrawn the non-conforming deviation or reservation.
- 18.5. The requirements of specifications shall be approximately studied for compliance on each of the points. The Bidder may explain clearly his stand on the specifications not complied with. However, bids in compliance to each point would be deemed "Responsive Bid".
- 18.6. Bids which do not cover the complete scope of work will be treated as incomplete and shall be rejected.
- 18.7. Bid stipulating completion period/delivery schedule beyond that specified may not be considered.
- 18.8. Substantially responsive bids shall be evaluated by the PMC / MRPL to ascertain the relative position of the best evaluated bid in the interest of the PMC / MRPL, for the total of the complete supplies and services covered by the Tender Documents including Technical Specifications and as set out in the Schedule of Prices.
- 18.9. The evaluation of bids shall be done on the basis of total prices quoted for the complete scope of work and Supply, Services, Composite Works and conditions elsewhere as specified in the tender.

## 19. REBATE

- 19.1. No suo-moto reduction in price(s) by bidders is permissible after opening of the bid. If any Bidder unilaterally reduces the price(s) quoted by him in his bid after opening of bids, such reduction shall not be considered for comparison of prices but shall be

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binding on the Bidder if he happens to be selected for award of work. Conditional discount, if offered, shall not be considered for evaluation.

## 20. NOTIFICATION OF AWARD

- 20.1. The lowest evaluated bid shall be accepted by MRPL for award. The Bidder, whose bid is accepted, selected for award of contract by MRPL shall be issued Order / Letter / Fax of Acceptance (LOA / FOA) prior to expiry of bid validity. Bidder shall acknowledge the receipt.
- 20.2. MRPL shall not be obliged to furnish any information / clarification / explanation to the unsuccessful Bidders as regards non-acceptance of their bids. MRPL shall correspond only with the successful bidder.

## 21. UNSOLICITED POST TENDER MODIFICATIONS



- 21.1. Bidders are advised to quote as per terms and conditions of the Bidding Document and not to stipulate deviations/ exceptions. Once quoted, the Bidder shall not make any subsequent price changes, whether resulting or arising out of any technical / commercial clarifications and details sought on any deviations, exceptions or stipulations mentioned in the bid unless any amendment to Bidding Document is issued by PMC / MRPL. Similarly, no revision in quoted price shall be allowed should the deviations stipulated by him are not accepted by MRPL and are required to be withdrawn by him in favour of stipulation of the Bidding Document. Any unsolicited proposed price change is likely to render the bid liable for rejection.

## 22. CONTACTING PMC / MRPL

- 22.1. No bidder shall contact the PMC / MRPL on any matter relating to its bid from the time of bid opening till the time Contract is awarded, unless requested to do in writing. Any effort by a bidder to influence the PMC / MRPL in the PMC / MRPL's decisions in respect of Bid evaluation or Contract award will result in the rejection of that bidder's bid and action as deemed fit shall be initiated against the bidder.

## 23. CANVASSING

- 23.1. Canvassing in connection with tenders is strictly prohibited and the Tenders submitted by the Tenderers who resort to canvassing shall be liable for rejection.
- 23.2. Subject to the provisions concerning clarification of Bids, no Bidder shall contact the PMC / MRPL on any matter relating to its bid from the time of the bid opening up to the time that the contract is awarded.

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23.3. Any effort by the Bidder or Bidder's representative however described to influence the PMC / MRPL in any way concerning scrutiny, consideration, evaluation of the Bid(s) or decision concerning award of contract shall entail rejection of Bid and action shall be taken against the bidder as deemed fit.

23.4. The PMC / MRPL will deal with the Bidder on a principal bases, without involvement in any manner in India or abroad of any agent or consultant or associate or other person howsoever described.

#### **24. COLLUSIVE BIDS**

24.1. In case it appears to the PMC / MRPL, after examining the tenders received, that any two or more tenders are collusive or otherwise manipulated to the disadvantage of the MRPL and against the spirit of ethical competition, the PMC / MRPL reserves the right to summarily reject such tenders. It shall not be incumbent on the PMC / MRPL to prove any collusion or other malpractice in this regard.

#### **25. MULTIPLE/ALTERNATIVE BID**

25.1. A bidder (i.e., the bidding entity) shall on no account submit more than one bid either directly or indirectly (as a sub-contractor) failing which following actions shall be initiated:

25.1.1. All bids submitted by such bidder (say 'A') directly or indirectly, shall stand rejected.


25.1.2. If another bidder (say 'B') has proposed bidder 'A' as a sub-contractor, then bidder 'B's' bid shall also be rejected. However, in case the bidder 'B' has also proposed an alternative sub-contractor who is other than the bidder 'A', then bidder 'B's' bid shall be evaluated with the proposed alternative sub-contractor only. Hence, every bidder shall ensure in his own interest that his proposed sub-contractor is not submitting alternative/multiple bids.

#### **26. CARTEL FORMATION**

26.1. 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 will also be banned from bidding in future.

#### **27. CORRUPT AND FRAUDULENT PRACTICES**

27.1. Bidders are required to furnish the complete and correct information / documents required for evaluation of their bids. If the information / documents forming basis of

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evaluation is found to be false / fake/ forged, the same shall be considered adequate ground for rejection of the bids and putting the bidder under holiday list/banning list.



27.2. MRPL requires that the CONTRACTOR observes the highest standard of ethics during the execution of Contract. In pursuance of this policy, MRPL defines, for the purposes of this provision, the terms set forth below as follows:

- (i) "Corrupt Practice" means the offering, giving, receiving, or soliciting of anything of value to influence the action of public official in contract execution; and
- (ii) "Fraudulent Practice" means a misrepresentation of facts in order to influence the execution of a Contract to the detriment of MRPL, and includes collusive practice among bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive MRPL of the benefits of free and open competition.
- (iii) "False/Fake" means to make or construct falsely. "Faked alibi" is a made, manufactured, or false alibi. Something that is not what is purports to be; counterfeit, an imposter.
- (iv) "Forgery" means the false making or the material altering of a document with the intent to defraud. A signature of a person that is made without the person's consent and without the person otherwise authorizing it. A person is guilty of forgery if, with the purpose to defraud or injure anyone or with knowledge that he is facilitating a fraud or injury to be perpetrated by anyone, the actor;
  - a. alters any writing of another without his authority
  - b. makes, completes, authenticates, executes, issues or transfers any writing, so that it purports to be the act of another who did not authorize that act or to have been executed at a time or place or in a numbered sequence other than was in fact the case, or to, be a copy of an original when no such original exists.

Utters any writing which he knows to be false in a manner specified in (a) & (b) above.

27.3. MRPL may terminate the Contract if it discovers subsequently that the Contractor had engaged in Corrupt Practices or Fraudulent Practices in competing for the Contract.

27.4. In case, the information/ document furnished by the Contractor forming basis of evaluation of its Bid is found to be false / fake/ forged after the award of the Contract, MRPL shall have the right to terminate the Contract and get the remaining Works executed by a third party at the risk & cost of the Contractor and without any prejudice

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to other rights available to MRPL under the Contract such as forfeiture of the Security Deposit/Contract Performance Bank Guarantee, withholding of payment etc.

- 27.5. In case, this issue of submission of false/fake documents comes to the notice after execution of the Works, MRPL shall have full right to forfeit any amount due to the Contractor along with forfeiture of the Security Deposit/Contract Performance Bank Guarantee furnished by the Contractor. Further, any Contractor which is found guilty of any Corrupt or Fraudulent Practice or submission of false / fake / forged documents, shall be put on the negative / holiday list of MRPL debarring them from future business with MRPL.

## 28. PUBLIC UTILITY SERVICE

- 28.1. The Bidder / Contractor shall take on record that MRPL has been declared as a Public Utility Service under Industrial Dispute Act 1947 and Essential Services Maintenance Act and various other provisions hereby undertake on their behalf and on behalf of the employees under their roll that they refrain from indulging in any activity(ies) which would hamper Industrial peace in MRPL and also would extend their Assistance and support to MRPL to comply with the requirements within mentioned statutory requirement / declaration.

## 29. INTEGRITY PACT

Integrity Pact documents has been attached herewith. The said document shall be signed in all the pages by the authorised signatory of the bidder, who signs the bid and returned with the Techno-Commercial unpriced bid. Offer of those bidders who do not attach the Integrity Pact duly signed shall be summarily rejected without any further reference to the bidder.

## 30. RAISING DISPUTES/COMPLAINTS



- 30.1. MRPL has appointed Independent External Monitors (IEMs). Bidders may raise disputes/complaints, if any, with the nominated Independent External Monitors (IEM). The name, emails & Phone no of the present IEMs are as given below:

30.2.

SI No.	IEMs	E-mail ID
1	Shri. Sunil Kumar Chourasia, IOFS (Retd.)	sunilchourasia@hotmail.com
2	Ms. Alka Sirohi, IAS (Retd.)	alka.sirohi@gmail.com

- 30.3. Curriculum Vitae of Independent External Monitors (IEMs) are placed permanently on the home page of MRPL's website [www.mrpl.co.in](http://www.mrpl.co.in) –Tenders.



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- 30.4. The bidders may raise disputes / complaints, if any, either with the designated Competent Purchase Authority (CPA) related to the Tender or with the concerned Director of MRPL or directly with the IEMs c/o CVO, MRPL, Kuthethoor via Katipalla, Mangalore 575030.
- 30.5. IEMs would not consider any representation received on the basis of oral submission made by the representing bidder unless additional documents or clarifications have specifically been sought by IEMs from such representing bidders
- 30.6. IEMs would consider only those representations on post contract issues wherein there is an alleged violation of provisions of Integrity Pact.

### **31. HOLIDAY LISTING POLICY**



- 31.1. The Guidelines and procedures for Holiday Listing are available in MRPL website as Holiday Listing Policy and shall be applicable in the context of all tenders and consequently all Orders / Contracts / Purchase Orders. This can be accessed at URL [www.mrpl.co.in](http://www.mrpl.co.in) refer to Tenders - Holiday Listing Policy.
- 31.2. Agencies participating in tenders are deemed to have read, accepted and agreed for the Holiday Listing Policy of MRPL and shall not seek any damages/compensation from MRPL on account of the Holiday Listing of business with the Agency.
- 31.3. **DECLARATION:**

Any party or its associated company if had been in the holiday list / black- listed/ banned by any Central / State Government agencies or any Central / State PSU company or any Regulatory Institution/Authority and such name appears in the list of the above mentioned Central / State Government agencies or Central / State PSUs or any Regulatory Institution/Authority as on date is disqualified would not be considered.

An affidavit to this effect/ or an affidavit that the vendor is not holiday listed / black listed / banned by above mentioned Agencies is required to be produced, if called for by MRPL, in the event of award of work order.

Agency (Bidder) has to declare and undertake that MRPL has unconditional right to terminate the contract which is already awarded or yet to be awarded to the Agency if it is put under holiday listing.



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### 32. PREFERENCE TO MICRO OR SMALL ENTERPRISES

Not applicable for this tender.

### 33. MRPL RESERVES THE RIGHT TO ACCEPT OR REJECT ANY BID

- 33.1. MRPL reserves the right to accept or reject any Bid and to annul the Bidding process and reject all Bids at any time prior to award of contract, without thereby incurring any liability to the affected Bidder or Bidders or without any obligation to inform the affected Bidder or Bidders of the grounds or the reasons for MRPL's action.
- 33.2. In the opinion of MRPL, if the total price or certain prices quoted by the Lowest Bidder are considered high, he may invite the Lowest Bidder for price negotiation. Lowest Bidder shall attend such negotiation meetings and if requested by MRPL shall provide the analysis of prices/break-up of amount quoted by him for any or all items of Schedule of Prices to demonstrate the reasonability. As a result of negotiation, Bidder may offer rebate on his earlier quoted price.



### 34. CONTRACT AGREEMENT

The CONTRACTOR shall execute a formal contract with MRPL within 30 days from the date of issue of Letter of Acceptance, on a Non-Judicial Stamp paper of Rs. 200/- value. The cost of Non-Judicial Stamp Paper shall be borne by the CONTRACTOR. Contract documents for agreement shall be prepared after the acceptance of bid. Until the final contract documents are prepared and executed, this Bidding Document together with the annexed documents, modifications, deletions agreed upon by the PMC / MRPL and bidder's acceptance thereof shall constitute a binding contract between the successful Bidder and the MRPL based on terms contained in the aforesaid documents and the finally submitted and accepted prices.

The Contract document shall be as per details mentioned in Special Conditions of Contract (SCC) and General Conditions of Contract (GCC) provided elsewhere in this Bidding document

### 35. E-PAYMENTS

Owner has initiated payments to suppliers and contractors electronically and to facilitate the payments electronically, the bidder should have an account with Banks supporting the same so that the payment through e-banking be made to the bidder, in case work is awarded to him. The payment shall be released either through Electronic Clearing System (ECS) / Electronic Fund Transfer (EFT)/ Real Gross Time Settlement (RGTS) or through Internet. The bidder should give their Bank details as per FORM-L attached with Proposal Form, to facilitate payment through E-banking.


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### 36. GENERAL GUIDELINES

- 36.1. Every tenderer must quote strictly in accordance with the conditions and specifications prescribed by PMC/MRPL. Special conditions, if any, submitted along with the tender documents by the bidder will not be applicable to this Tender, in case they are in conflict with any of our terms and conditions.
- 36.2. All entries in the tender must be written in permanent ink or typewritten without use of eraser or overwriting. Corrections if any, should be attested under the full signature of the Bidder.
- 36.3. All tenderers are required go through the Bidding Documents carefully and submit a declaration statement as token of having read, understood and accepted the conditions, along with information called for by PMC/MRPL.
- 36.4. Company will not be responsible for loss or late /non-receipt of tender documents.
- 36.5. PMC/MRPL reserves the right to assess bidder's capability and capacity to execute the work using in-house information and by taking into account other aspects such as concurrent commitments and past performance, etc.
- 36.6. Submission of authentic/genuine documents is the prime responsibility of the bidder. Wherever PMC/MRPL has concern or apprehension regarding the authenticity/genuineness of any document, MRPL reserves the right of obtaining the documents cross verified from the document issuing authority.
- 36.7. PMC/MRPL reserves the right to complete the evaluation based on the details furnished by the bidder in the first instance along with their bid without seeking any additional information.
- 36.8. All tenderers are required to give details in the Performa attached to Bidding documents.

### 37. DIFFERENCE IN MEANINGS/TERMS

- 37.1. In case of any difference of any of the terms and conditions either in the meaning or understanding or contradictory terms or conditions at different places/portions in this document, the interpretation most favorable to MRPL and PMC shall be considered. The bidder shall also seek clarifications on such issues from PMC/MRPL before submission of the quotes.

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**38. CORRECTNESS OF DOCUMENT**

It shall be understood that every endeavour has been made to avoid error which can materially affect the basis of this tender and the successful tenderer shall take upon himself and provide for risk of any error which any subsequently be discovered and shall make no subsequent claim on account thereof no advantage is to be taken by the tenderer successful Or otherwise of any clerical error of mistake which may occur in the general specification, schedules, plans of tender forms supplied to the tenderer.

**39. CONDITIONS FOR MICRO AND SMALL ENTERPRISES (MSEs)**

Not applicable for this tender.

**40. PURCHASE PREFERENCE FOR MICRO AND SMALL ENTERPRISES**

Not applicable for this Tender.

**41. CONDITIONS FOR START-UP COMPANIES**



Not applicable for this Tender.

**42. POLICY TO PROVIDE PURCHASE PREFERENCE (LINKED WITH LOCAL CONTENT) (PP-LC)**

Refer Special Conditions of Contract and other Bidding documents.

**43. TERMS AND CONDITIONS FOR BIDDERS FROM A COUNTRY SHARING LAND BORDERS WITH INDIA**

Refer Special Conditions of Contract and other Bidding documents.

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**LSTK-B : CIVIL AND STRUCTURAL WORKS  
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**PART I : TECHNO-COMMERCIAL**

**PROPOSAL FORMS**



	<b>MRPL Marketing Terminal Project at Devangonhi, Bangalore</b> <b>Marketing Infrastructure Projects, MRPL</b>	
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## PART I : TECHNO-COMMERCIAL

### PROPOSAL FORMS

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**FORM - A1**

**FORM OF TENDER**  
*(ON BIDDER'S LETTER HEAD)*  
**(To be filled up by the Tenderer)**

**For Commercial Bid**

Serial No.  
From:

Date:

To,  
Mangalore Refinery and Petrochemicals Limited  
Mangalore



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 Price, and Addendum (s) to the Tender Documents, and having understood the provisions of the said Tender Documents and having thoroughly studied the requirements of Mangalore Refinery and Petrochemicals Limited, relative to the work tendered for in connection with the **“MRPL Marketing Terminal Project at Devangonithi, Bangalore”** 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 Tender Documents.

In consideration of the sum of Rupee 1/- (Rupee one) only paid to me/us by Mangalore Refinery and Petrochemicals Limited, 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 **120**



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**days** from the schedule date of opening of Tenders as specified in the General Instructions to Bidders 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 Mangalore Refinery and Petrochemicals Limited, during the period of 2(two) years immediately preceding the date hereof OR I/We hereby declare that I/Shri \_\_\_\_\_ one of our partners (in case of partnership firm / Directors in the case of a company) was employed as a Director in Mangalore Refinery and Petrochemicals Limited, during the period of 2 (two) years immediately preceding the date hereof and that I / Shri \_\_\_ have / has obtained previous permission of Mangalore Refinery and Petrochemicals Limited, to make this tender.

I / We have annexed to this Bid the following documents:

- i. Schedule or Price 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 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 Gazetted Officer/Notary Public.
- iv. Original Bid Security declaration from bidder in lieu of EMD
- v. Original Signed Integrity Pact.
- vi. Information regarding tenderer in the form annexed to the Form of Tender.
- vii. Information regarding experience of the tenderer in the performance of work of a comparable nature in the form annexed to the Form of Tender.
- viii. Information regarding construction organization and equipment in the form annexed to the Form of Tender.
- ix. Solvency Certificate from a Nationalized / Scheduled Bank:
- x. Set of Tender Documents, as issued duly signed.
- xi. 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 Mangalore Refinery and Petrochemicals Limited, to avoid any resultant contract.

I / We further undertake as and when called upon by Mangalore Refinery and Petrochemicals Limited to produce, for its inspection, original(s) of the document(s) of which copies have been annexed hereto.

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I / We confirm having submitted Bid Security declaration from bidder in lieu of EMD.

Dated this \_\_\_\_ day of \_\_\_\_\_ 2021.

(Signature(s) of the Tenderer)

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 behalf of The Tenderer(s)

Full Name and address of the Bidder(s):

Witness:

Signature Name:

Occupation:

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**FORM - A2**

**FORM OF TENDER**  
*(ON BIDDER'S LETTER HEAD)*  
**(To be filled up by the Tenderer)**

**For Price Bid**

Serial No.:

Date:

From:



To  
Mangalore Refinery and Petrochemicals Limited  
Mangalore

Tender No.:

Having examined the Tender Documents consisting of the Notice inviting Tender, General Instruction of Tenderer, General Conditions of Contract, Special Instructions to Tenderers, Special Conditions of Contract, specifications, plans, drawings, time-schedule, Form of Contract, Form of Tender, Form of Schedule of Price and Addendum(s) to Bidding Document having understood the provisions of the said Tender Documents and having thoroughly studied the requirements of Mangalore Refinery And Petrochemicals Ltd., relating to the work tendered for in connection with the construction of **“MRPL Marketing Terminal Project at Devangonhi, Bangalore”**, 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 facility, the availability and suitability of borrow areas, the availability of land for right-of-way and temporary office and accommodation quarters and all other factors and facilities and things whatsoever necessary or relative to the formulation of the tender and the performance of work, I / We hereby submit our tender offer for the performance of the proposed work in accordance with the terms and conditions and within the time mentioned in the Tender Documents at the rate(s) quoted by me/us in the accompanying Schedules of Price based on the form of Schedule of Price included within the Tender documents and arrived at a **Total Contract Value of (as quoted in E-tendering Portal) Rs.....(Rupees.....Only)**

based on an application of the rates tendered in the accompanying Schedule of Price to the relative quantities indicated in the form of Schedule of Price 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 document as defined in Form of contract forming part of the

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Tender Documents and accept the terms and conditions of Contract as laid down therein, and undertake within 10 (ten) days of receipt of Acceptance / Award of Tender to pay to and/or deposit with the Accounts Officer, Mangalore Refinery And Petrochemicals Ltd., Mangalore, a sum which shall make Rupees \_\_\_\_\_ /- (Rupees \_\_\_\_\_) as specified in the Acceptance / Award of Tender for the purpose of security deposit, by any one or more of the modes of payments specified in the Special Conditions of Contract and 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 terms of the form of contract forming part of Tender Documents, within 10 (ten) days of receipt of Letter of Acceptance / Award from or on behalf of Mangalore Refinery And Petrochemicals Ltd., in this behalf failing which Mangalore Refinery and Petrochemicals Ltd., shall be at liberty, without further reference to me/us and without prejudice to any of its rights or remedies, to terminate the contract and/or to take action as per declaration given by me in lieu of Earnest Money deposited in terms hereof.

In consideration of the sum of Rupee 1/- (Rupee one only) paid to me/us by Mangalore Refinery and Petrochemicals Ltd., by adjustment in the price of Tender Documents, I/We further undertake to keep my/this tender offer open for a period of **120 days** from the Schedule date of opening of Tender 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) was/were employed as Directors of Mangalore Refinery And Petrochemicals Ltd., during the period of 2 (two) years immediately preceding the date hereof or I/We hereby declare that I/Sri \_\_\_\_\_, one of our partners in the case of a partnership firm, was employed as a Director in the Mangalore Refinery And Petrochemicals Ltd. during the period of 2 (two) years immediately preceding the date hereof and that I/Sri \_\_\_\_\_ have/has obtained previous permission of Mangalore Refinery And Petrochemicals Ltd., to participate in this tender.

I/We have annexed to this tender the following documents:

- i. Schedule of Price in the prescribed form;
- ii. Original Power of Attorney or proof of authority of the person who has signed the Tender OR copy of Power of Attorney or duly attested by a Gazetted Officer in proof of 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;
- iv. Original Sales Tax Clearance Certificate OR copy of Sales-tax Clearance Certificate duly attested by a Gazetted Officer;
- v. Original Bid Security declaration from bidder in lieu of EMD;
- vi. Original Signed Integrity Pact;
- vii. Information regarding tenderer in the form annexed to the Form of Tender;

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- viii. Information regarding experience of work of a comparable nature in the form annexed to Form of Tender;
- ix. Information regarding construction organization and equipment in for form annexed to the Form of Tender;
- x. Solvency Certificate from a Nationalized / Scheduled Bank;
- xi. Set of Tender Documents, as issued duly signed;
- xii. Any additional documents as listed below;

I / We hereby undertake that the statements made herein and the 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 misrepresentation entitling Mangalore Refinery and Petrochemicals Ltd. to avoid any resultant contract.

I / We further undertake as and when called upon by Mangalore Refinery and Petrochemicals Ltd., to produce, for its inspection, original(s) of the document(s) of which copies have been annexed hereto.

I/ We confirm having Bid Security declaration from bidder in lieu of EMD.

Dated this \_\_\_\_ day of \_\_\_\_\_ 2021.

Yours faithfully,



Signature(s) of the Tenderer (s)  
Name and designation of authorized person

Signing the tender on behalf of the tenderer(s):  
Full name and address of the tenderer(s)

Witness (Signature): Name in block letters:

Address:

Occupation:



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**FORM – A3**

**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 MRPL 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 of MRPL 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 MRPL present or retired within the past 2 years.
  - 3.6. Permanent Account Number:

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- 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:

Name & Address of the Tenderer  
Signature of Tenderer



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**FORM-B1**

**FORMAT FOR SPECIFIC WORK MEETING THE EXPERIENCE CRITERIA**  
(AS APPLICABLE IN NIT)

Bidder shall furnish their Experience for similar work with all details and documents as mentioned in this Specific Experience Format which are in conformity with Bidder's Qualification Criteria mentioned in Notice Inviting Tender. In case of more than one work, furnish details for all such Works.

Sl. No.	DESCRIPTION	DETAILS
Details of similar works executed by bidder (Complying the requirement of BQC)		
1	Name of Project and its location	
2	Description of work	
3	Name of Owner, Postal Address, Phone/Fax No. /E-mail Address	
4	Name of Consultant, Postal Address, Phone/ Fax No./E-mail Address	
5	Contract Value: a) Awarded b) Final Executed c) Component of relevant work experience as Per BQC.	Rs. _____ Rs. _____ Rs. _____
	Milestone Dates	Date of award: _____ Starting date: _____ Scheduled Completion Date: _____  Actual Completion Date: _____  Reasons for delay, if any: _____ _____ _____
6	Supporting Documents for Experience Criteria	Whether copy of Work Order/Contract Agreement enclosed  YES <span style="float: right;">NO</span>  Ref.no: _____ Dated _____  Whether Completion Certificate enclosed  YES <span style="float: right;">NO</span>





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**LSTK-B : CIVIL AND STRUCTURAL WORKS  
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Sl. No.	DESCRIPTION	DETAILS
		Ref.no: _____ Dated _____ Date of Completion: _____
	Supporting Document for Financial Criteria	Whether Complete Annual Audited Financial Report Including P& L account is enclosed.  YES <span style="float:right">NO</span>  If yes, submitted for financial years 1. _____ 2. _____ 3. _____
	Whether Worked as Consultant directly with Client or Sub-Consultant of Consultant	Executed the work as Main Consultant <input type="checkbox"/> Sub- Consultant <input type="checkbox"/>
7	CONFIRMATIONS	BIDDER'S CONFIRMATION
7.1	Confirm that the above work has been completed within the qualifying period as mentioned in NIT	Confirmed
7.2	Confirm that the above work is not an In-housework experience.	Confirmed
7.3	Confirm that the information / documentation furnished in this proforma are correct and in case of any original document is required by MRPL / PMC the same shall be submitted for Verification.	Confirmed
7.4	Confirm that all information / documentation for the work to be considered for qualification is Furnished in this proforma along with supporting documents as detailed NIT. Non Submission of above required information / documentation may lead to rejection of bid	Confirmed
7.5	Confirm the submission of following Formats / Certificates, as	If Yes, (Please tick mark √ the applicable)

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Sl. No.	DESCRIPTION	DETAILS
	applicable towards fulfilment of Bidder Qualification Criteria:  (i) Statutory Document  (ii) Notarized document	YES <input type="checkbox"/> NO <input type="checkbox"/>  YES <input type="checkbox"/> NO <input type="checkbox"/>
7.6	Confirm that all documents furnished by the bidder in support of meeting the experience & financial criteria of BQC have been duly certified by the Statutory Auditor of the bidder or a practicing Chartered Accountant (not being an employee or a Director or not having any interest in the bidder's company / firm) where audited accounts are not mandatory as per law or Notarized by a Public Notary in bidder's Country or self-certified by CEO or CFO or Company Secretary of the bidder (Limited company only) as per the provision of NIT.	Confirmed

Note: Bidder to use separate format for different works

SIGNATURE OF BIDDER: \_\_\_\_\_

NAME OF BIDDER: \_\_\_\_\_

COMPANY SEAL: \_\_\_\_\_

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**FORM - B2**

**ANNUAL TURNOVER STATEMENT**

The bidder shall indicate herein his annual turnover during preceding 3 years based on the audited balance sheet/profit & loss account statement.

**A. FINANCIAL DETAILS**

1	FINANCIAL YEAR / YEAR ENDING	ANNUAL TURNOVER (RS.)
	Year 1 (20xx - 20xx )	
	Year 2 (20xx - 20xx )	
	Year 3 (20xx - 20xx )	
NETWORTH OF IMMEDIATE PRECEDING YEAR AS PER AUDITED FINANCIAL RESULT		

**NOTES:**

- i. Net worth means paid up share capital, Share Application Money pending allotment\* and reserves# less accumulated losses and deferred expenditure to the extent not written off.



# Reserves to be considered for the purpose of net worth shall be all reserves created out of the profits and securities premium account but shall not include reserves created out of revaluation of assets, write back of depreciation and amalgamation.

\* Share Application Money pending allotment will be considered only in respect of share to be allotted.

Accordingly, the definition of Net worth shall be as follows:

Paid up share capital	XXXX
Add: Share Application Money pending allotment	XXX
Add: Reserves (As defined Above)	XXXX
Less: Accumulated Losses	XX
Less: Deferred Revenue Expenditure to the extent not written off	XX
Net worth	XXXX

**(Sign & Stamp of Bidder)**

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**FORM - C**

**COMPLIANCE TO BID REQUIREMENT**

NAME OF WORK: \_\_\_\_\_

BIDDING DOC. NO.: \_\_\_\_\_



We hereby agree to fully comply with, abide by and accept without variation, deviation or reservation all technical, commercial and other conditions whatsoever of the Bidding Documents and Amendment(s) / Addendum(s) to the Bidding Documents, if any, for subject work issued by PMC / MRPL.

We here by further confirm that any terms and conditions if mentioned in our bid (Un-priced as well as Priced Part) shall not be recognized and shall be treated as null and void.

SIGNATURE OF BIDDER : \_\_\_\_\_

NAME OF BIDDER : \_\_\_\_\_

COMPANYSEAL : \_\_\_\_\_

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**FORM - D (SHEET 1 OF 2)**

**EXCEPTIONS AND DEVIATIONS  
(FOR COMMERCIAL PART)**



Sl. No.	REFERENCE OF BID DOCUMENT		SUBJECT	DEVIATIONS
	PAGE NO.	CLAUSE NO.		

NOTE: This shall be submitted separately for Commercial & Technical Sections

SIGNATURE OF BIDDER : \_\_\_\_\_

NAME OF BIDDER : \_\_\_\_\_

COMPANYSEAL : \_\_\_\_\_

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**FORM - D (SHEET 1 OF 2)**

**EXCEPTIONS AND DEVIATIONS  
(FOR TECHNICAL PART)**

Sl. No.	REFERENCE OF BID DOCUMENT		SUBJECT	DEVIATIONS
	PAGE NO.	CLAUSE NO.		



NOTE: This shall be submitted separately for Commercial & Technical Sections

SIGNATURE OF BIDDER : \_\_\_\_\_

NAME OF BIDDER : \_\_\_\_\_

COMPANYSEAL : \_\_\_\_\_



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**FORM - E**

**CHECKLIST FOR SUBMISSION OF BID**



Bidder is requested of ill this check list and ensure that all details/ documents have been furnished as called for in the Bidding Document along with duly filled in, signed & stamped check list with each copy of the "Unpriced bid (Part-I)".

Please tick the box and ensure compliance:

- |    |   |                          |
|----|---|--------------------------|
| 1) | Form of Bid as per FORM-A<br>Submitted  | <input type="checkbox"/> |
| 2) | Power of Attorney in Favour of the person who as signed the bid.<br>Submitted   | <input type="checkbox"/> |
| 3) | Information about Bidder as per FORM-A1<br>Submitted  | <input type="checkbox"/> |
| 4) | EMD Declaration<br>Submitted  | <input type="checkbox"/> |
| 5) | Integrity Pact<br>Submitted   | <input type="checkbox"/> |
| 6) | Documentation against Bidder meeting the BQC (Technical & Commercial) stipulated in NIT per FORM-B1 & B2 and as per NIT |                          |
| a) | Submitted   | <input type="checkbox"/> |
| b) | Not Submitted   | <input type="checkbox"/> |
| 7) | Compliance to Bid Requirement as per FORM-C.<br>Submitted   | <input type="checkbox"/> |
| 8) | Exceptions / Deviations as per FORM-D both technical and commercial Part (Un-priced)<br>Submitted                       | <input type="checkbox"/> |
| 9) | Reply to commercial questionnaire as per FORM-F with Bidder's Reply / confirmation for each Sl. Nos.<br>Submitted       | <input type="checkbox"/> |

 <b>ONGC</b> एन.ओ.एन.सी. <b>MRPL</b>	<b>MRPL Marketing Terminal Project at Devangonthi,          Bangalore</b> <b>Marketing Infrastructure Projects, MRPL</b>	 <b>nauvata</b> <small>Engineering &amp; Construction</small>
	<b>LSTK-B : CIVIL AND STRUCTURAL WORKS</b> <b>VOLUME I : COMMERCIAL</b>	

- Details of PF as per FORM-G
- 10) Submitted
- 11) Employees Provident Fund Registration Certificate Submitted / Not Submitted / Not applicable
- If EPF Registration is not available, duly acknowledged (by the EPF Authorities) copy of application or undertaking on Bidder's Submitted /
- 12) Not Submitted Company letterhead for obtaining the same in case of award / not available of contract Submitted / Not Submitted / Not applicable
- PF Code No.: \_\_\_\_\_
- 13) ESI obtained from the Competent Authority Submitted / Not Submitted / Not applicable
- If ESI No is not available, duly acknowledged (by ESI Authority) Copy of application or undertaking on Bidder's Company Letterhead for obtaining the same
- 14) in case of award of contract Submitted / Not Submitted / Not applicable
- ESI No.: \_\_\_\_\_
- Declaration by the Bidder as per FORM-J
- 15) Submitted
- 16) Declaration about current litigation/arbitration
- Blank copy (without price) of Price Part
- 17) Submitted
- MOU/AOA/Partnership Deed
- 18) Submitted
- Declaration by Bidder regarding Blacklisting / Holiday listing
- 19) Submitted, if Applicable
- Undertaking for non-engagement of child labour as per FORM-K
- 20) Submitted

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- Bidder's Bank Details as per FORM-L
- 21) Submitted
- Reply to Technical questionnaire (if enclosed in technical part) with Bidder's Reply / Confirmation
- 22) for each Sl. No Submitted (if applicable)
- Technical Details/Documents specified in Technical part.
- 23) Submitted (if applicable)
- Cancelled cheque of bidders bank account
- 24) Submitted
- Copy of PAN Card
- 25) Submitted
- Letter of Waiver as per Form-N
- 26) Submitted



**CONFIRM THE FOLLOWING**

- 1) All pages of the bid have been page numbered in sequential manner YES
- 2) Master Index and Copy of Addendum / Amendment, if any, Has been submitted along with offer, duly signed and stamped on each page. YES
- 3) Blank copy (without price) of Price bid duly signed and stamped on each page has been submitted YES
- 4) The bid has been submitted in line with requirements as specified in Instructions to Bidders YES

SIGNATURE OF BIDDER : \_\_\_\_\_

NAME OF BIDDER : \_\_\_\_\_

COMPANYSEAL : \_\_\_\_\_



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**FORM - F**



**COMMERCIAL QUESTIONNAIRE**

Bidder's reply/ confirmation as furnished in the Commercial Questionnaire (CQ) shall supersede the stipulations mentioned elsewhere in their bid.

Sl. No.	PMC / MRPL's QUERY	BIDDER'S REPLY/ CONFIRMATION
1.0	Confirm that your Bid is valid for 120 days months from the last date of submission of Bid.	
2.0	Confirm that Declaration in lieu of Earnest Money Deposit as per bid stipulations have been furnished along with bid.	
3.0	Confirm that the following documents are submitted with Part-I:	
a	All documents as per Form - E (CHECKLIST) & Clause 9.5 of I.T.B.	
b	Master Index as enclosed with NIT is submitted in Unpriced part duly signed and stamped on each page.	
c	Copy of Addendum / Amendments as a token of acceptance (Applicable, if issued).	
4.0	Confirm that price has been submitted in an e-tender portal as per the manner stated in the ITB.	
5.0	Schedule of Price	
a	<b>Price must be filled in the Price bid Form uploaded in the e-tender portal.</b>  <b>Please note that the format is not to be edited / altered by the bidder.</b>	
b	Confirm that rate/price has been quoted in Form-SP 0	
c	Confirm that deviation / terms & conditions are not mentioned in the price part. In case any terms and condition is mentioned in the price part, the same shall be treated as null and void.	
6.0	Confirm your compliance to TERMS AND CONDITIONS of Bidding Document. Confirm your compliance to critical stipulations of bidding document as mentioned in SITB.	
7.0	Confirm that you have studied complete Bidding Document including Technical and Commercial part and your Bid is in accordance with the requirements of the Bidding Document.	
8.0	Confirm your compliance to total Scope of Services mentioned in the Bidding Document	
9.0	Confirm your acceptance for Scope of Services mentioned in the Bidding Document	

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10.0	Confirm your acceptance for Time Schedule as mentioned in Bidding Document.	
11.0	Confirm that your quoted price includes all taxes & duties as applicable for this services/ Work in accordance with the provision of General Conditions of Contract (GCC) / Conditions of contract	
12.0	Confirm that your quoted price includes all types of insurance as per the provisions of GCC / Conditions of contract.	
13.0	Confirm that all costs resulting from safe execution of Work, such as safety practices, use of protective clothing, safety glasses and helmet, safety precaution taken during monsoon, or any other safety measures to be undertaken are included in the quoted prices/rates	
14.0	Confirm that while submitting your price, you have taken consideration of scope of services / work and technical requirement mentioned in Bidding Document	
15.0	Confirm that you have your own QA/QC programme for executing this work. In case of award of work, you will submit all QA/QC documents as per specification.	
16.0	<p>We confirm that we are not involved in any Litigation or Arbitration.</p> <p style="text-align: center;">OR</p> <p>We confirm that the current litigation/ arbitration in which We are involved will not have any impact in work being tendered or in entering into contract during the validity of offer and performing the contract till all contractual Obligations under contract are performed.</p>	
17.0	Confirm that the Bidder is not under liquidation, court receivership or similar proceedings.	
18.0	<p>Confirm Compliance to the following:</p> <p>i. Minimum required equipment's, tools &amp; tackles to be mobilized as required.</p> <p>ii. Key Construction Manpower to be deployed at site as per SCC.</p>	
19.0	Please confirm that your Bid does not have any deviation to terms and conditions of the Bidding Document.	
20.0	Confirm that you have uploaded the Bid on e-tender portal as per the instructions given in ITB.	
21.0	None of the Directors of BIDDER is a relative of any Director of Owner or the BIDDER is a firm in which any Director of Owner or his relative is a Partner or the BIDDER is a private company in which none of director of Owner is a member or Director.	



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22.0	Confirm that all authenticated documents submitted for meeting the BQC are certified as per the authentication requirement defined in the bidding document.	
23.0	Bidder to confirm the submission of the following: a) Bank Guarantee for PBG upon Placement of Order. b) Bank Guarantee for Mobilisation Advance, if applicable.	<input type="checkbox"/> <input type="checkbox"/>

SIGNATURE OF BIDDER : \_\_\_\_\_

NAME OF BIDDER : \_\_\_\_\_

COMPANYSEAL : \_\_\_\_\_

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**FORM - G**

**DETAILS OF P.F. REGISTRATION**

Bidder to furnish details of Provident Fund Registration:

PF Registration No. : \_\_\_\_\_  
District & State : \_\_\_\_\_

We hereby confirm that the above PF Account is under operation presently and shall be used for all. PF related activities for the labour engaged by us in the present work (if awarded to us).

SIGNATURE OF BIDDER : \_\_\_\_\_

NAME OF BIDDER : \_\_\_\_\_

COMPANYSEAL : \_\_\_\_\_





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**FORM - H**

**BIDDER'S QUERIES (TECHNICAL)**

Sl. No.	BIDDING DOCUMENT		SUBJECT	BIDDER'S QUERY	OWNER'S REPLY
	PAGE No.	CLAUSE No.			

NOTE: Bidder's Queries may be sent by e-mail to: [pm.mrpl@nauvata.com](mailto:pm.mrpl@nauvata.com)  
Submit the queries one day prior to the Pre-bid meeting



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**FORM - I**

**BIDDER'S QUERIES (COMMERCIAL)**

Sl. No.	BIDDING DOCUMENT		SUBJECT	BIDDER'S QUERY	OWNER'S REPLY
	PAGE No.	CLAUSE No.			

NOTE: Bidder's Queries may be sent by e-mail to: as per ITB.

\*Submit the queries one day prior to Pre-bid meeting



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**FORM - J**

**DECLARATION BY THE BIDDER**

We (Name of the Bidder) here by represent that we have gone through and understood the Bidding Document (which is in two Parts) in Commercial Part (including Price) and Technical Part and that our Bid has been prepared accordingly in compliance with the requirement stipulated in the said documents.

We are submitting Master Index of Bidding Document as part of our Bid, duly signed and stamped on each page in token of our acceptance. We undertake that Commercial Part (including Price) and Technical Part of the Bidding Document shall be deemed to form part of our bid and in the event of award of work to us, the same shall be considered for constitution of Contract Agreement. Further, we shall sign and stamp each page of above Parts of Bidding Document as a token of Acceptance and as a part of the Contract in the event of award of Contract to us.



We further confirm that we have indicated prices in Schedule of prices (Short Description) which is print out of Short Description of SOP with prices, considering detailed description of items given in Schedule of Price (Detailed Description) including Summary of Price and submitted in Price Bid in separately sealed envelope / in EPS portal. We confirm that price quoted by us includes price for all works / activities / supply etc. as mentioned in tender / item description of the items in Schedule of Price (with detailed item description) which has been issued to us in CD (PDF File) or downloaded as per the Bidding Document.

SIGNATURE OF BIDDER : \_\_\_\_\_

NAME OF BIDDER : \_\_\_\_\_

COMPANY SEAL : \_\_\_\_\_

NOTE: This declaration should be signed by the Bidder's representative who is signing the Bid.

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**FORM - K**

**UNDERTAKING FOR NON-ENGAGEMENT OF CHILD LABOUR**

Name of Work:

Bidding Doc. No.:

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 / We, either be for re award or during execution of Contract, commit at transgression through 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 to 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



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**FORM - L**

**VENDOR FORM FOR ELECTRONIC FUNDS TRANSFER PAYMENT & TAX DETAILS**

**Please use additional copies of this form if your Company has additional Branches/  
Divisions dealing with PMC / MRPL/ if Material/ Service/ Invoice will be provided  
from different GST Nos.**

<b>To: GGM- Materials</b>	
<b>Mangalore Refinery &amp; Petrochemicals</b>	
<b>Ltd.,Kuthethoor P.O., via Katipalla, Mangalore.</b>	
<b>(Karnataka), Pin Code-575030, INDIA</b>	
<b>1. Vendor / Contractor particulars:</b>	
(i)	Name of the Company:
(ii)	Corporate Identity No. (CIN)
(iii)	Existing Vendor Code (given by PMC / MRPL)
(iv)	Complete Postal Address:
(v)	Pin code/ ZIP code:
(vi)	Telephone nos. (with country/area codes):
(vii)	Fax No.: (with country/area code):
(viii)	Cell phone Nos.:
(ix)	Contact persons /Designation:
(x)	Email IDs:
<b>2. Bank Account Particulars:</b>	
(i)	Name of the Account holder:
(ii)	Complete Bank Account No. (for Electronic Funds Transfer):
(iii)	Account type :
(iv)	Bank Name :

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(v)	Bank Branch:	
(vi)	Bank Branch Contact Nos.:	
(vii)	11 Digit IFS Code (for Bank Branches in India)	
(viii)	Swift Code (for Bank Branches not in India)	
<b>3. Tax Registration numbers:</b> *(Please fill in the applicable fields and attach relevant proofs)		
(i)	Income Tax PAN no.:	
(ii)	Vendor type as per GST Act (tick any one)	<input type="checkbox"/> Registered <input type="checkbox"/> Not Registered <input type="checkbox"/> Compounding  <input type="checkbox"/> SEZ
(iii)	GST No.:	
(iv)	Registered address as per GST No.	
(v)	Contact Names, Nos.& email IDs for GST matters (Please mention primary and	
	Accounts Deptt.	1. 2.
	Material Dispatch Deptt./ Services Deptt.	1. 2.
(vi)	Are you registered under TreDS	No/Yes with RXIL/ A-TREDS/M1xchange 10 digit Reg No-
<b>4. Organization information (MSMEs refer to Micro, Small and Medium Enterprises Development Act, 2006):</b>		
(i)	Company /Partnership Firm /Proprietary Concern / Society/Trust /NGO/Others (Please Specify):	
(ii)	Whether Proprietor/ Partner belongs to SC/ ST category. (Please specify names and percentage of shares held by SC/ST Partners):	
(iii)	Micro/Small / Medium Enterprise/ SSI/ Govt. Deptt./ PSU/ Others:	







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**LSTK-B : CIVIL AND STRUCTURAL WORKS  
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**FORM - M1**

**INTEGRITY PACT**

between

Mangalore Refinery and Petrochemicals Ltd (MRPL) hereinafter referred to as "The Principal",

and

M/s..... hereinafter referred to as "The Bidder/Contractor"

**Preamble**

The Principal intends to award, under laid down organizational procedures, contract/s for procurement of products / services vide tender No. .... dtd ..... The Principal values full compliance with all relevant laws of the land, rules, regulations, economic use of resources, and of fairness and transparency in its relations with its Bidder/s and Contractor/s.



In order to achieve these goals, the Principal will appoint an Independent External Monitor (IEMs) who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

**Section 1 - Commitments of the Principal**

- (1) The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles:-
1. No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a 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.
  2. The Principal will, during the tender process treat all Bidders with equity and reason. The principal will in particular, before and during the tender process, provide to all Bidders the same information and will not provide to any bidder confidential/additional information through which the Bidder could obtain an advantage in relation to the tender process or the contract execution.
  3. The Principal will exclude from the process all known prejudiced persons.
- (2) If the Principal obtains information on the conduct of any of its employees which is a criminal offence under the the IPC/PC Act, or if there be a substantive suspicion in this regard, the Principal will inform the Chief Vigilance officer and in addition can initiate disciplinary actions.



For "The Principal"

For "The Bidder/Contractor"

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Section 2 – Commitments of the Bidder(s)/Contractor(s)

- (1) The Bidder(s) / Contractor(s) commit themselves to take all measures necessary to prevent corruption. The Bidder(s) / Contractor(s) commit themselves to observe the following principles during his participation in the tender process and during the contract execution.
1. The Bidder(s)/Contractor(s) will not, directly or through any other person or firm, offer, promise or give to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material or immaterial 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.
  2. The Bidder(s)/Contractor(s) will not enter with other Bidders 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 introduce cartelization in the bidding process.
  3. 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 purposes of competition or personal gain, or pass on to others any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.
  4. The Bidders(s) / Contractor(s) of foreign origin shall disclose the name and address of the Agents/representatives in India, if any. Similarly the Bidder(s)/Contractor(s) of Indian Nationality shall furnish the name and address of the foreign principals, if any. Further details as mentioned in the "Guidelines on Indian Agents of Foreign Suppliers" shall be disclosed by the Bidder(s) / Contractor(s). Further, as mentioned in the Guidelines all the payments made to the Indian agent / representative have to be in Indian Rupees only.
  5. The Bidder(s) / Contractor(s) will, when presenting his bid, disclose any and all payments made, is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.
  6. Bidder(s) / Contractor(s) who have signed the Integrity Pact shall not approach the courts while representing the matter to IEMs and shall wait for the decision in the matter.

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- (2) The Bidder *I* Contractor will not instigate third persons to commit offences outlined above or be an accessory to such offences.

**Section 3 - Disqualification from tender process and exclusion from future contracts**

If the Bidder(s) *I* Contractor(s), before award or during execution has committed a transgression through a violation of Section 2 or in any other form such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidder(s) *I* Contractor(s) from the tender process or take action as per the procedure mentioned in the "Policy for Holiday Listing". Copy of the "Policy for Holiday Listing" is placed at MRPL Website.

**Section 4 - Compensation for Damages**

- (1) If the Principal has disqualified the Bidder(s) from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover from the Bidder liquidated damages equivalent to Earnest Money Deposit *I* Bid Security.
- (2) If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to Section 3, the Principal shall be entitled to demand and recover from the Contractor liquidated damages of the contract value or the amount equivalent to Security Deposit *I* Performance Bank Guarantee.



**Section 5 - Previous transgression**

- (1) The Bidder declares that no previous transgressions occurred in the last 3 years with any other Company in any country conforming 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 as per the procedure mentioned in "Policy for Holiday Listing".

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For "The Principal"

For "The Bidder/Contractor"

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### Section 6

- Equal treatment of all Bidders / Contractors / Subcontractors

(1) In case of sub-contracting, the Principal Contactor shall take the responsibility of the adoption of Integrity Pact by the Sub-Contractor.

(2) The Principal will enter into agreements with identical conditions as this one with all Bidders, Contractors & Subcontractors.



(3) The Principal will disqualify from the tender process all bidders who do not sign this pact or violate its provisions.

### Section 7 - Criminal charges against violating Bidders / Contractors / Subcontractors

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion this regard, the Principal will inform the the same to the Chief Vigilance Officer.

### Section 8 - Independent External Monitor

- (1) The Principals appoints competent and credible Independent External Monitor for this Pact after approval by Central Vigilance Commission. The task of the Monitor is to review independently and objectively, whether and to what extend the parties comply with the obligations under this agreement.
- (2) The Monitor is not subject to instructions by the representatives of the parties and performs his/her functions neutrally and independently. The Monitor would have access to all Contract documents, whenever required. It will be obligatory for him / her to treat the information and documents of the Bidders/Contractors as confidential. He / She reports to the Managing Director, MRPL.
- (3) The Bidder(s)/Contractor(s) accepts that the Monitor has the right to access without restriction to all project documentation of the Principal including that provided by the Contractor. The Contractor will also grant the Monitor, upon his/her request and demonstration of a valid interest, unrestricted and unconditional access to his project documentation. The same is applicable to Subcontractors.



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- (4) The Monitor is under contractual obligation to treat the information and documents of the Bidder(s) / Contractor(s) / Sub-contractor(s) with confidentiality. The Monitor has also signed declarations on 'Non-Disclosure of Confidential Information' and of 'Absence of Conflict of Interest'. In case of any conflict of interest arising at a later date, the IEM shall inform Managing Director, MRPL and rescue himself / herself from that case.
- (5) The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between the principal and the Contractor. The parties offer to the Monitor the option to participate in such meetings.
- (6) As soon as the Monitor notices, or believes to notice, a violation of this agreement, he/she will so inform the Management of the Principal and request the Management to discontinue or take corrective action, or to take other relevant action. The monitor can in this regard submit non-binding recommendations. Beyond this, the Monitor has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action.
- (7) The Monitor will submit a written report to the Managing Director, MRPL within 8 to 10 weeks from the date of reference or intimation to him by the 'principal' and, should the occasion arise, submit proposals for correcting problematic situations.
- (8) If the Monitor has reported to the Managing Director MRPL, a substantiated suspicion of an offence under IPC/PC Act. and the Managing Director MRPL has not, within reasonable time taken visible action to proceed against such offence or reported it to the Chief Vigilance Officer, the Monitor may also transmit this information directly to the Central Vigilance Commissioner.
- (9) The word "Monitor" would include both singular and plural.

For "The Principal"

For "The Bidder/Contractor"



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Section 9 – Pact  
Duration

This Pact begins when both parties have legally signed it. It expires for the Contractor 12 months after the last payment under the respective contract, and for all other Bidders 6 months after the contract has been awarded. Any violation of the same would entail disqualification of the bidders and exclusion from future business dealings.

If any claim is made/lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified above, unless it is discharged or determined by Managing Director of MRPL.

Section 10 – Other Provisions

(1) This agreement is subject to Indian Law, Place of performance and jurisdiction is the Registered Office of the Principal, i.e. Mangalore.

(2) Changes and supplements as well as termination notices need to be made in writing. Side Agreements have not been made.

(3) If the Contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members. (4) Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid.

In this case, the parties will strive to come to an agreement to their original intentions.

(5) Issues like Warranty / Guarantee etc. shall be outside the purview of IEMs.

(6) In the event of any contradiction between the Integrity Pact and its Annexure, the clause in the Integrity Pact will prevail.

For "The Principal"

For "The Bidder/Contractor"



(Name & Signature with Seal)

Place: Mangalore

Witness 1:.....

Date:.....

Witness 2:.....

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**FORM-M2**

FORMAT FOR FURNISHING AFFIDAVIT W.R.T. INTEGRITY PACT

**FORMAT OF AFFIDAVIT**

AFFIDAVIT OF \_\_\_\_\_ S/o D/o \_\_\_\_\_, resident of  
 \_\_\_\_\_ EMPLOYED AS \_\_\_\_\_ WITH  
 \_\_\_\_\_ HAVING OFFICE AT  
 \_\_\_\_\_ PIN \_\_\_\_\_

I, the above named deponent do hereby solemnly affirm and state as under: -

1. That I am the authorized representative and signatory of M/s \_\_\_\_\_
2. Bidding entity M/s \_\_\_\_\_ is not involved in any case of transgression in terms of Integrity Pact Submitted for Tender No: \_\_\_\_\_
3. I depose accordingly,

**DEPONENT**

**VERIFICATION**



I, \_\_\_\_\_ the deponent above named, do hereby verify that the factual contents of this Affidavit are true and correct. No part of it is false and nothing material has been concealed there from.

Verified at \_\_\_\_\_ on this \_\_\_\_\_ day of \_\_\_\_\_ 20 \_\_\_\_\_

**DEPONENT**

[On non-judicial stamp paper of appropriate value & duly notarized]



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**FORM - N**

**FORMAT OF LETTER OF WAIVER  
(ON LETTERHEAD OF BIDDER)**

Name of Work: \_\_\_\_\_

Bidding Document No: \_\_\_\_\_

We \*hereby agree to fully comply with, abide by and accept without variation, deviation or reservation all technical, commercial and other conditions whatsoever of the tender documents of Tender no and all Addenda issued by PMC / MRPL.

We further hereby waive, withdraw and abandon any and all deviations, variations, objections or reservations whatsoever thereto here to-before set out, given or indicated in our offer, clarifications, correspondence, communications, or otherwise with a view that the price bid submitted may be treated to conform in all respects, with the terms and conditions of the said tender documents including all Addenda.



We further hereby confirm that the price quoted in the price bid is as per the provisions of the tender document and there is no deviation to the provisions in the price bid.

\*\*For & on behalf of

Authorised signatory of Bidder

\* Here fill in the name of bidder.

\*\* The Letter of Waiver must be signed by the person(s) authorised to sign

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**FORM - P**

**(TO BE GIVEN ON BIDDER'S LETTER HEAD)**  
**PROFORMA OF DECLARATION OF BLACK LISTING/HOLIDAY LISTING**

**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 \_\_\_\_\_, submitting the Bid / Tender nor any other concern in which I am Proprietor nor any partnership firm in which I am involved as a Managing partner have been placed on blacklist or holiday list declared by any Government Department / Quasi-Government / Public Sector Undertaking or its Administrative Ministry (presently the Ministry of Petroleum & Natural Gas) / Regulatory authorities except as indicated below: (Here give particulars of banning or blacklisting or holiday listing and in the absence there of state "NIL")

**In the case of a Partnership Firm:**

We hereby declare that neither we, M/s \_\_\_\_\_, submitting the Bid / Tender nor any partner involved in the management of the said firm either in his individual capacity or as proprietor or managing partner of any firm or concern have or has been placed on blacklist or holiday list declared by any Government Department / Quasi-Government / Public Sector Undertaking or its Administrative Ministry (presently the Ministry of Petroleum & Natural Gas) / Regulatory Authorities except as indicated below: (Here give particulars of banning or blacklisting or holiday listing and in the absence thereof state "NIL")

**In the case of a Company:**

We hereby declare that we have not been placed on any holiday list or black list declared by any Government Department / Quasi-Government / Public Sector Undertaking or its Administrative Ministry (presently the Ministry of Petroleum & Natural Gas) / Regulatory authorities except as indicated below: (Here give particulars of banning or blacklisting or holiday listing and in the absence thereof state "NIL")



Any false information will be liable for rejection of bid, severe action like Cancellation of the Order, Forfeiture of Security deposit including Black listing of the Bidder Company in all ONGC /MRPL establishments.

Signature of Bidder \_\_\_\_\_

Name of Signatory: \_\_\_\_\_

Place:

Date:

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**FORM - Q**

(ON LETTERHEAD OF BIDDER)



We confirm that we are not involved in any Litigation or Arbitration.

OR

We confirm that the current litigation/ arbitration in which we are involved will not have any impact in work being tendered or in entering into contract during the validity of offer and performing the contract till all contractual Obligations under contract are performed.

For & on behalf of

Authorized signatory of Bidder



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**FORM - R**



**STATEMENT OF CREDENTIALS**

Tenderers should fill their technical offer by providing all information as follows (If not applicable- Please mention as 'N/A')

SI No	Particulars	Details
1	Name of the Firm	
2	Nature of the Firm  (State whether Limited Company, partnership Firm, Co-op. Society or Sole Proprietor, Photocopies of documents Confirming constitution of the firm to be	
3	Year of Establishment	
4	Registration Number, if any	
5	Registered Postal Address	
6	Telegraphic Address, if any	
7	Telephone No. (s)	
8	Fax No. (s), if any	
9	E-mail ID, if any	
10	Address of Branches, if any	
11	Address on which Order / LOA to be placed	
12	Name of Directors/ partners / Proprietor (as The case may be) with address & Telephone	
13	Permanent Income Tax No.	
14	Last Income Tax Clearance (Attach Photocopy)	
15	Name of Bankers & Branch with full address	
16	Type of Account & A/C No.	

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17	Name (s) of Authorized Representatives (s)  Note: Power of Attorney signed by the director(s) / Partners / Proprietor in favour of the authorized Person signing the tender documents must be enclosed.	
18	Type of job in which engaged as independent manufacturer. contractor	
19	Maximum value of the Job the Contractor/ manufacturer is capable of Handling per year. (Furnish details of your Financial standing together with the Bank References and necessary Solvency certificate From their banker (Nationalized) as per Bank's Format).	
20	Were you associated with PMC / MRPL in any Other contract in the past	
21	Are you currently having any contract with MRPL	
22	Are you on the approved list of other Oil Cos/ Public Sector Undertakings / govt. Dept. Etc. If so, furnish true copies of Certificates certifying your performance	
23	Please confirm that you have qualified/ trained / experienced staff on your payroll to handle this job	
24	Furnish Audited Balance sheet for last 3 Years ending previous financial year	
25	Details of technical collaboration. Please provide Documentary support (Xerox copies) if any and the brief experience of the parties	
26	Confirmed that Bank Guarantee for acceptance of the Security Deposit as per tender will be provided	
27	Brief Description of the job methodology / Quality Assurance:	

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28	Details of Testing methods and equipment's that will be made available	
29	Details of your Past Experience in the country (India) in this nature of job.	
30	Whether the bidder is put on Holiday list of any of the PSU. (If sought later, an affidavit to be produced later to PMC / MRPL.)	



Bidder shall provide details in the below format, of at least one Authorised Contact person in Bidder's organization with whom PMC / MRPL may correspond on the matter for seeking any clarifications:

<b>1</b>	<b><u>Primary Contact Details of the Bidder</u></b>	
	Name	
	Designation	
	Landline Nos.	
	Cell Phone nos.	
	Email IDs	
<b>2</b>	<b><u>Alternate Contact Details of the Bidder</u></b>	
	Name	
	Designation	
	Landline Nos.	
	Cell Phone nos.	
	Email IDs	

**Note:** The Bidder to fill up the above and enclose along with Technical Bid.

**Authorized Signatory**

**(With Company Seal & Signature)**

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**FORM – S**

**DECLARATION FOR LIQUIDATION / COURT RECIEVERSHIP**



(ON LETTERHEAD OF BIDDER)

We confirm that we are not under Liquidation, Court Receivership or Similar Proceedings.

For & on behalf of

Authorised signatory of Bidder



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**UNDERTAKING BY THE BIDDERS**

(In letter head)

Tender No.: \_\_\_\_\_

Name of the Work: \_\_\_\_\_

We \_\_\_\_\_ (Name of the Tenderer) hereby certify that we have fully read and thoroughly understood all the tender requirements and accept all terms and conditions of the tender including all corrigendum / addendum / clarification issued, if any. Our offer is in confirmation to all the terms and conditions of the tender including all corrigendum / addendum / clarification, 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 confirm that we have quoted the prices/rates in the tender considering inter-alia the

- 1) Tender Document(s)
- 2) Scope of Work / Special Conditions of Contract
- 3) Safety Policy
- 4) Pre-bid meeting Minutes (if any)
- 5) SOR / Price bid format
- 6) Corrigendum / Addendum/ Clarification (if any)



Place :

Signature of Bidder:

Date :



Name of Signatory:

Note: This declaration should be signed by the Tenderer's authorised representative on Company Letterhead who is signing the Bid and Scanned copy to be uploaded.

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## **PART I : TECHNO-COMMERCIAL**

### **GENERAL CONDITIONS OF CONTRACT (GCC)**

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## GENERAL CONDITIONS OF LSTK CONTRACT

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- v. Form of Bank Guarantee to cover Earnest Money (EMD) (Appendix-V)
- vi. Form of Bank Guarantee for Advance (Mobilisation) (Appendix-VI)
- vii. Form of bank guarantee for security deposit/performance bond (Appendix-VII)
- viii. Form of Tender (Appendix-VIII)



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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.

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- 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 pressing into service of the plant(s), Equipment(s), Vessel(s), Pipeline(s), Machinery (ies) and systems and 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.
- 1.0.11.0 “**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.

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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.

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- 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.

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- 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 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

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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”** means installation of all equipment facilities and thereafter completion of all activities as listed in “Check List for Mechanical Completion” to be performed by the CONTRACTOR, completion of all check list / 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 insulation of other lines, final painting, Alkali Boil Out, furnace drying, Catalyst loading and punch list items which, in the sole opinion of Engineer-in-Charge, do not affect Commissioning. Copy of “Check List for Mechanical Completion” tick-marked in line with above guidelines as attached to the technical documents shall form part of Contract document. Notwithstanding any exclusion as aforesaid in the definition of Mechanical Completion, Mechanical completions shall not deemed to have achieved for the purpose of any payment milestone(s) subsequent to Mechanical Completion unless the excluded items are completed.

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- 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, manpower and equipment ready to receive, transport and store materials and to commence and execute work at site(s) in accordance with 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 Mangalore Refinery and Petrochemicals Limited, a Company incorporated in India and having its registered office at Kuthethur, Katipalla, Mangaluru-575030.
- 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, tracing 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



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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 and 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, insulation of resistance, conducting operability tests on individual equipment, vessels and 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 “Check List for Mechanical 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.

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- 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”** and **“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

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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**” are synonymous and mean the totality of the work / services 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, consumer goods, equipment and labour required for or relative or incidental to or in connection with the preparation for, commencement, completion, testing, pre-commissioning, start up, commissioning, performance, 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 clauses 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

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the case may be, 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 the Bill of Materials and for Services as specified in the Bill of Activity.

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1.0.60.0 “**Utilities**” shall mean power, electricity, gas and other sources of energy, water, earth and other things whatsoever required for or incidental to the performance of the services, 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.

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## 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 in any provision of the Special



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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,

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Schedule of Lump sum 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.



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- 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 anyone 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.

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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**

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- 2.1.1.0 The CONTRACTOR shall within 28 (twenty-eight) 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.
- 2.1.2.0 As and by way of the said Security Deposit, the CONTRACTOR shall within 28 (twenty-eight) 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.
- 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 shall be entitled to encash the Bank Guarantee(s) or any of them which are not renewed atleast 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

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anywise 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 fulfilment of all obligations of the CONTRACTOR.

**2.2.0.0 PLANS, DRAWINGS & 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 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 (in respect of approvals to be furnished by the OWNER) 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 making of any front or supply, as the case may be, as and when

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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) as the case may be, the CONTRACTOR shall give written notice to the Engineer-in-Charge stating specifically the approval(s) which is / are pending, the period for which it / they are pending, the reason(s) for which they are pending and 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 the approval or the disapproval, as the case may be, is not granted within 10 (ten) working days, the drawings or documents or other proposal(s) put up for approval, will be deemed to have been approved.

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

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have been approved in Code-1. 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

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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,



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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 / altered 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 remains 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



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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 alongwith 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, whichever 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

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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 fulfilment 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 reproducibles, no lower in quality than auto positive of extra thin paper able to produce clean legible prints (the reproducibles 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 reproducibles 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

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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 MRPL) \_\_\_\_\_

**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 the opinion that any plan, drawings, design or specification or order or instruction relative thereto within the CONTRACTOR’s scope of work or supply is anywise 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

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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 result in a reduction or increase or change in the work or supply covered by the Lumpsum Price so as to render unreasonable the Lumpsum Price, the OWNER and the CONTRACTOR shall negotiate a suitable increase or reduction, as the case may be, in the Lump sum Price and failing agreement on a negotiated appropriate reduction or increase as the case may be, the Engineer-in-Charge shall, as an interim measure, fix a reduction or increase as he considers reasonable in the circumstances with relative portion of the Lumpsum Price and the Lumpsum Price shall be deemed to be accordingly amended to the extent applicable to the work or supply covered by the alteration, amendment or modification.

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2.4.2.1 Pending finalisation in respects of the revision pursuant to the provisions of Clause 2.4.2.0 hereof, the CONTRACTOR shall continue and be bound to continue and perform the works and / or make the supply to completion in all respects according to the contract (unless the contract or works be determined by the OWNER) and the CONTRACTOR shall be liable and bound in all respects under the Contract.

2.4.2.2 The CONTRACTOR shall not be entitled to any compensation in addition to the payment for the works actually performed by the CONTRACTOR and / or supplies actually made by the CONTRACTOR calculated on the basis of the Lumpsum Price except as provided in clause 2.4.2.0 hereof where applicable as a result of any alternation, amendment, modification or improvement in the specifications, plans, designs or drawings as aforesaid, in which event the payment shall be calculated for the affected work or supply on the basis of the Lumpsum Price as reduced or increased as the case may be under Clause 2.4.2.0.

**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.

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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 such alteration shall, in the opinion of the Engineer-in-Charge, result in a reduction or increase or change in the work or supply covered by the Lumpsum Price so as to render unreasonable the Lumpsum Price, the provision of clauses 2.4.2.0 and 2.4.2.1 shall apply.

2.5.4.0 The CONTRACTOR shall not be entitled to any compensation in addition to the payment for the work actually performed and supply actually made by the CONTRACTOR calculated on the basis of the Lumpsum Price except as provided in Clause 2.5.3.0 hereof where applicable as result of any alteration in the scope of work, in which event the payment shall be calculated for the affected work or supply on the basis of the Lumpsum Price as reduced or increased, as the case may be, under Clause 2.5.3.0.

#### **2.6.0.0 CHANGE ORDERS**

2.6.1.0 The provisions of Clauses 2.4.1.2, 2.4.2.0 and / or 2.5.3.0 hereof and of associated provisions shall apply only upon the issue of a Change Order as herein specified.

2.6.2.0 A Change Order may be initiated in case (i) of a change by the OWNER in exercise of its powers under Clause 2.4.0.0 and / or 2.5.0.0 and associated Clauses thereunder, or (ii) if the CONTRACTOR requests and the OWNER agrees to delete any part of the Scope of Work which will not adversely affect the operational capabilities of the Project / UNIT and for which cost and time benefits shall be passed on to the OWNER.

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2.6.3.0 Any claim for or initiation of a Change Order as given above, may be sent by the CONTRACTOR to Engineer-in-Charge and the OWNER in writing, specifying the variation (if any) in the Contract Price and in the Progress Schedule. The claim for a Change Order must be submitted by CONTRACTOR to the Engineer-in-Charge within 14 (fourteen) days of the issue of the order or instruction on which the CONTRACTOR basis such claim and the provisions of Clause 6.6.1.0 hereof shall mutates mutandis apply to any such claim for a Change Order. Provided always that the provisions with respect to a Change Order shall not be applicable if:

- (i) the change of supply and / or scope of service is required by the OWNER / Engineer-in-Charge before approval of detailed design or engineering to meet the requirements of the Contract.
- (ii) the change of supply or services or work is necessary at any time in order for the CONTRACTOR to comply with its responsibilities under the Contract,
- (iii) the additional supply or services or works are required because of any delay or deficiency attributable to the CONTRACTOR.
- (iv) 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,
- (v) the change relates to the repair, rectification or re-performance of any of the defective Work or materials within the CONTRACTOR's scope.

2.6.4.0 If the OWNER / Engineer-in-Charge and the CONTRACTOR are unable to agree on the CONTRACTOR's entitlement to a Change Order, the CONTRACTOR's request for a Change Order shall be deemed to be a claim to which the provisions of Clause 6.6.1.0



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hereof and associated provisions with regard to the CONTRACTOR's claims shall mutatis mutandis apply.

2.6.5.0 Any Change Order as above comprising an alteration which involves a material change in the cost of the relative works or supplies, as the case may be, shall be the subject of an amendment to the contract under Clause 2.4.2.0 and / or Clause 2.5.3.0 hereof, as the case may be, by way of an increase or decrease in the relative price of supply and / or services, as the case may be, in the Lumpsum Price. The Change Order shall also specify the heads relevant to the change(s) for making on account payments.

2.6.6.0 If the OWNER and the CONTRACTOR are unable to agree on the increase or reduction in the Lumpsum Price as a result of a Change Order, a statement of time worked by all labour employed and showing the description and quality of all materials and equipment utilised for the work to which the Change Order relates 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 and equipment used in this behalf. The cost of mechanical equipment shall be worked out on a capital amortisation of 2000 (two thousand) working days. Notwithstanding any dispute as to the cost allocation, the Statement shall be signed by the OWNER with a Note of dissent as a record for time worked and materials and equipment used and the OWNER's views thereon.

#### **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



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conclusive proof of such cancellation and of the reason(s) thereof. Upon cancellation of the Contract the Engineer-in-Charge may require the CONTRACTOR:

- a. 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
- b. 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 fulfilment, 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.

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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.

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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 mobilization and demobilisation 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.

#### **2.8.0.0 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.

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2.8.2.0 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) DELETED

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

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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 occur 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.

#### **2.10.0.0 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

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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 is, for any reason(s) not attributable to the CONTRACTOR, 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) days from the receipt of such notice and the CONTRACTOR cannot commence or progress with the work, the provisions of Clause 4.3.5.0 hereof shall mutatis mutandis apply. No standby allowance shall be payable to the Contractor in this regard.

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### SECTION-3



#### **MATERIALS, LABOUR, EQUIPMENT & 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 anytime 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 OWNER's choice in respect of imported materials and delivered ex-factory 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

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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:



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- i) Clearance of the goods through custom and port clearance including filling and / or filling 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, airport, 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, warehouse, 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 otherwise securing or protecting the same in transit and during and in storage.
- iv) Supply, procurement, mobilisation and deployment of all labour thereof, equipment and 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 fulfil 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

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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 no 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

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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

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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 his 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 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 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

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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 warehouse 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**

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- 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 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

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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



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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



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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 of 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 fulfilment 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 fulfilment 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 infact 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.

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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 bought to or upon the job site by the CONTRACTOR or any sub-contractor is rendered idle by such delay.

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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 and freight embargoes.

Notwithstanding the provisions of Clause 3.0.5.9 hereof, strike or lock-out in the works of manufacturers of critical equipment’s (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; 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

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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.

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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 conducted by the agency(ies), or authority(ies) if any specified by the Engineer-in-Charge or Inspection Agency. The CONTRACTOR shall provide all equipment, labour, materials and other

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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 of 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 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 fulfilment 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

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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 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 reimbursements 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



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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.

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### 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 supplies 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.

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- 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 manufacturers.
- 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 provisions of sub-clauses (iii), (vi), (vii), (ix) and (x) of Clause 3.0.3.1 hereof shall mutatis mutandis apply to the OWNER supplied materials.

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### **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.

### **3.3.0.0 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.



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- 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 defense 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).

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### 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 and 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.

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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



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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 to 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

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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 jobsite, 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.

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- 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 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, levelled 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

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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.

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1. 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.

### **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 7(seven) 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:

Signed Invoice(s);

Clean Bill of Lading;

Packing Lists / Mill Tally Sheets;

Certificate of origin;

Consular’s Invoice, if necessary;

Export Licence / documents, if applicable; and;

Any other document(s) or literature required for Customs clearance;

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 /

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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.

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.



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.

In addition, within 7 (seven) working days of the date of shipment, the CONTRACTOR shall despatch, by Air courier, according to the instructions of the Engineer-in-Charge in this behalf, 10 (ten) sets / copies of the said documents.

The CONTRACTOR shall also, within 48 (forty-eight) hours of shipment, send intimation of shipment by Fax or scanned copy by e-mail to the addresses of the OWNER and / or Engineer-in-Charge specified in this behalf.

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.

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 Licence(s) / Permit(s) issued to the OWNER in this behalf.

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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.

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.

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.



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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)

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- 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 furnishes 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.

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### 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 Customs 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.

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- 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.

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**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



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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 coordinate 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 levelling areas for assembly and erection, dewatering of surface and sub-soil water and

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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 replacement 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 cooperate 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 cooperate 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 OWNER's 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



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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.

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.

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- 4.1.2.0 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.
- 4.1.3.0 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.
- 4.1.4.0 Pillars bearing geodetic marks located at the sites of units of works under construction should be protected and fenced by the CONTRACTOR.
- 4.1.5.0 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.

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#### 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 over ground 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;

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j) Requirement of other authorities concerned with the Project or with any licence, 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

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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

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repairation, 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 CONTRACTOR to commence or complete within prescribed date(s) any work or operation 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 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

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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 act, event of 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 act, event or omission and the date of commencement of such occurrence. Thereafter, if even upon the cessation of such act or event or the fulfilment of the omission, 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) or works or the entire work at the job site(s) is necessary, the CONTRACTOR shall, within 7(seven) days after the cessation or fulfilment 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.



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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 of the existence of any ground(s) justifying the delay, 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 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

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restricted to, wars (declared or undeclared) or revolutions, civil wars, tidal waves, fires, major floods, earthquakes, epidemics, quarantine restrictions and freight embargoes.

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

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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 - 1 % (one percent) of the Lumpsum Price.

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- (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 - 2 % (two 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 - 3 % (three 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 - 4% (four 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 - 5% (five 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 - 6% (six 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 - 7% (seven 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 - 8% (eight percent) of the Lumpsum Price.

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(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 - 9% (nine 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 - 10% (ten percent) of the Lumpsum Price.

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.

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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, as the case may be, for 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.

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- 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.
- 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.



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#### 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 to 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

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plain 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.

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- 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 organizational 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:

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- (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 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

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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

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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

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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 put 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 Engineers-in Charge.

4.9.0.0 **SUB-CONTRACTS**



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- 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 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 the such notice, terminate such sub-contract at the risks and cost of the CONTRACTOR, and shall keep OWNER indemnified against the consequences.

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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

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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 an/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 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.

- 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 Modelling 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



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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 Engineers. 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 center 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

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discretion to nominate any one member of consortium to be the consortium leader and to represent the CONTRACTOR and/or to deal with 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

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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, is 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.

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**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 inspector. The manufacturer shall ensure that the inspecting personnel referred to above are given free



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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 manufacture'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

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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 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

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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

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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 materials(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.

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- 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. 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

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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 fulfilments 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 any 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-

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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 & startup 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 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.



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- 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, and 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 authorised 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

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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 Clauses 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 not 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 Clauses 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

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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:

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- (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, 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:

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- (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) Items-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, and
- (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.

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

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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
- 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

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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.

- 5.3.4.2 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



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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 earth quake, flood, storm, cyclone, tidal wave, lightening and other adverse weather conditions), accidents of kinds, fire, war risks and explosion.

#### 5.3.4.3 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.

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(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 Notwithstanding commissioning of the complete system prior to issue of the Completion Certificate in respect of the entire works/Unit(s), the primary Defect Liability Period for the complete works/Unit(s) shall be 12 (twelve) months from the date of the issue of the Completion 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 24 (twenty four) 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 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.

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- 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, systems(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 systems(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

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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 systems(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

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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&Haza 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&Haza)

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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 & satisfy itself the FEED for its accuracy and completeness and in case of deficiency, the CONTRACTOR shall inform the OWNER as well as Engineer-in-Charge, of the modifications proposed to be carried out to overcome the deficiency and the CONTRACTOR shall immediately rectify the same in consultation with the Engineer-in-Charge within the scope of work at no extra cost before proceeding with re-work.

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.

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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;
- 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. However, within and to the extent applicable to the scope of supply, the CONTRACTOR shall be responsible for performance guarantees of the UNIT in terms of product quality and design and rated capacities, including turn down capacity and facilities/systems incorporated therein as well as for guaranteed consumption of power. This guarantee shall cover the guaranteed mechanical performance for each and every related equipment, their efficiencies and their performance as laid down in the Process Package including guarantee for power consumption. 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 etc) with 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 process guarantees, he shall carry all activities in collecting the required data during Performance Tests or other process guarantee runs to identify problems of



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non-performance, for further analysis and modifications required to meet process performance parameters.

- 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 beforehand. One or more performance tests shall be carried out for a maximum of 120 hours under the technical direction of OWNER/Licenser 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

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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.

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**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

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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) day for Commissioning the UNIT.
- 5.6.5.0 The OWNER shall supply free of cost to the CONTRACTOR, water, DM water, steam, plant air, instrument air and raw materials (required for producing the final product), hydrogen, nitrogen (excluding chemical & 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

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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, 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

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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 ERP (Enterprise Resource Planning) or any other system of Owner and the templates against individual category of items shall be duly filled by in by the CONTRACTOR including price for each items before handing over the mandatory spares to OWNER.

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

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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.

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## 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.

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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

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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 Order(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.

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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 handing 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

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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 anywise 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

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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.

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- (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.
- (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.



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(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 Clause 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 shall 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

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Account Bills or otherwise as elsewhere more specially provided for in the Contract documents.

6.4.2.0 The following provisions shall apply with respect to “advance” payments to the CONTRACTOR:

6.4.2.1 Advance(s) paid to the CONTRACTOR shall carry interest at the rates specified in the Special Conditions of Contract, and shall be adjustable (without prejudice to the any other mode of recovery) from the Running Account Bills of the CONTRACTOR as provided in the Special Conditions of Contract.

6.4.2.2 The advances paid to the CONTRACTOR shall be used for execution of this contract only and the CONTRACTOR shall satisfy the OWNER in this regard whenever required. If it is found that an advance has been utilised by the CONTRACTOR in whole or part for any other purpose, the OWNER may at its discretion forthwith recall the entire advance and, without prejudice to any other right or remedy available to the OWNER, recover the same by recourse to any Bank Guarantee(s).

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

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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



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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.

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- 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 Account 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.

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6.4.8.0 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 or otherwise relieve the CONTRACTOR from any of its liabilities and obligations under the Contract.



6.4.9.0 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 made under or in terms of the Contract, payable in Indian currency, shall be paid by crossed "Account payee" cheque sent to the office of the CONTRACTOR notified in this behalf by the CONTRACTOR by quickest means of postal delivery. All cheques drawn shall be payable at the designated office of the OWNER's bankers and in no case will the OWNER be responsible if the cheque is mislaid, mis-appropriated or otherwise lost or stolen.

6.5.1.1 Subject to the other provisions hereof, if the execution of the works or the supply of the materials shall necessitate the importation into India of materials, plant or equipment within the CONTRACTOR's scope of supply, or if the works or any part thereof are to be executed by labour from outside India or if any other circumstances exists as shall render this necessary or desirable, a portion of the payments to be made under the contract shall be made in the appropriate foreign currencies as requested in the CONTRACTOR's bid and accepted by the OWNER.

6.5.1.2 All payments required to be made by the OWNER to the CONTRACTOR in foreign exchange shall be paid by Banker's Draft drawn on any branch of State Bank of India in a country of the CONTRACTOR's choice in the currencies indicated in this behalf in the Contract.

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6.5.1.3 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



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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.

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**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 14 (Fourteen) 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

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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.

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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 priority 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

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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

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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 has 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.

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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



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**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,

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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 fulfil 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;

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(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.

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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 and 6.4.7.0 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

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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

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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,



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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 (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) of 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

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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, reperform 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

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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.

7.1.0.1 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.

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**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

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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, acknowledgment or other documents(s) concerned, provided always that the OWNER shall be entitled its discretion at any time to call upon all or any of the partners/members of the CONTRACTOR's firm/consortium to sign and 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



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of the CONTRACTOR authorized 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-à-vis the CONTRACTOR (and if the CONTRACTOR be a consortium vis-à-vis each member of the consortium) to make the settlement, receipt , acknowledgment , 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 of State Government or authority with respect to or covered by 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 there from 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.

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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.

**8.2.0.0 GOVERNMENT REGULATIONS**

8.2.1.0 The CONTRACTOR shall comply with and ensure strict compliance by his/its subcontractors, servants and agents or all applicable Central, state, municipal and local laws and regulations of any Central, state or local bodies and authorities and undertakes to indemnify the OWNER from and against all levies, damages, penalties and payments whatsoever as may be imposed by reason of any breach or violation of any law, rule or regulation whatsoever and all actions, claims and demands arising there from and/or relative thereto.

**8.3.0.0 LABOUR LAWS AND REGULATIONS**

8.3.1.0 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



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1952 and Employees' State Insurance Act 1948 , all as amended from time to time and all rules, regulations and schemes framed there under from time to time.

8.3.2.0 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 authorization(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 authorization(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 (Abolition and Regulation) 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 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 there under.

8.3.3.0 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 of otherwise is deducted or recovered by the Jamadars from the wages of the workmen.

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- 8.3.4.0 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.
- 8.3.5.0 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.
- 8.3.6.0 The CONTRACTOR shall not employ in connection with the work, any person below the prohibited age of employment.
- 8.3.7.0 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 along with 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

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challans /receipt of the Provident Fund Authority for the period covered by the related deduction.

8.3.8.0 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.

8.3.9.0 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.

8.3.10.0 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

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“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.

8.3.10.1 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 1 and Appendix II hereto), the “Contractors’ Labour Regulations” and/or the “Model Rules of Labour Welfare” shall prevail to the extent of the irreconcilable conflict.

8.3.10.2 In the event of an irreconcilable conflict between the “Contractors’ Labour Regulations” and/or the “Model Rules of Labour Welfare” (set out in Appendix 1 and Appendix II hereto), and any applicable law, rule or regulation, the law, rule or regulation shall prevail over the “Contractors’ Labour Regulations” and/or the “Model Rules of Labour Welfare” as the case may be, and shall be complied with.

8.4.0.0 **RISK, ACCIDENT AND DAMAGE**

8.4.1.0 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.

8.4.2.0 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

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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 vegetations.

8.4.3.0 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 form 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).



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#### 8.5.0.0 INDEMNITY AND INSURANCE

8.5.1.0 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(s) 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 for every year. 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 their limit(s) specified.

8.5.1.1 Should the CONTRACTOR fail to take out and/or keep afoot insurance as provided for in the foregoing clause the ONWER shall be entitled (but without obligation to do so) to

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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 however becoming payable to the CONTRACTOR.

8.5.2.0 In addition, the CONTRACTOR shall protect, defend, indemnify and hold the OWNER harmless from the 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, Sub-contractors 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 to 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



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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.



#### 8.6.0.0 **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).

#### 8.7.0.0 **LIMITATION OF LIABILITY**

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 (SOP) 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 wilful 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

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- (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;



AND provided always that such limitation 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.

#### 8.8.0.0 **TRAINING OF APPRENTICES**

8.8.1.0 The CONTRACTOR shall if so required by law, himself engage and/or procure engagement by his sub-contractor(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.

#### 8.9.0.0 **RECORDS AND INSPECTION**

8.9.1.0 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 sub-contractor 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



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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.

#### 8.10.0.0 PATENTS AND ROYALTIES

8.10.1.0 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.

8.10.2.0 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 to 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

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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 8.10.3.0 shall mutatis mutandis apply.

8.10.3.0 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.

#### 8.11.0.0 **ARTICLES OF VALUE FOUND**

8.11.1.0 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,

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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.

**8.12.0.0 MATERIALS OBTAINED FROM DISMANTLING**

8.12.1.0 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.

**8.13.0.0 LIENS AND LIABILITIES**

8.13.1.1 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

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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 ( in so far 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 provisions of the Indian Interest Act, 1839.



#### 8.14.0.0 **COLLECTION OF INDEBTEDNESS**

8.14.1.0 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 and 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 for or in connection with the Contract.

8.14.2.0 Where the OWNER makes any deduction pursuant to the provisions of Clause 8.14.1.0 hereof, the OWNER shall furnish to the CONTRACTOR all details of the deduction(s) with copies of the documents, if any, in support the deduction(s).

#### 8.15.0.0 **LIABILITIES OF SUB-CONTRACTOR(S)**

8.15.1.0 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

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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.

#### 8.16.0.0 **CONFIDENTIAL HANDLING OF INFORMATION**

8.16.1.0 The CONTRACTOR and his employees, agents and Sub-Contractors and employees and agents of the Sub-Contractor(s) 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 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 other 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.

8.16.1.1 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.



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#### 8.17.0.0 **WAIVER**

8.17.1.0 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.

#### 8.18.0.0 **CONTRACTOR'S ESTABLISHMENT**

8.18.1.0 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-



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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.

**8.19.0.0 OBSERVANCE OF ENVIRONMENTAL REGULATIONS AND ENVIRONMENTAL PROTECTION**

8.19.1.0 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.

8.19.2.0 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 8.16.1.0 hereof, and against any and all claims, actions or proceedings, prosecutions and liabilities, and losses and damages, and costs (including legal costs), charges and

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expenses whatsoever suffered or incurred or instituted against the OWNER as the case may be.

#### 8.20.0.0 **REGISTRATION OF THE CONTRACTOR WITH STATUTORY AUTHORITIES**

8.20.1.0 Within 30 days of execution of the Contract Agreement, the CONTRACTOR shall, in so far 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.

8.20.2.0 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.

#### 8.21.0.0 **STATUTORY APPROVALS**

8.21.1.0 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 along with copies of required certificates complete in all respects shall be prepared and submitted 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.

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8.21.2.0 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.

8.21.3.0 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.



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

**8.22.0.0 RENTS & ROYALTIES**

8.22.1.0 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.

**8.23.0.0 UTILISATION OF LOCAL RESOURCES**

8.23.1.0 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.



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8.23.2.0 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.

8.24.0.0 **FUEL REQUIREMENT OF WORKERS**

8.24.1.0 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.

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## SECTION -9

### ARBITRATION & CONCILIATION



**9.0.0.0 ARBITRATION&CONCILIATION: Applicable for all the Tenders valuing above Rs. 5 Lakhs:**

Parties hereby agree as under:

If any difference or dispute (hereinafter referred as "Dispute") under the Contract arises, the party shall give a 60 days written notice ("Dispute Notice") to the identified officer of the other party mentioned in the Contract giving details of the Dispute. The Parties shall use all reasonable endeavors to resolve the Dispute mutually and amicably. All efforts by either party within these 60 days Dispute Notice Period shall be kept confidential by both the parties under Section 75 of the Arbitration and Conciliation Act, 1996. Parties shall not rely upon any views expressed or suggestions made by the other party, admissions made by the other party or the fact that the other party had indicated his willingness to enter into a settlement as evidence in any Forum / arbitration / court proceeding.

If Parties are unable to resolve the Dispute amicably within 60 days of receipt of the Dispute Notice, then after expiry of the 60 days' Dispute notice period, the aggrieved Party can refer the Dispute to conciliation and / or arbitration subject to terms and conditions contained herein below:

- 1) Parties further agree that following matters shall not be referred to Conciliation or Arbitration:
  - i) Any claim, difference or dispute relating to, connected with or arising out of MRPL decision to initiate any proceedings for suspension or banning, or decision to suspend or to ban business dealings with the Bidder / Contractor and/or with any other person involved or connected or dealing with bid / contract / bidder / contractor.

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ii) Any claim, difference or dispute relating to, connected with or arising out of MRPL decision under the provisions of Integrity Pact executed between MRPL and the Bidder / Contractor.

2) Part-I: Conciliation (Not applicable in contracts valuing less than ` 10 lakhs).

3) Part-II: Arbitration (Not applicable in contracts valuing less than ` 5 lakhs) If the parties are not able to resolve the dispute through OEC or do not opt for conciliation through OEC, the party may invoke arbitration clause as provided in the contract.

9.0.1.0 **PART - I: CONCILIATION: Resolution of disputes through conciliation by OEC** (Not applicable in Contracts valuing less than Rs.10 lakhs):



If any dispute, difference, question or disagreement arises between the parties hereto or their respective representatives or assignees, in connection with construction, meaning, operation, effect, interpretation of the contract or breach thereof which parties are unable to settle mutually, the same may first be referred to conciliation through Outside Expert Committee (“OEC”) to be constituted by MD, MRPL as provided hereunder:

**Submission of proposal for OEC**

1. Conciliation through OEC will be resorted in all cases involving disputed amount up to ` 250 crores only. The disputed amount will be calculated by considering the amount of claim and counter-claim of the parties.
2. Claimant shall give a 30 days’ notice for conciliation. In cases where the contractor is claimant then the notice shall be given to the concerned MRPL office as per the contract, clearly bringing out the points of dispute and the amount claimed with documents in support of the claim and the party concerned shall not raise any new issue thereafter.

**Constitution of OEC**





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3. MD, MRPL will have the sole discretion to constitute OEC. OEC will be formed from the panel of experts maintained by MRPL and will normally comprise of three members, one member from each category i.e., Technical, Finance, Commercial and Legal. However, there will be a single member OEC for disputes involving a claim and counter claim (if any) up to ` 1 crore.
4. MD, MRPL will have authority to reconstitute an OEC to fill any vacancy or if any OEC member is not available to attend the OEC Meetings.
5. Upon constitution of the OEC, Head-Legal will issue the appointment letters to OEC members and inform same to the parties concerned.
6. The OEC members shall give a declaration of independence and impartiality (in the format at **Annexure D**) to both the parties before the commencement of the OEC proceedings.

**Proceedings before OEC**

7. The claimant shall submit its statement of claims to OEC members, and to the party(s) prescribed in the appointment letter within 30 days of the issue of the appointment letter. The claims shall be raised as per the format at **Annexure E**.
8. The respondent shall file its reply and counter claim (if any) within 30 days of the receipt of the statement of claims. (As per aforesaid format at **Annexure E**).
9. Parties may file their rejoinder/additional documents, if any in support of their claim/counter claim within next 15 days. No documents shall be allowed thereafter.
10. OEC will commence its meetings only after completion of the pleadings.

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11. In case of 3 members OEC, 2 members will constitute a valid quorum and the meeting can take place to proceed in the matter after seeking consent from the member who is not available. If necessary video conferencing may be arranged. However, OEC Recommendations will be signed by all Members. Further, efforts must be made for unanimous recommendations.
12. The parties shall be represented by their in-house employees/executives. No party shall be allowed to bring any advocate or outside consultant/advisor/agent to contest on their behalf. Ex-officers of MRPL who have handled the dispute matter in any capacity are not allowed to attend and present the case before OEC on behalf of Contractor. However, ex-employees of parties may represent their respective organizations.
13. Solicitation or any attempt to bring influence of any kind on either OEC Members or MRPL is completely prohibited in conciliation proceedings and MRPL reserves the absolute right to close the conciliation proceedings at its sole discretion if it apprehends any kind of such attempt made by the Contractor or its representatives.
14. Parties agree to rely only upon documentary evidence in support of their claims and not to bring any oral evidence in the OEC proceedings.
15. OEC will give full opportunity of hearing to the parties before giving its recommendations.
16. OEC will conclude its proceedings in maximum 10 meetings, and give its recommendations within 90 days of its first meeting. OEC will give its recommendations to both the parties recommending possible terms of settlement

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MD, MRPL may extend the time/ number of meetings, in exceptional cases, if OEC requests for the same with sufficient reasons.

17. OEC members will be paid fees (plus applicable tax) and provided facilities as detailed in clause 29 below, subject to revision by MRPL from time to time and subject to Government guidelines on austerity measures, if any. All the expenditure incurred in the OEC proceedings shall be shared by the parties in equal proportion. The parties shall maintain account of expenditure and present to the other for the purpose of sharing on conclusion of the OEC proceedings.
18. Depending upon the location of the OEC members and the parties, the venue of the OEC meeting shall be either Delhi /Mangaluru / Bengaluru or any other location whichever is most economical from the point of view of travel and stay etc.
19. Parties shall not claim any interest on claims/counterclaims from the date of notice invoking conciliation till execution of settlement agreement, if so arrived at. In case, parties are unable to reach a settlement, no interest shall be claimed by either party for the period from the date of notice invoking conciliation till the date of OEC recommendations and 30 days thereafter in any further proceeding.
20. Legally, parties are under no obligation to refer a dispute to conciliation or continue with conciliation proceedings. Parties are free to terminate the conciliation proceedings at any stage as provided under the Arbitration and Conciliation Act, 1996 and subsequent amendments or re-enactment thereof.

**Actions after OEC Recommendations**

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21. The recommendations of OEC are non-binding and the parties may decide to accept or not to accept the same. Parties are at liberty to accept the OEC recommendation with any modification they may deem fit.
22. The contractor shall give its response to MRPL within 7 days of receiving OEC Recommendation.
23. If the recommendations are acceptable to the contractor partly or fully, MRPL will consider and take a decision on OEC recommendations. MRPL shall communicate its decision to the contractor. If decision of MRPL is acceptable to the contractor, a settlement agreement under Section 73 of the Arbitration and Conciliation Act, 1996 will be signed within 15 days of contractor's acceptance and same shall be authenticated by all the OEC Members.
24. The timelines mentioned in the above guidelines are with an objective to achieve expeditious conclusion of OEC proceedings. However, it does not mean that any action beyond the timelines will be invalid. However, the party concerned will make all efforts to complete the actions within the stipulated time.
25. Parties shall keep confidential matters relating to the conciliation proceedings including minutes of OEC meeting and Recommendations of OEC. Parties shall not rely upon them as evidence in any Forum/arbitration/court proceeding, whether or not such proceedings relate to the dispute that is the subject of the conciliation proceedings,
  - a. Views expressed or suggestions made by the other party in respect of a possible settlement of the dispute.
  - b. Admissions made by the other party in the course of the OEC proceedings;
  - c. Proposals made by the OEC;

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d. The fact that the other party had indicated his willingness to accept a proposal for settlement made by the OEC.

26. Confidentiality extends also to the settlement agreement, except where its disclosure is necessary for purposes of implementation and enforcement. This stipulation will not apply to disclosure made by MRPL to Govt. of India, if required.



27. Subject to terms and conditions contained in the above paras, the provisions of the Part III of Arbitration and Conciliation Act, 1996 shall be acceptable to the conciliation proceedings and the parties and the OEC members shall be bound by the same.

28. If the parties are not able to resolve the dispute through OEC or do not opt for conciliation through OEC, the party may invoke arbitration clause as provided in the contract.

29. **Fees and Facility to the OEC Members:**



OEC members shall be entitled for the following fees plus applicable taxes per member and facilities:

Sl. No	Fees/Facility	Entitlement	To be paid by
1.	Fees	Rs 20,000/- per meeting subject to maximum of Rs. 2,00,000/-* for the whole case. In addition, one OEC member chosen by OEC shall be paid an additional amount of Rs 10,000/- towards secretarial expenses in	Contractor

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		writing minutes/ Recommendations.	OEC
2.	Fee for attending meeting/s to authenticate the settlement agreement.	Rs 10,000/-	Contractor
3.	Transportation in the city of meeting	Car as per entitlement or Rs 2,000/- per day	Contractor
4.	Venue of the meeting	MRPL conference rooms/Hotels	MRPL
<b>Facilities to be provided to the out-stationed member</b>			
5.	Travel from the city of residence to the city of meeting	Business class air tickets/first class train tickets/ car/ reimbursement of actual fare. However, entitlement of air travel by Business class shall be subject to austerity measures, if any, ordered by Govt. of India.	Contractor
6.	Transport to and fro airport / railway station in the city of residence	Car as per entitlement or Rs 3,000/-	Contractor
7.	Stay for out stationed members	5 Star Hotel	MRPL
8.	Transport in the city of meeting	Car as per entitlement or Rs 2,000/- per day	Contractor

\* except in exceptional cases, where the no. of meetings may extend beyond 10.



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9.0.2.0 **PART – II: ARBITRATION (Applicable in case of supply orders/Contracts with firms, other than Public Sector Enterprises)** (Not applicable in contracts valuing less than ` 5 lakhs).

Except as otherwise provided elsewhere in the contract, if any dispute, difference, question or disagreement arises between the parties hereto or their respective representatives or assignees, in connection with construction, meaning, operation, effect, interpretation of the contract or breach thereof which parties are unable to settle mutually or through conciliation, the same shall be referred to Arbitration as provided hereunder:



1. There shall be no arbitration for disputes involving claims up to ` 25 lakhs and more than ` 100 crores. The disputed amount will be calculated by considering the amount of claim and counter-claim of the parties. Unresolved disputes involving claims above ` 100 crores shall be adjudicated under the Commercial Courts, Commercial Division and Commercial Appellate Division of High Courts Act, 2015.
2. A party wishing to commence arbitration proceeding shall invoke Arbitration Clause by giving 60 days' notice to the other party. The notice invoking arbitration shall specify all the points of disputes with details of the amount claimed to be referred to arbitration at the time of invocation of arbitration and not thereafter. If the claim is in foreign currency, the claimant shall indicate its value in Indian Rupee for the purpose of constitution of the arbitral tribunal.
3. Arbitration can be invoked by giving Invocation Notice only after expiry of the 60 days' period as per Dispute Notice.
4. For a dispute involving claims above ` 25 lacs and upto ` 5 crores, in case other party is Claimant, MRPL will forward a list containing names of five jurists to the other party for selecting one from the list who will be appointed as sole arbitrator by



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MRPL. In case MRPL itself is the Claimant, it shall appoint the Sole Arbitrator by invoking the Arbitration clause and inform the Contractor. Such dispute shall be resolved on fast track procedure specified in Section 29B of the Arbitration and Conciliation Act, 1996.

5. For a dispute involving claims above ` 5 crores and upto ` 100 crore, the claimant shall appoint an Arbitrator and communicate the same to the other Party in the Invocation Notice itself along with the copy of disclosure made by nominated Arbitrator in the form specified in Sixth Schedule of the Arbitration & Conciliation Act, 1996. For the purpose of Section 21, the Arbitration Proceeding shall commence only upon date of receipt of Invocation Notice complete in all respects mentioned above. The other Party shall then appoint the second Arbitrator within 15 days from the date of receipt of written notice. The two Arbitrators appointed by the Parties shall appoint the third Arbitrator, within 30 days, who shall be the Presiding Arbitrator. The parties agree that they shall appoint only those persons as arbitrators who accept the conditions of this arbitration clause. No person shall be appointed as arbitrator or presiding arbitrator who does not accept the conditions of this arbitration clause.
6. For the purpose of appointment of Arbitrator(s), claims amount shall be computed excluding claim for interest, if any.
7. The parties agree that they shall appoint only those persons as arbitrators who accept the conditions of this arbitration clause. No person shall be appointed as arbitrator or presiding arbitrator who does not accept the conditions of this arbitration clause.
8. Parties agree that there will be no objection if the Arbitrator appointed holds equity shares of MRPL and/or is a retired officer of MRPL / any PSU. However, neither party



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shall appoint its serving employee as arbitrator and shall have been retired before 3 years on the date of commencement of the Arbitration.

9. If any of the Arbitrators so appointed dies, resigns, becomes incapacitated or withdraws for any reason from the proceedings, it shall be lawful for the concerned party/arbitrators to appoint another person in his place in the same manner as aforesaid. Such person shall proceed with the reference from the stage where his predecessor had left if both parties consent for the same; otherwise, he shall proceed de novo.
10. Parties agree that neither party shall be entitled for any pre-reference or pendente-lite interest on its claims, i.e. date of cause of action till date of Award by Arbitral Tribunal. Parties agree that claim for any such interest shall not be considered and shall be void. The Arbitrator / Tribunal shall have no right to award pre-reference or pendente-lite interest in the matter.
11. The arbitral tribunal shall make and publish the award within time stipulated as under:

Amount of Claims and Counter Claims (excluding interest)	Period for making and publishing of the award (counted from the date of first meeting of the arbitrators):
UptoRs. 5 Crore	Within 8 months
Above Rs. 5 Crore	Within 12 months

The above time limit can be extended by the arbitrator, for reasons to be recorded in writing, with the consent of the parties.

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12. The fees payable to each Arbitrator shall be as per rules framed by the High Court in whose territorial jurisdiction as per contract and seat of arbitration is situated. In case no rules have been framed, the fees prescribed may be as per Fourth Schedule of the Arbitration and Conciliation Act, 1996. However, Arbitrator may fix their fees keeping the aforesaid schedule as guiding factor.

13. The parties may, after invocation of dispute, agree for sharing the cost of Arbitration equally on 50:50 basis.



14. If after commencement of the Arbitration proceedings, the parties agree to settle the dispute mutually or refer the dispute to conciliation, the arbitrators shall put the proceedings in abeyance until such period as requested by the parties. Where the proceedings are put in abeyance or terminated on account of mutual settlement of dispute by the parties, the fees payable to the arbitrators shall be determined as under:

- (i) 20 % of the fees if the claimant has not submitted statement of claim.*
- (ii) 40 % of the fees if the pleadings are complete.*
- (iii) 60% of the fees if the hearing has commenced.*
- (iv) 80% of the fees if the hearing is concluded but the award is yet to be passed*

15. Each party shall pay its share of arbitrator's fees in stages as under:

- (i) 20% of the fees on filing of reply to the statement of claims.*
- (ii) 40% of the fees on completion of pleadings.*
- (iii) 20% of the fees on conclusion of the final hearing.*
- (iv) 20% at the time when award is given to the parties.*

16. Each party shall be responsible to make arrangements for the travel and stay etc of the arbitrator appointed by it. Claimant shall also be responsible for making

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arrangements for travel / stay arrangements for the Presiding Arbitrator and the expenses incurred shall be shared equally by the parties. In case of sole arbitrator, MRPL shall make all necessary arrangements for his travel stay and the expenses incurred shall be shared equally by the parties.

17. The Arbitration shall be held at the place from where the contract has been awarded. However, parties to the contract can agree for a different place for the convenience of all concerned.

18. The Arbitrator(s) shall give reasoned and speaking award and it shall be final and binding on the parties.



19. Subject to aforesaid, provisions of the Arbitration and Conciliation Act, 1996 and any statutory modification or re-enactment thereof shall apply to the arbitration proceedings under this clause.

20. Insofar as practicable, the Parties shall continue to implement the terms of the Contract notwithstanding the initiation of Arbitration proceedings.

9.0.2.1 **Arbitration Clause applicable in case of Purchase Orders/ Contracts on Public Sector Enterprises**

Ref: No.4 (1) /2011-DPE (PMA)-GL, Government of India, Department of Public Enterprises. Dated 12th June 2013.

In the event of any dispute or difference relating to, arising from or connected with the CONTRACT, such dispute or difference shall be referred by either party to the arbitration of one of the Arbitrators in the Department of Public Enterprises, to be nominated by the Secretary to the Government of India, In charge of the Bureau of Public Enterprises.

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The Arbitration and Conciliation Act 1996 shall not be applicable to the Arbitration under this clause.



The award of the Arbitrator shall be binding upon the parties to the dispute, provided however; any party aggrieved by such award may make a further reference for setting aside or revision of the award to the Law Secretary, Deptt. of Legal Affairs, Ministry of Law and Justice, Government of India. Upon such reference, the dispute shall be decided by the Law Secretary or the Special Secretary / Additional Secretary, whose decision shall bind the parties finally and conclusively.

The parties in the dispute will share equally the cost of the arbitration as intimated by the Arbitrator.

**9.0.3.0 JURISDICTION:**

Contract / Purchase Order, including all matters connected with this Contract / Purchase Order shall be governed by the Indian law both substantive and procedural, for the time being in force and shall be subject to the exclusive jurisdiction of Indian Courts at Mangaluru.

Foreign companies, operating in India or entering into Joint ventures in India, shall have to obey the law of the land and there shall be no compromise or excuse for the ignorance of the Indian legal system in any way.

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**Annexure D to Clause 9.0.1.0 - Conciliation**

**Declaration of independence and impartiality by OEC Member**

To,

1. MRPL .....

2. Contractor.....

**Subject: Declaration of independence and impartiality by OEC Member in the dispute between MRPL .....And.....under Contract No.....**

I, the undersigned, hereby accept to act as Member of the Expert Committee and conciliate in the disputes under reference between the parties above named.



I confirm that I am aware of the requirements of law particularly of the Arbitration and Conciliation Act, 1996, to act as a conciliator. I am able to act as conciliator and I am available to act as Member of the Expert Committee.

I hereby declare that I am independent of each of the parties and have no ownership interest in any part of the contract under reference or any financial interest in the said contract. I have no interest in the outcome of the dispute or its settlement.

I hereby affirm that I shall act with honesty, integrity, diligence, and will remain independent and impartial while discharging my duties as conciliator/OEC Member. I will disclose any interest or relationship with the parties or the subject matter which might compromise in any manner my ability or capacity to remain impartial and independent in the matter.

The fees and other facilities offered to me and the terms and conditions contained in the appoint letter and guidelines issued by MRPL are acceptable to me. I will not demand for enhancement of the same.

(Signature)

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Name:

Address:

Phone:

Email:

Date:

**Annexure E to Clause 9.0.1.0 - Conciliation**



**STATEMENT OF CLAIM(S)/COUNTERCLAIM(S)**

1. Chronology of the dispute
2. Brief of the contract
3. Brief history of the dispute:
4. Issues:
5. Details of claim(s)/Counter Claim(s):

SI NO	Description of claim(s)/ Counter Claim	Amount (in INR/USD)	RelavantC ontarct Clause

6. Basis/Ground of claim(s)/counter claim(s) (along with relevant clause of contract). Statement of claims may kindly be restricted to maximum limit of 20 pages. Relevant documents may be compiled and submitted along with the statement of claims. The



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statement of claims is to be submitted to all OEC members, to other party and to the office of Head Legal Services-MRPL, by post as well as mail.



**Authorized Signatory of the Claimant**

**Place:**

**Contact No.:**

**Date**

**Email:**

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## SECTION 10

### SAFETY CODE AND REGULATIONS

#### **10.0.0.0 GENERAL**

10.0.1.0 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.

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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 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 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 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.

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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 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.



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10.4.3.0 Working platform, 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 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 of the 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 defense 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:**

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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 or 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 area 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

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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 eye shields, and gloves, etc.
- 10.7.5.0 Stonebreakers 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 and 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.



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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 use in hoisting or lowering materials or as a means of suspension shall be of durable quality and adequate strength and free from patent defects.

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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 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 energized, 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 material, which are goods conductors of electricity.

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**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.

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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 authorized 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

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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 the 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 authorized representative and that the supporting challans/documents are stamped and signed by the OWNER's personnel at the gate at the time of entry.



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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

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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 PRMIT**



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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 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.

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10.19.2.2 Welding & electrical cable 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 cloths, 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.

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**10.20.0.0 DEDUCTIONS FROM LUMPSUM 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 lump sum 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 Lump sum 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

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be established by the OWNER for , inter alia, such contributions, and until such fund is established, to a charity nominated by the OWNER.



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### 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-1)
- (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 (MOBILIZATION) (APPENDIX-VI)
- (vii) FOR OF BANK GUARANTEE TO COVER SECURITY DEPOSIT (APPENDIX-VII)
- (viii) FORM OF TENDER (APPENDIX- VIII)

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**APPENDIX-1**  
**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" mean 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 neighborhood 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 Organization.
  - (f) "Prescribed" means prescribed under the Contract Labour (Regulation and Abolition) Act 1970 and Rules framed there under.
  
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.

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- (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.)



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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 or 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 10<sup>th</sup> 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.

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(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.

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- (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 Owner 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

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- 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 Owner.
  3. Taking or giving bribes or any illegal gratification.
  4. Habitual late attendance.
  5. Drunkenness, fighting, riotous or disorderly or indifferent behavior.
  6. Habitual negligence.
  7. Smoking near or around the area where combustible or other material are locked.
  8. Habitual indiscipline.
  9. Causing damage to work in the progress or to property of the Owner 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.



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14. Unauthorized use of employer's property of manufacture or making of unauthorized articles at the work place.
  15. Bad workmanship in construction and maintenance by skilled workers which is not approved by the Owner 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 unauthorized divulgence of business affairs of the employers.
  19. Collection or canvassing for the collection of money within the premises of an establishment unless authorized 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

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- (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 of 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, carryout 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 form 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).

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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 preceding the date on which she proceeds on leave. The





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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 authorized 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 Owner 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.

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## APPENDIX - II



### 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.

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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 (30 sq.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 1.80mX1.50m (6'x5') 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 15 cm (6") above the surrounding ground. The roofs shall be laid with thatch or any other materials as may

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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.
- (v) There shall be kept an open space at least 7.2 m (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 or 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 waterproof. 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

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- (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 receptacles 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. Receptacles 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 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

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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, for 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 but 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 crèche(s) shall vary according to the number of women workers employed.

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



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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 of 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 Contractor's 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.



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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/Owner 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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**APPENDIX - III**



**SAFETY PRACTICE DURING CONSTRUCTION**

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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 recognized 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**



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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 1& 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 terminologies are given below:

- **Adequate, appropriate or suitable** are used to describe qualitatively or quantitatively the means or method used to protect the worker.
- **Brace:** As 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 mechanized 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,

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authorized 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.
- **Guardrail:** 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.
- **Work place:** 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 organization to comply with the safety and health measures required at the workplace.



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- ii) provide and maintain workplaces, plant, equipment, tools and machinery and organize 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) Organization 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.



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- ix) Organize 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, wherever 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.1&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 authorized, 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 authorized 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.
- xvi) Obtain the necessary clearance/permits as required and specified by owner

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xvii) As per 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 crèche where 10 or more women workers are having children below the Age of 6 years.
- Transport arrangement for attending to emergencies.

xviii) 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 jobs.

#### **5.0 SAFETY PRACTICES AT WORK PLACES**

##### **5.1 GENEAL 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

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- 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, lookout men or barriers to protect any person against injury by the fall of materials, or tools or equipment being raised or lowered.

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- 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 unauthorized persons.
- 5.5.2 Visitors should not be allowed access to construction sites unless accompanied by or authorized 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;

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- 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 standard.

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 nighttime to facilitate standby lighting source, if normal system fails.

5.7.3 Artificial lighting should not produce glare or disturbing shadows.



5.7.4 Lamps should be protected by guards against accidental breakage.

5.7.5 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.

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- 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 authorized 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.

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- iv) Only insulated or non-conducting 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 minimize 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

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- 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 a 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



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- Demolition
- Radiography
- Sand/shot blasting/spray panting
- 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 onsite, 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 excavation 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.

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- 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<sup>0</sup> 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 sidewall.
- 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.

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6.1.15 In case of mechanized excavation, precaution shall be taken to not to allow anybody to come within one meter of extreme reach of the mechanical shovel. The mechanized 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.

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- 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.

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- 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 scaffolds 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.

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- 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 plant.
- 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 4 mt. Above 4mt flights, fixed ladders shall be provided with at least 600 mm landings at every 6 mt or less.
- xvii) The width of ladder shall not be less than 300 mm and rungs shall be spaced not more than 300 mm.
- 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.

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- 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/boatswain'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.

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### 6.3 STRCUTURAL WORK, LAYING OF REINFORCEMENT & CONCRETING



#### 6.3.1 General provisions

- i) The erection or dismantling of buildings, structures, civil engineering works; formwork, false work 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, false work 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 early 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:





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- 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.

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- 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) 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 unfavorable 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.

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- 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, holding 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.

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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 pacts 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 1/3<sup>rd</sup> 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.

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- 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.

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- 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.

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- 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.

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- 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 O<sub>2</sub> level before entry in the confined space and monitor level periodically or other wise use respiratory devices.



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- 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.

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- 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 hydro testing. 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 Prove 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.

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- ii) While working at a height of more than 3 meters, permit should be issued by competent person before commencement of the job.
- iii) Workers 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.

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- 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;

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- (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.



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## 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 equipment's 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 tire pressure of all moving equipment's like cranes, forklifts, and 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 unauthorized 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.

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- 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 equipment's should be avoided. If unavoidable to do erection in night, operator and rigger should be fully trained for night signalling. Also proper illumination should be there.
- xiii) Allow crane to move on hard, firm and levelled ground.
- xiv) When crane is in idle condition for long period 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 the 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 1 mt in height.



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- 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.



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- 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.

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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.



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- 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

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- 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

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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.



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- 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 levelled, 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.

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- 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, equipment’s (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

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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/equipment's from water and naked flames.
- xxvi) Illuminate suitably all the work area.
- 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;



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- 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;

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- d) the conductors and equipment should be earthed and short-circuited;
- e) neighbouring 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:

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- 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, evaluation 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,

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- d) Evacuate in case of emergency and operation should be completed preferably in day light.

### 6.12.3 Drilling



- i) In view of CO<sub>2</sub> and H<sub>2</sub>S 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 H<sub>2</sub>S 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 atleast 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 avoid blow out.

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- 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 H<sub>2</sub>S.
- xvi) Portable H<sub>2</sub>S 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 – blow down 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, and ILSL) should be maintained.  
\*Shut down Panels
- vi) Welder’s rectifier set and electrical connections to it should be checked and approved by electrical-in-charge for proper electrical safety.
- vii) “SCADA” telemetry system if available should be operational for remote opening and closing of wells at unmanned platforms (through RPMC).

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- 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 shutdown (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.

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- 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 on board 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 lifesaving 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.

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- 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 provision



- 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



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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.

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- 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.

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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 along with 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.



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- 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 to 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.

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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 provide 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.

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- 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:



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- (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.

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- 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 work places 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.





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## 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.

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- 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 organizing 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



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**ANNEXURE – I**



 <b>ONGC</b> एन.ओ.ए.पी.एल. <b>MRPL</b>	<b>MRPL Marketing Terminal Project at Devangonthi,          Bangalore</b> <b>Marketing Infrastructure Projects, MRPL</b>	 <b>nauvata</b> ENGINEERING CONSULTANTS
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**LIST OF SAFETY CODES FOR CIVIL WORKS PUBLISHED BY BUREAU OF INDIAN STANDARDS**



<b>Sr. No.</b>	<b>Code No.</b>	<b>Title</b>
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 – Scaffolds
15	IS : 3764	Safety Code for Excavation Work.

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<b>Sr. No.</b>	<b>Code No.</b>	<b>Title</b>
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.

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<b>Sr. No.</b>	<b>Code No.</b>	<b>Title</b>
36	IS : 9759	Guidelines for de-watering during construction
37	IS : 9944	Recommendations on safe working load for natural and manmade fiberoap 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.

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**APPENDIX-IV**

**FORM OF CONTRACT**

(To be executed on a Non Judicial Stamp Paper of appropriate value)

**CONTRACT NO.:**

THIS CONTRACT made at New Delhi this..... day of 200.... BETWEEN MANGALORE REFINERY AND PETROCHEMICALS LIMITED., registered in India under the Indian Companies Act -1956, having its registered Office at -----and the head Office at -----(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 Mangalore Refinery and Petrochemicals Ltd. at \_\_\_\_\_.

AND WHEREAS the Contract with respect to the said Tender has been awarded to the CONTRACTOR, pursuant whereto, 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:**

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<b>LSTK-B : CIVIL AND STRUCTURAL WORKS</b>		

## 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 along with 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

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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 Mangaluru (where this Contract has been signed on behalf of OWNER) and only



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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 CONTRACT with reference to the CONTRACT, shall be deemed to have been sufficiently served if delivered by hand or through Courier to the

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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.

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## 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 or 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 the 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

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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 & ON BEHALF OF  
MANGALORE REFINERY AND  
ETROCHEMICALS LTD.

SIGNED & DELIVERED  
FOR & ON BEHALF OF  
-----

(CONTRACTOR)

BY \_\_\_\_\_

BY \_\_\_\_\_

(THIS DAY OF \_\_\_\_\_ 20\_\_)



IN THE PRESENCE OF:

- 1.
- 2.

IN THE PRESENCE OF:

- 1.
- 2.

\*\*\*\*\*

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**APPENDIX-V**

**FORM OF BANK GUARANTEE IN LIEU OF EARNEST MONEY DEPOSIT**

The irrevocable Bank Guarantee (BG) in the following prescribed format if submitted against Earnest Money Deposit/PBG/SD/Mobilisation advance shall be subject to verification from the issuing Bank, the email ID of bank for the same must be incorporated in the BG.

The BG issued by the issuing Bank on behalf of Bidder/Contractor/Supplier in favour of “Mangalore Refinery and Petrochemicals Limited” shall be in paper form and also be made available under the “Structured Financial Messaging System” (SFMS).

A separate advice of the BG will invariably be sent by the issuing bank to the beneficiary’s ‘Bank through SFMS and SFMS transmission message reference number (currently 32digits code) is to be sent along with BG directly to MRPL through speed post/regd. Post.

The details of beneficiary for issue of BG under SFMS platform is furnished below:

**Name of Beneficiary:** Mangalore Refinery and Petrochemicals Limited

**Beneficiary Bank, Branch and address:** Union Bank of India (Erstwhile Corporation Bank)  
Kuthethoor Post Mangaluru 575030, Karnataka

**IFSC code:** UBIN0905925



**SWIFT Code:** UBININBBMAP

**MICR Code:** 575026018

Any bank guarantee submitted in physical mode which cannot be verifiable through SFMS will not be accepted under any circumstances

-----  
(To be executed on non-judicial stamp paper of appropriate value)

BG NO. \_\_\_\_\_

	<b>MRPL Marketing Terminal Project at Devangonhi, Bangalore</b> <b>Marketing Infrastructure Projects, MRPL</b>	
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DATED: \_\_\_\_\_

VALID UPTO: \_\_\_\_\_

To

M/s. Mangalore Refinery and Petrochemicals Ltd.,



Regd. Office: Kuthethur P.O

Katipalla, Mangaluru 575 030

In consideration of Mangalore Refinery And Petrochemicals Ltd., (hereinafter called “the Owner” 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 Owner at Mangaluru 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 Owner, upto an aggregate limit of (Amount in figures and words).

AND THE BANK DO TH HEREBY FURTHER AGREES AS FOLLOWS:



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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 Owner on the Bank until the Owner discharges this Guarantee/Undertaking subject, however, that the Owner 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 Owner for a further three months.

2. The Owner 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 Owner 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 Owner 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 Owner 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 Owner 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

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undertaking or security for any indebtedness of the Tenderer to the Owner 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 Owner in any demand, claim or notice made with reference to this guarantee shall as between the Bank and the Owner for the purpose of these Presents be conclusive of the amount payable by the Bank to the Owner hereunder.
5. The liability of the Bank to the Owner under this Guarantee/Undertaking shall remain in full force and effect notwithstanding the existence of any difference or dispute between the Tenderer and the Owner, the Tenderer and the Bank and/or the Bank and the Owner or otherwise howsoever touching these Presents or the liability of the Tenderer to the Owner, 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 Owner 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 Owner 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 Owner.
7. Without prejudice to any other mode of service, a demand or claim or other communication may be transmitted by the Owner 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:



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- i) The Bank's liability under this guarantee/undertaking shall not exceed (Amount in figures & words);
- ii) The 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:\_\_\_\_\_

\*\*\*\*\*

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**APPENDIX-VI**

**GUARANTEE AGAINST ADVANCE PAYMENT (MOBILIZATION)**

The irrevocable Bank Guarantee (BG) in the following prescribed format if submitted against Earnest Money Deposit/PBG/SD/Mobilisation advance shall be subject to verification from the issuing Bank, the email ID of bank for the same must be incorporated in the BG.

The BG issued by the issuing Bank on behalf of Bidder/Contractor/Supplier in favour of “Mangalore Refinery and Petrochemicals Limited” shall be in paper form and also be made available under the “Structured Financial Messaging System” (SFMS).

A separate advice of the BG will invariably be sent by the issuing bank to the beneficiary’s Bank through SFMS and SFMS transmission message reference number (currently 32digits code) is to be sent along with BG directly to MRPL through speed post/regd. Post. The details of beneficiary for issue of BG under SFMS platform is furnished below:

Name of Beneficiary: Mangalore Refinery and Petrochemicals Limited

**Beneficiary Bank, Branch and address:** Union Bank of India (Erstwhile Corporation Bank)



Kuthethoor Post Mangalore 575030, Karnataka

**IFSC code:** UBIN0905925

**SWIFT Code:** UBININBBMAP

**MICR Code:** 575026018

Any bank guarantee submitted in physical mode which cannot be verifiable through SFMS will not be accepted under any circumstances

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-----  
 (To be executed on non-judicial stamp paper of appropriate value)

BG NO. \_\_\_\_\_

DATED : \_\_\_\_\_

VALID UPTO : \_\_\_\_\_

To



M/s. Mangalore Refinery And Petrochemicals Ltd.,  
 Regd. Office: Kuthethur P.O  
 Katipalla, Mangaluru 575 030

This deed of Guarantee made this ..... day of ..... between ..... and wherever the context so required includes its successors and assigns hereinafter called 'The surety' and ..... "a company registered under the Companies Act of 1956 and having its Registered Office at ..... and wherever the context so required includes its successors and assigns, hereinafter called 'The Owner'.

Whereas M/s..... a Company registered under the Companies Act of 1956 having at its registered office at ..... (wherever applicable) and wherever the context so requires includes its successors and assignees, hereinafter called 'the Contractor' has undertaken to ..... on the terms and conditions mentioned in the

a) Letter of Intent No .....  
 Dated.....

OR

	<b>MRPL Marketing Terminal Project at Devangonhi, Bangalore</b> <b>Marketing Infrastructure Projects, MRPL</b>	
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b) Agreement No.....

Dated.....



Referred to as “ the said Contract”,

And whereas the Owner has agreed to make an advance of Rs.....  
(Rupees.....) being .....% value of the contract  
on ..... as provided in the contract as the said advance to the Contractor  
carrying no interest.

AND WHEREAS the Contractor has agreed with the Owner authorizing him to deduct the said  
advance thereon under the terms of the said contract from the amount that becomes due and  
payable to the Contractor as per the terms and conditions described under the clause ‘Terms and  
conditions of Payment’ of the Contract on proper execution of the Contract.

Now this deed witnesseth that in consideration of the said advance or any balance thereof made  
by the Owner to the Contractor, the surety hereby GUARANTEES the payment of the said advance  
thereon by the Contractor, and undertakes to pay the Owner on demand the sum of  
Rs..... Subject to the following conditions.



- a) “Surety hereby gives an irrevocable guarantee and declares that its liability under  
this bond shall extend to the payment of the whole of amount viz.  
Rs..... paid as advance as provided for in the contract “as the said  
advance”.
- b) This Guarantee shall remain in full force and effect so long as the said advance or  
any part thereof remains outstanding and shall expire and become ineffectual only  
after the recovery of the entire sum of Rs..... covered by the guarantee and

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upon intimation thereof being given by the Owner to the Surety, in which event, the Surety shall be discharged by the Owner.

- c) The Surety shall not be discharged or released from the Guarantee by any arrangements made between the Owner and the Contractor with or without the consent of the surety or by any alteration in the obligations of the parties or by any indulgence, forbearance, whether as to payment, time performance or otherwise.
- d) The Guarantee shall come into force from the date Contractor receives from the Owner the said advance i.e, - (specify the date).
- e) Notwithstanding anything stated above, the liability of the Surety under the guarantee is restricted to Rs..... (Rupees .....  
.....) and this guarantee will remain in force upto  
..... at the first instance. However, if the contract for which this guarantee is given is not completed or fully performed, the surety (bank) hereby agrees to further extend the Guarantee till such time as is required by the owner to fulfil the contract.

\*\*\*\*\*

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**APPENDIX-VII**

**PROFORMA OF BANK GUARANTEE FOR SECURITY DEPOSIT/PERFORMANCE BOND**

The irrevocable Bank Guarantee (BG) in the following prescribed format if submitted against Earnest Money Deposit/PBG/SD/Mobilisation advance shall be subject to verification from the issuing Bank, the email ID of bank for the same must be incorporated in the BG.

The BG issued by the issuing Bank on behalf of Bidder/Contractor/Supplier in favour of “Mangalore Refinery and Petrochemicals Limited” shall be in paper form and also be made available under the “Structured Financial Messaging System” (SFMS).

A separate advice of the BG will invariably be sent by the issuing bank to the beneficiary’s Bank through SFMS and SFMS transmission message reference number (currently 32digits code) is to be sent along with BG directly to MRPL through speed post/regd. Post.

The details of beneficiary for issue of BG under SFMS platform is furnished below:

**Beneficiary Bank, Branch and address:** Union Bank of India (Erstwhile Corporation Bank)  
Kuthethoor Post Mangaluru 575030, Karnataka



**IFSC code:** UBIN0905925

**SWIFT Code:** UBININBBMAP

**MICR Code:** 575026018

Any bank guarantee submitted in physical mode which cannot be verifiable through SFMS will not be accepted under any circumstances

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(To be executed ON NON-JUDICIAL STAMP PAPER OF APPROPRIATE VALUE)



Ref: Bank Guarantee No.....  
Date.....

To:

M/s. Mangalore Refinery and Petrochemicals Ltd.,  
Regd. Office: Kuthethur P.O  
Katipalla, Mangaluru 575 030

Dear Sir,



1. In consideration of Mangalore Refinery And Petrochemicals Ltd., having its Registered Office at..... (hereinafter referred to as the “Company” which expression shall unless repugnant to the context or meaning thereof, include all its successors, administrators, executors) and having entered into a contract dated ..... (hereinafter called the “Contract” which expression shall include all the amendments thereto) with M/s. ....having its Head/Registered Office at.....(hereinafter referred to as the “Contractor” (which expression unless repugnant to the context or meaning thereof, shall include all its successors, administrators, executors and assigns) and the contract having been unequivocally accepted by the Contractor resulting in a contract bearing No..... dated..... Valued at for ..... (scope of work) ..... and the Company having agreed that the Contractor shall furnish to the Company a performance guarantee for the faithful performance of the entire contract to the extent of ..... % of the contract price, i.e. Rs..... (in word) we ..... (bank)..... having its Registered Office at.....(hereinafter referred to as the

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“Bank” which expression shall unless repugnant to the context or meaning thereof, include all its successors, administrators, executors and assigns) do hereby guarantee and undertake to pay on demand to the Company any money or all moneys to the extent of Rs..... (Rupees .....) in aggregate at any time without any demur, reservation, recourse, contest or protest and/or without any reference to the Contractor. Any such demand made, by the Company on the Bank shall be conclusive and binding notwithstanding any difference between the Company and the Contractor or any dispute pending before any Court, Tribunal, Arbitrator or any other authority. We agree that Guarantee herein contained shall be irrevocable and shall continue to be enforceable till it is discharged by the Company in writing.



2. The Company shall have the fullest liberty, without affecting in any way the liability of the Bank under this Guarantee from time to time, to extend the time for performance of the contract by the Contractor, or vary the terms of the Contract. The Company shall have the fullest liberty without affecting this Guarantee to postpone, from time to time, the exercise of power vested in them or of any right which they might have against the Contractor and to exercise the same at any time in any manner and either to enforce, or to forbear from enforce, any covenants contained or implied in the contract between the Company and the Contractor or any other course or remedy or security available to the Company. The Bank shall not be released of its obligations under these presents by any exercise by the Company of its liberty with reference to matters aforesaid or any of them or by reason of any other act or forbearance of other act or forbearance of other acts of Company or any other indulgence shown by the Company or by any other matter or thing whatsoever, which under law would, but for this provision, have the effect of relieving the Bank.
  
3. The Bank also agrees that the Company at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance, without proceeding



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against the Contractor and notwithstanding any security or other guarantee that Company may have in relation to the Contractor's liabilities.

4. The Bank further agrees that the guarantee herein contained shall remain in full force during the period that is taken for the performance of the contract and it shall continue to be enforceable till all the dues of the Company under or by virtue of this contract have been fully paid and claim satisfied or discharged or till the Company discharges the Guarantee in writing.
  
5. We further agree that as between us and Company for the purpose of this Guarantee any notice given to us by the Company and any amount claimed in such notice by the Company that the money is payable by the Contractor and any amount claimed in such notice by the company shall be conclusive and binding on us notwithstanding any difference between the Company and the Contractor or any dispute pending before any Court, Tribunal, Arbitrator or any other authority. We further agree that this Guarantee shall not be affected by any change in our Constitution or that of the Contractor or in the Constitution of the Company. We also undertake not to revoke this Guarantee during its currency or till the Company discharges the Guarantee in writing.
  
6. Notwithstanding anything contained hereinabove, our liability under this Guarantee is limited to Rs..... (Rupees ..... ) in aggregate and it shall remain in full force upto and including ninety days after ..... unless extended further, from time to time, for such period as may be instructed in writing by M/s..... on whose behalf this Guarantee has been given, in which case it shall remain in full force upto and including 90 days after extended date. Any claim under this Guarantee must be received by us before the expiry of the 90 days from ..... or before the expiry of the 90 days from the extended date. If no such claim has been received by us within the sixty days after the said date/extended date,

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the Company's right under this guarantee will cease. However, if such a claim has been received by us within and upto sixty days after the said date/extended date, all the Company's rights under this Guarantee shall be valid and shall not cease until we have satisfied that claim

Dated this ..... Day of .....200....

WITNESS:

\_\_\_\_\_  
(SIGNATURE)

\_\_\_\_\_  
(SIGNATURE)

\_\_\_\_\_  
(NAME)

\_\_\_\_\_  
(NAME)

\_\_\_\_\_  
(OFFICIAL ADDRESS)



\_\_\_\_\_  
(Designation with Bank Stamp)

\_\_\_\_\_ Attorney as per power of

Attorney No.....

Dated:.....

\*\*\*\*\*

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**APPENDIX-VIII**

**FORM OF TENDER**

**(To be filled up by the Tenderer)**

**For Price Bid**

Serial No.

Date:

From

\_\_\_\_\_

\_\_\_\_\_

To



Mangalore Refinery and Petrochemicals Limited

Phase III Refinery Project

Mangaluru

Tender No. \_\_\_\_\_

Having examined the Tender Documents consisting of the Notice inviting Tender, General Instruction of Tenderer, General Conditions of Contract, Special Instructions to Tenderers, Special Conditions of Contract, specifications, plans, drawings, time-schedule, form of Contract, form of tender, form of Schedule of Rates and Addendum (s) to Bidding Document having understood the provisions of the said Tender Documents and having thoroughly studied the requirements of Mangalore Refinery And Petrochemicals Ltd., relating to the work tendered for in connection with the construction of ..... (Name of Refinery/ Project , Mangaluru”, 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 facility, the availability and suitability of borrow areas, the availability of land for right-of-way and temporary office and accommodation quarters and all other factors and facilities and things whatsoever necessary or relative to the formulation of the tender and the performance of work. I/We hereby submit our tender offer for the performance of the proposed work in accordance with the terms and conditions and within the



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time mentioned in the Tender Documents at the rate(s) quoted by me/us in the accompanying schedules of rates based on the form of schedule (s) of Rates included within the Tender documents and arrived at a Total Contract Value of Rs.....(Rupees.....Only)

based on an application of the rates tendered in the accompanying Schedule(s) of Rates to the relative quantities indicated in the form of 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 document as defined in 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 / Award of Tender to pay to and/or deposit with the Accounts Officer, Mangalore Refinery And Petrochemicals Ltd., Mangaluru, a sum which, together with the amount of Earnest Money deposited by me/us in terms hereof, shall make Rupees ...../- (Rupees.....) as specified in the Acceptance / Award of Tender for the purpose of security deposit, by any one or more of the modes of payments specified 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 terms of the form of contract forming part of Tender Documents, within 10 (ten) days of receipt of Letter of Acceptance / Award from or on behalf of Mangalore Refinery And Petrochemicals Ltd., in this behalf failing which Mangalore Refinery and Petrochemicals Ltd., shall be at liberty, without further 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 Mangalore Refinery And Petrochemicals 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 4/6 (four/six)



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months from the Schedule date of opening of Tender 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) was/were employed as Directors of Mangalore Refinery And Petrochemicals Ltd., during the period of 2 (two) years immediately preceding the date hereof or I/We hereby declare that I/Sri....., one of our partners in the case of a partnership firm, was employed as a Director in the Mangalore Refinery And Petrochemicals Ltd. during the period of 2 (two) years immediately preceding the date hereof and that I/Sri..... have/has obtained previous permission of Mangalore Refinery And Petrochemicals Ltd., to participate in this tender.

I/We have annexed to this tender the following documents:

- (i) Schedule of Rates in the prescribed form:
- (ii) Original Power of Attorney or proof of authority of the person who has signed the Tender OR copy of Power of Attorney or duly attested by a Gazetted Officer in proof of 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;
- (iv) Original Sales Tax Clearance Certificate OR copy of Sales-tax Clearance Certificate duly attested by a Gazetted Officer;
- (v) Information regarding tenderer in the form annexed to the Form of Tender;
- (vi) Information regarding experience of work of a comparable nature in the form annexed to Form of Tender;
- (vii) Information regarding construction organisation and equipment in for form annexed to the Form of Tender;
- (viii) Solvency Certificate from a Nationalised/Scheduled Bank:
- (ix) Set of Tender Documents, as issued duly signed;

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(x) Any additional documents as listed below;

I/We hereby undertake that the statements made herein and the 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 mis-representation entitling Mangalore Refinery And Petrochemicals Ltd.to avoid any resultant contract.

I/We further undertake as and when called upon by Mangalore Refinery and Petrochemicals 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.)

By Demand Draft No..... Dated..... drawn.....  
Bank..... Branch.....attached hereto)

Dated this ..... day of .....200 .

Witness (Signature)

yours faithfully,

Name in block letters



Address

Signature(s) of the Tenderer (s)

Occupation:

**Name and designation of authorised person signing the tender on behalf of the tender (s).**

**Full name and address of the tenderer(s).**

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**FORM OF TENDER**

(To be filled up by the Tenderer)

**For Commercial Bid**

Serial No.

Date:

From

\_\_\_\_\_  
\_\_\_\_\_

To

Mangalore Refinery and Petrochemicals Limited



Phase III Refinery Project

Mangaluru

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 Mangalore Refinery and Petrochemicals Limited, 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 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 Tender Documents.

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In consideration of the sum of Rupee 1/- (Rupee one) only paid to me/us by Mangalore Refinery and Petrochemicals Limited, 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 schedule date of opening of Tenders as specified in the General Instructions to Tenderer 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 Mangalore Refinery and Petrochemicals Limited, during the period of 2(two) years immediately preceding the date hereof OR I/We hereby declare that I/Shri \_\_\_\_\_ on of our partners (in case of partnership firm/Directors in the case of a company) was employed as a Director in Mangalore Refinery and Petrochemicals Limited, during the period of 2 (two) years immediately preceding the date hereof and that I/Shri \_\_\_\_\_ have/has obtained previous permission of Mangalore Refinery and Petrochemicals Limited, to make this tender .

I/We have annexed to this Bid the following documents:

- (i) Schedule or 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 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 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.



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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 Mangalore Refinery and Petrochemicals Limited, to avoid any resultant contract.

I/We further undertake as and when called upon by Mangalore Refinery and Petrochemicals Limited 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

Singing 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

Singing the Tender on behalf of The Tenderer(s)

Full Name and address of the Bidder(s)



Witness:

Signature

Name:



Occupation:

\*\*\*\*\*

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## **PART I : TECHNO-COMMERCIAL**



### **SPECIAL CONDITIONS OF CONTRACT (SCC)**

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**SPECIAL CONDITIONS OF CONTRACT**

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- 1.0 GENERAL
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- 28.0 MECHANICAL COMPLETION
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#### **ANNEXURES TO SCC**

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- ii. Annexure – IA: Penalties for non adherence to the intermediate major milestones Time Schedules
- iii. Annexure – II: Terms of Payment
- iv. Annexure – III: Format for Sub-contractors approval



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- v. Annexure – IV: Qualification & Experience requirement of key construction personnel
- vi. Annexure – V : MRPL Contract Workers Safety Policy and Construction HSE Manual
- vii. Annexure – VI: Specification for Quality Management System
- viii. Annexure – VII : Specifications for Documentation requirements from Contractors
- ix. Annexure – VIII: Calibration Requirements of Monitoring & Measuring Devices at Construction Site.
- x. Annexure – IX : List of Iron & Steel Products
- xi. Annexure – X : Format for Affidavit of self-certification regarding Domestic Value addition in Iron & Steel Products
- xii. Annexure – XI : Construction Management Requirement
- xiii. Annexure – XII : List of Third Party Inspection (TPI) Agencies
- xiv. Annexure – XIII: Circular issued by O/o Chief Engineer, CPWD, Bangalore for Base Price of Steel for January 2021 (for example/illustration purpose)
- xv. Annexure –XIV: Snap Shot of All India Wholesale Monthly Price Index for **MILD STEEL: LONG PRODUCTS** released by Office of Economic Advisor to Government of India, Department of Industrial Policy and Promotion (DIPP), Ministry of Commerce and Industry for the Month of January 2021(for example/illustration purpose)

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## 1.0 GENERAL

- 1.1. These Special Conditions of Contract shall be read in conjunction with the General Conditions of Contract, specifications of work, drawings and any other document forming part of this contract wherever the context so requires.
- 1.2. Notwithstanding the sub-division of the document into these separate sections and volumes, every part of each 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.
- 1.3. The materials, design and workmanship shall satisfy the relevant Indian Standards, the Technical Specifications contained herein and codes referred to. Where the job specifications stipulate requirements in addition to those jobs contained in the standard codes and specifications, these additional requirements shall also be satisfied. In absence of any standards/ specifications/ codes of practice for detailed specifications covering any part of the work covered in this tender, the instructions/ directions of Engineer-in-charge will be binding on the CONTRACTOR.
- 1.4. Where any portion of the GCC is repugnant to or at variance with any provisions of the Special Conditions of Contract, then unless a different intention appears, the provision(s) of the Special Conditions of Contract shall be deemed to override the provision(s) of GCC only to the extent that such repugnancies or variations in the Special Conditions of Contract are not possible of being reconciled with the provisions of GCC. It shall be the responsibility of the CONTRACTOR to bring to OWNER's notice of any irreconcilable conflict before the start of work.
- 1.5. 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 Contract price shall be deemed to have included cost of such performance and/or provision, as the case may be.
- 1.6. In case of an irreconcilable conflict between Indian or other applicable standards, General Conditions of Contract, Special Conditions of Contract, Specifications, Drawings and/or Schedule of Prices, the following shall prevail to the extent of such irreconcilable conflict in descending order of precedence:

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- i. Formal Contract
- ii. Detailed Letter of Acceptance
- iii. Letter of Acceptance
- iv. Schedule of Price / Lumpsum Schedule of Price
- v. Special Conditions of Contract
- vi. Scope of works/Job Design Basis/Particular Specification.
- vii. Drawings
- viii. Technical/ Material Specifications.
- ix. Instructions to Bidders
  - x. General Conditions of Contract.
  - xi. Standard Specifications.
  - xii. Indian Standards.
  - xiii. Other applicable Standards.

1.7. In the absence of any Specifications covering any material, design or work(s) the same shall be performed/supplied/executed in accordance with standard Engineering Practice as per the instructions/directions of the Engineer-in-Charge, which will be binding on the CONTRACTOR.

## 2.0 TIME SCHEDULE

2.1 The Work shall be executed within the Time Schedule given in **Annexure-I** to the Special Conditions of Contract.



## 3.0 CONSTRUCTION WATER & POWER SUPPLY

### 3.1 CONSTRUCTION WATER

CONTRACTOR shall make his own arrangements for the supply of construction and potable/drinking water through water tankers or other means. All permissions and payments required for this shall be the responsibility of the Contractor and the same is included in the Lumpsum Price (SOP). Any statutory approval(s) required in this connection shall be obtained by the Contractor.

### 3.2 CONSTRUCTION POWER

Contractor shall arrange for Construction Power at his own cost and responsibility through DG sets or any other means. CONTRACTOR should have their own stand-by arrangement and no time extension or compensation shall be payable on this account. The CONTRACTOR shall not claim any extra time for completion of job due to power interruption. All permissions required and payments for this shall be the responsibility

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of the Contractor and the same is included in the Lumpsum Price (SOP). Any statutory approval(s) required in this connection shall be obtained by the Contractor.

- 3.2.1 The CONTRACTOR shall dismantle at his own cost the temporary power systems after completion of job before final bill payment.
- 3.2.2 CONTRACTOR shall take proper written permission from the Engineer-in-Charge before taking any temporary power supply. CONTRACTOR will make his own fool proof arrangement for temporary distribution.
- 3.2.3 In case CONTRACTOR is arranging any temporary connection for power, CONTRACTOR shall ensure the following points with the consultation of Engineer-in-Charge:
- a) The CONTRACTOR will provide suitable energy meter with valid calibration record on a board.
  - b) The CONTRACTOR will bring approved quality Distribution panel with earth leakage protection of proper rating to qualify for receiving power from owner.
  - c) The CONTRACTOR will bring distribution board of proper incomer rating and outgoing distribution feeders with MCCB/Switch fuse units of proper rating. The Distribution Board shall be approved by Engineer-in-charge.
  - d) There should be no loose & naked wire for taking supply from the board. Proper size of plug tops, lugs and glands to be used and there should not be any loose connection.
  - e) Proper earthing should be checked before taking the supply. Necessary Earthing pits to be constructed as required and ensure proper statutory compliance is met with. Earthing for all the metallic parts/ equipment used in the job should be provided from the existing earth grid. The size of earth continuity conductor should not be less than half of the largest current carrying conductors. No permanent structure shall be used as earth connecting conductor such as- water pipe, gas pipe, process pipe or member of steel structural etc.
  - f) Cable route markers shall be installed for underground cable routes.
  - g) Obtaining all statutory approvals as applicable shall be the responsibility of CONTRACTOR.
  - h) Contractor shall make all payments for Power to any externally agencies.

#### **4.0 EXCESS/SURPLUS MATERIAL**



- 4.1 The Contractor shall deliver the LSTK-B package as per the scope and terms of the contract. In case, the contract includes commissioning or mandatory spares etc., then these shall be handed over to the PMC/OWNER store with required SAP codes as per contractual terms. The Contractor shall remove all excess or surplus or balance or left-over materials



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which are procured or brought by him including the scrap generated by him during construction/erection and clear the site/work location before Closure of Contract / Demobilisation.

- 4.2 Surplus Civil construction materials comprising sand, bricks, stones and aggregate etc and the product of dismantling temporary works erected by the contractor shall vest in and belong to the contractor upon completion of the works and/or earlier termination of the contract for any cause, with right in the contractor, subject to the other terms and conditions of the contract, to remove the same from the job site subject to satisfactory proof of supply. Clearance/clean-up of such materials shall be scrap generated during execution of work and shifted out of project site. PMC/OWNER shall only be facilitating in issuing the necessary gate pass for removal such material from the Site. No other surplus material will be allowed to be taken out and deemed to be the property of the OWNER and the same shall be transported properly to the OWNER's store or as directed by OWNER..
- 4.3 Reconciliation of all excess/surplus material including free issue material(if any) with respect to scope of supply shall be carried out by the CONTRACTOR. All such left-over materials will not be allowed to be taken out and deemed to be the property of the Owner and the same shall be transported properly to the Owner's stores or as directed by OWNER. The reconciliation document shall be submitted to the PMC/OWNER and excess/surplus material shall be shifted and handed over to OWNER'S stores with SAP codes provided by OWNER if any, only after approval of reconciliation document by PMC/MRPL.
- 5.0 LAND FOR SITE OFFICE AND RESIDENTIAL ACCOMMODATION**
- 5.1 HSE for labours considering labour colony including sanitation, drinking water, dispensary, Canteen, Power supply, Cleaning etc. shall be in CONTRACTOR'S scope and the CONTRACTOR shall adhere to all safety norms as per Government/statutory guideline and Bidding Documents.
- 5.2 All other terms & conditions of Clause No. 3.7.0.0 of the General Conditions of contract remain unaltered.
- 5.3 Contractor to arrange for site office like portal cabin & Necessary space for the same will be allotted at site. Contractor to arrange for necessary telephone and other required facilities to site office. Contractor to strictly adhere to these conditions.

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## 6.0 PRICE, TAXES AND DUTIES

- 6.1 The Lumpsum Quoted Price in SOP shall be deemed to be inclusive of all taxes and duties, all cess including municipal taxes, statutory levies, royalty, Custom duty and Custom Related duties, income tax, Withholding tax in case of foreign bidder, GST Compensation cess (if applicable), etc., as applicable irrespective of whether the same is categorically specified or not but exclusive of "Goods and Services Tax" (hereinafter called GST) (i.e. IGST or CGST and SGST/UTGST applicable in case of interstate supply or intra state supply respectively. The GST as legally leviable & payable by the Contractor under the provisions of applicable law(s)/act(s) shall be reimbursed by OWNER as per Contractor's GST invoice to OWNER.
- 6.2 Lumpsum Price quoted by the Bidder/Contractor shall be inclusive of prices, taxes, duties, cess, etc., including GST as applicable on any transaction between Contractor and their sub-supplier/sub-contractor. The quoted price shall also be deemed to be inclusive of all taxes / duties / cess / levies / fees etc. including GST as applicable and CONTRACTOR only shall within their quoted price be liable to pay and bear any and all duties, taxes, levies, cesses etc. lawfully payable or liable to be payable on any goods, equipment or materials imported into India or procured within any local limits for incorporation in the work(s).
- 6.3 The Lumpsum Quoted Price shall also be inclusive of all cost towards Insurances taken by the Bidder/Contractor.
- 6.4 It shall be the duty of the CONTRACTOR to duly observe and comply with all laws, rules, regulations, orders and formalities etc., including applicable to GST, Customs Duty and Custom related Duties etc. on the import, manufacture, sale and/or supply, etc., of any material and taking input credit wherever available to the OWNER and performance of the Works Contract Services under the Contract. The CONTRACTOR shall keep the OWNER indemnified from and against any and all claims, demands, prosecutions, actions, proceedings, penalties, damages, demurrages and/or other levies whatsoever made or levied by any Court, Tribunal or the Customs or other Authorities with respect to any alleged breach, evasion or infraction of such duties, taxes, charges or levies or any breach or infraction of any applicable laws, rules, regulations, orders or formalities concerning the same etc and from the consequence thereof.
- 6.5 The CONTRACTOR shall be liable for and shall pay any and all fees, cesses, taxes, duties, levies etc. assessable against CONTRACTOR in respect of or pursuant to the Contract.

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6.6 In addition, the CONTRACTOR shall be responsible for payment of all duties, levies, and taxes assessable against the CONTRACTOR or CONTRACTOR's employees or their Sub Contractors whether corporate or personal or applicable in respect of property.



6.7 Any errors of interpretation of applicability of all taxes / duties / cess / levies / fees etc by the CONTRACTOR shall be to CONTRACTOR's account.

**6.8 Goods and Services Tax (GST)**

GST is implemented by Government of India w.e.f 01.07.2017. "GST" shall mean Goods and Services Tax charged on the supply of Goods and Services. The term "GST" shall be construed to include the Integrated Goods and Services Tax (hereinafter referred to as "IGST") or Central Goods and Services Tax (hereinafter referred to as "CGST") or State Goods and Services Tax (hereinafter referred to as "SGST") / Union Territory Goods and Services Tax (hereinafter referred to as "UTGST") depending upon the import / interstate or intrastate supplies, as the case may be.



**6.9 Invoicing under Goods and Services Tax (GST) Rules:**

- i. CONTRACTOR shall be required to issue tax invoice in accordance with GST and GST Rules, as applicable from time to time, so that input credit can be availed by Owner. In the event that the CONTRACTOR fails to provide the invoice in the form and manner prescribed under the GST Act read with GST Invoicing Rules there under, Owner shall not be liable to make any payment on account of GST against such invoice.
- ii. As per Section 17 (5) c) of CGST Act, the Owner will not get Input Tax credit for Works contract services when supplied for construction of an immovable property (other than plant and machinery).
- iii. GST shall be paid against receipt of tax invoice. Contractor / Vendor shall forthwith upload the appropriate document at GSTN portal complying with all GST regulations including but not limited to payment of GST by contractor / vendor. In case of non-receipt of tax invoice or non-payment of GST by the CONTRACTOR, Owner shall withhold the payment of GST.
- iv. GST payable under reverse charge for specified services or goods under GST act or rules, if any, shall not be paid to the CONTRACTOR. If the same has already been

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reimbursed / paid to the Contractor for any reason whatsoever, the said amount shall be deducted / recovered / adjusted from the payment due to the Contractor.

- v. Further, GST payment shall be limited to the amount worked out on the total executed and certified amount (on which GST is applicable) based on the contracted rates.
- vi. The CONTRACTOR shall mention their registration status (Registered / Composition / Unregistered) on the bill / invoice. In case there is change in the Registration status of the CONTRACTOR during the execution of the contract the same should be advised immediately. Due to change in the Registration status. Owner will not be liable for any additional payments, whatsoever, including tax payments.
- vii. The classification/description of goods/services as per GST Tariff should be correctly done by the CONTRACTOR to ensure that input tax benefit is not lost to the OWNER on account of any error on the part of the CONTRACTOR.
- viii. The CONTRACTOR shall comply with all the provisions of the GST Act /Rules / requirements like providing of tax invoices, payment of taxes to the authorities within the due dates, filing of returns within the due dates etc. To enable Owner to take Input Tax Credit. The CONTRACTOR shall always comply with the requirements of applicable laws and provide necessary documents as prescribed under the Rules & Regulations, as applicable from time to time. In particular, if any tax credit, refund or other benefit is denied or delayed to OWNER due to any non-compliance / delayed compliance by the CONTRACTOR under the Goods & Service Tax Act (such as failure to upload the details of the sale on the GSTN portal, failure to pay GST) or due to non-furnishing or furnishing of incorrect or incomplete documents by the CONTRACTOR, the CONTRACTOR shall be liable to reimburse OWNER for all such losses and other consequences including, but not limited to the tax loss, interest and penalty. Notwithstanding anything contained anywhere in the Agreement, Owner shall be entitled to recover such amount from the CONTRACTOR by way of adjustment from the invoice or from any other Securities like Bank Guarantees available to Owner. In addition to the amount of GST, OWNER shall also be entitled to recover interest at the rate prescribed under GST Act and penalty, in case any penalty is imposed by the tax authorities on Owner.
- ix. Notwithstanding anything contained anywhere in the Agreement, in the event that the input tax credit of the GST charged by the Contractor / Vendor is denied by the tax



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authorities to OWNER due to reasons attributable to Contractor/Vendor. OWNER shall be entitled to recover such amount from the Contractor / Vendor by way of adjustment from the next invoice or from Bank Guarantee. In addition to the amount of GST, OWNER shall also be entitled to recover interest and/or penalty, as the case may be, imposed by the tax authorities on OWNER.

- x. Notwithstanding anything contained anywhere in the Agreement, any cost, liability, dues, penalty, fees, interest as the case may be, to which OWNER becomes liable, at any point of time on account of non-compliance of applicable tax laws or rules or regulations thereof or otherwise due to default on the part of CONTRACTOR shall be borne by the CONTRACTOR. Such cost, liability, dues, penalty, fees, and interest as the case may be shall be paid forthwith by the CONTRACTOR and /or OWNER shall be entitled to recover such amount from the CONTRACTOR by way of adjustment from the invoice or from any other Securities like Bank Guarantees available to OWNER. Any GST as may be applicable on such recovery of amount shall also be borne by CONTRACTOR.”
- xi. TDS under GST, if applicable, shall be deducted from CONTRACTOR’s bill at applicable rates. A certificate for tax deducted at source by OWNER shall be provided to CONTRACTOR.
- xii. CONTRACTOR shall raise their invoice in favour of OWNER with following details:
- Mangalore Refinery and Petrochemicals Limited**  
**Kuthethoor P.O., Via Katipalla**  
**Mangaluru - 575030.**  
**GSTIN: 29AAACM5132A1ZZ**  
**PAN: AAACM5132A**
- xiii. Recoveries if any by OWNER shall be with applicable GST thereon as per GST laws.

#### 6.10 Road Permits / Way bills

- (i) CONTRACTORS shall arrange Road Permits / Way bills etc. by themselves and comply with all applicable statutory laws.
- (ii) In case statutory laws require issuance of Road Permit / Way bill etc. is to be arranged by the OWNER, OWNER will arrange to issue the same. In case any implication of the same is borne / to be borne by Owner and the same shall be

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adjusted against the payments due to CONTRACTORS against their bills or from any other Securities like Bank Guarantees.

- (iii) The CONTRACTOR will be under obligation for proper utilization of the same for the specific supply and in case of seizure of goods / vehicle; the CONTRACTOR will be wholly responsible for release and also pay the litigation cost of Owner. Owner also reserves the right to recover the same against the payments due to CONTRACTORS against their bills or from any other Securities like Bank Guarantees available to Owner.

#### 6.11 NEW TAXES & DUTIES

All new taxes / duties / cess / levies / fees notified after the date of unpriced bid opening / submission of any subsequent price implication / revised prices, but within Time for Completion / extended Time for Completion (by Owner due to reason attributable to OWNER), shall be to Owner's account. These shall be reimbursed against documentary evidence. However, in case of delay attributable to contractor, any new taxes / duties / cess / levies / fees imposed after Time for contractual Completion, shall be to contractor's account.

#### 6.12 STATUTORY VARIATIONS

No variation on account of taxes / duties / cess / levies / fees, etc., statutory or otherwise, shall be payable by OWNER to CONTRACTOR except for the variation in GST.



Any Increase in GST after the contractual completion period (including extended Completion period for reasons attributable to owner) shall be to CONTRACTOR's account, however, any decrease shall be passed on.

#### 6.13 IMPORT DUTIES

Custom duties on the imported material (if any) shall be included in the quoted prices and supplier/contractor shall be responsible for the timely payment of the custom duties to the relevant government authority. All harbour dues/ pilotage fees, port fees, wharf fees, unloading costs incurred in India in respect of any imported goods shall be to supplier's/contractor's account.

The Vendor / Contractor shall be responsible for, and shall exercise due diligence in properly classifying the goods and materials, undertaking the payment of custom duties, and/or otherwise complying with all applicable laws w.r.t. any import of the goods and materials.



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In case Owner is exposed to any penal action, interest /penalties by the custom authorities for incorrect declaration and / or valuation of the goods or material by the supplier, or otherwise on account of any breach of applicable laws in the course of the import of the goods and material by supplier, the supplier shall indemnify and hold harmless, Owner for any and all costs, expenses or losses suffered or incurred by Owner in this regard.

The bidder must ascertain, if any custom duty exemption/waiver is applicable to the products being supplied by him under any CEPA/FTA/multi-lateral/bi-lateral trade agreements between India and bidder's country.

Any custom duty applicability on account of any change in the CEPA/FTA/multilateral/bi-lateral trade agreement shall be to bidder's account-

#### 6.14 **INCOME TAX**

The CONTRACTOR shall be exclusively responsible and liable for all Direct Taxes, including income tax, profession tax and wealth tax, whether payable in India or in any other jurisdiction.



The CONTRACTOR shall be responsible for ensuring compliance with all provisions of the direct tax laws of India including, but not limited to, the filing of appropriate Returns and shall promptly provide all information required by the owner for discharging any of its responsibilities under such laws.

Tax shall be deducted at source by OWNER from all sums due to CONTRACTOR in accordance with the provisions of the Income Tax Act, as in force at the relevant point of time.

OWNER shall issue a Tax deduction or withholding certificate to the CONTRACTOR evidencing the Tax deducted or withheld and deposited by OWNER on payments made to the CONTRACTOR.

##### **a. Indian Income Tax : Withholding Tax / Deduction of Tax at Source**

Wherever the Indian Income Tax laws require OWNER to deduct or withhold and remit to the accounts of the Government of India, a sum as Tax Deducted at Source or Withholding Tax, out of any amount payable to or/and paid to the successful bidder in pursuance of any agreement/contract arising out of this tender, the same shall be

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effected by OWNER and such Tax Deducted at Source or Withholding Tax shall be from the amount payable to or/and paid to the bidder and not on account of OWNER.



**b. In case of Indian Bidder:**

- a) Tax deduction at source to be effected at the applicable rates, shall be to the account of the Indian Bidder and not to the account of OWNER. The Indian Bidder's Bid Value mentioned in the Price Bid under this tender shall be inclusive of the Tax deduction at source applicable under the Indian Income Tax Act, 1961.
- b) OWNER shall effect the tax deduction at source (TDS) at the rates applicable as per the Indian Income Tax Act, 1961 or any other applicable law in force, from any amount payable to or/and paid to the Indian Bidder.
- c) Where the Indian Bidder obtains from appropriate Indian Income Tax Authority, Withholding Tax Order in the name of OWNER mentioning OWNER's Tax Deduction Account Number (TAN) 'BLRM00218B' (WHT Order), under section 197 of the Indian Income Tax Act, 1961, for deduction of tax at source at lower rate or for no deduction of tax at source, and furnishes the said Withholding Tax Order to OWNER at the time of remittance of any amount payable to the Indian Bidder, then OWNER shall effect the tax deduction at source at the lower rate specified in the Withholding Tax Order or shall effect no tax deduction at source, as the case may be, from the amount payable to the Indian Bidder. However, such effecting of tax deduction at source at the lower rate specified in the Withholding Tax Order or effecting of no tax deduction at source, as the case may be, from the amount payable to the Indian Bidder shall be subject to the limits or conditions prescribed in the said Withholding Tax Order.
- d) OWNER shall furnish to the Indian Bidder, original or certified copy of Certificate of tax deduction at source remitted to the Government Accounts in Form-16A or equivalent, for any tax deduction at source affected by OWNER under the Indian income Tax Act, 1961.

**6.15 FIRM PRICES**

The Lumpsum Quoted Price shall remain firm and fixed and valid until completion of the contract and shall not be subject to escalation for any reason what so ever.



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**7.0 APPLICABILITY OF TAX CREDIT OF GST:**

OWNER may claim input tax credit on GST and on any other taxes & duties as per the relevant statutes in force and the credit on account of the same shall be considered for evaluation. The bidders shall furnish the present rate of GST as applicable and is payable against proper invoice as per statutes. The bidders should quote taxes and duties separately (In rates as well as in values) expected in the Schedule of Price (SOP).

**8.0 TERMS OF PAYMENT**



Terms of Payment shall be as per attached **Annexure - II**.

In addition to the Payments Terms as per Annexure-II, Bidder should also take a note of the following:

As per The Karnataka Labour Welfare Fund Act, 1965, any Employer/Establishment employs fifty or more employees /persons contribution towards Labour Welfare Fund need to done on yearly basis on or before 15<sup>th</sup> January of every year. This includes both regular and contractual employees.

<b>Labour Welfare Fund Contribution (Under Section 7A of the Act)</b>					
Category	Employee Contribution (Contractor employees)	Employer Contribution (Contractor)	Total Contribution	Date of Deduction	Last Date for Submission
All employees who are employed for wages to do any work skilled or unskilled, manual or clerical, in an establishment	20.00	40.00	60.00	31 <sup>st</sup> December	15 <sup>th</sup> January

Accordingly, the CONTRACTOR (Employer) is requested to do the needful and submit the proof of remittance with regard to same to OWNER. If no communication is received from the CONTRACTOR, then OWNER being principal employer, will remit the same on behalf

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of every CONTRACTOR and contribution amount will be deducted from their bills as per prevailing practice.

## 9.0 PENALTIES

Payments are subject to deductions towards the Penalties as specified in various Annexures to the SCC and else where in the Tender documents.

## 10.0 SUB-CONTRACTING

10.1 If the CONTRACTOR is required to engage a Sub-Contractor for any part of work, then such Sub-Contractors shall have credentials of similar work and shall require approval by PMC/ OWNER before award of such work.

10.2 CONTRACTOR shall submit to the PMC/ OWNER for approval, the details of Sub-Contractors as per **Annexure-III** to this Special Conditions of Contract. CONTRACTOR shall ensure that very competent and resourceful agencies with credentials should be proposed for the work to be sub-contracted.



10.3 Any Sub-Contractor being proposed by the CONTRACTOR should not be on holiday list of Government of India/ PSUs.

## 11.0 QUALIFICATION AND EXPERIENCE OF KEY SUPERVISORY PERSONNEL

Qualification and Experience of Key Supervisory Construction Personnel to be deployed for this work shall be as per **Annexure-IV** to these Special Conditions of Contract. CONTRACTOR shall submit bio-data of Key Supervisory Personnel meeting the requirement of this Appendix, after award, which will be reviewed and approved by Engineer-in-Charge. The CONTRACTOR shall without prejudice to his responsibilities to execute and complete the work as per the specifications and time schedule, progressively deploy minimum key supervisory personnel as indicated in Annexure-IV to SCC and further augment the same depending on the exigencies of work and as decided by the PMC/OWNER so as to suit the construction schedule within scheduled completion date without any additional cost to OWNER.

## 12.0 INDIRECT OR CONSEQUENTIAL LOSS

The CONTRACTOR shall not be liable for loss of use of any part (or full) of the works or for loss of production, loss of profit or other indirect or consequential loss or any like damage which may be suffered by the OWNER in connection with the Contract.

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The Owner or its other contractors or their personnel shall in no event be responsible for or liable to the Contractor or his Sub-contractor for consequential damages suffered by the contractor or his sub-contractor as above. The Contractor shall protect, defend, indemnify the Owner, its employees, appointed representatives, agents and other Contractors, etc., from such claims.

### 13.0 OTHER CONDITIONS

1.	GST	%age of GST Input Credit available to OWNER.	Applicable GST as quoted shall not be considered for evaluation of total cost to the extent of input Tax credit (as applicable), as OWNER will claim Input credit on the same. Balance (as applicable) of GST shall be considered for evaluation for Total cost. MRPL is not availing input tax credit for this project.
2.	Custom Duty	Import shall be at merit of Custom Duty or any other concessional rate Of Custom Duty.	This project is not entitled for any concession.
3	Consignee details	Who will be Consignee of goods for Import as well as Indigenous?	Contractor
4	Bill of Entry	Bill of Entry shall be filed in whose name i.e. Contractor /OWNER.	Contractor
5	Road Permit	Road Permit shall be issued by OWNER Or PMC or Contractor.	Contractor

### 14.0 LABOUR LICENSE/ LABOUR LAWS AND REGULATIONS

14.1 Before starting of work, the CONTRACTOR shall obtain a license from the concerned authorities under the Contract Labour (Abolition and Regulation) Act, 1970 and shall furnish copy of the same to OWNER. The labour license for the appropriate labour shall be valid for the total contractual period including extended period, if any.

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14.2 **LABOUR LAWS AND REGULATIONS** Labour laws and regulations as mentioned in GCC Clause No. 8.3.0.0 are applicable.

However the following is added to the said clause:

- i. Contractors and their Sub-Contractors shall carry out all payments to their workforce through their individual bank accounts only. The records of such bank transfer shall be submitted as proof of compliance along with the wage registers. The wage registers are to be certified by Engineer in charge. Wage registers without these statements will not be accepted.
- ii. Details of bank accounts of the individual workmen shall be submitted for issuance of gate pass. Contractors and their sub-contractors shall ensure that minimum wages as notified from time to time are paid and the wage register and transfers shall be verified on the basis of such minimum wages.
- iii. **Group term Life insurance cover to be taken having a risk coverage 24X7 death coverage (Natural / Accidental death) with a sum assured of Rs. 10,00,000/- (Rs.Ten lakh ) per person by the contractor.**
- iv. The details of documents to be submitted to HR Department by the Contractor duly signed by Engineer-In-charge as per relevant clause of SCC.

## 15.0 LABOUR RELATIONS



15.1 In case of labour unrest/ labour dispute arising out of non-implementations of any law the responsibility shall solely lie with the CONTRACTOR and he shall remove/ resolve the same satisfactorily at his cost and risk.

15.2 The CONTRACTOR shall deploy only duly qualified and competent personnel for carrying out the various jobs as assigned by the Engineer-in-Charge from time to time. The workmen deployment by the CONTRACTOR should also possess the necessary licence etc., if required under any law, rules and regulations.

## 16.0 EMPLOYMENT OF LOCAL LABOUR

16.1 The CONTRACTOR shall ensure that local labour, skilled and/or unskilled, to the extent available shall be employed for this work. In case of non-availability of suitable labour in any category out of the above persons, labour from outside may be employed.

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

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**17.0 CONTRACTOR'S LABOURERS TO LEAVE SITE ON COMPLETION OF THE WORK**

The Labourers of Contractor must leave the location of the project site after the work is tapered off/completed.

**18.0 FUEL REQUIREMENT OF WORKERS**

The CONTRACTOR shall be responsible to arrange for the fuel requirement of his workers and staff without resorting to cutting of wood for fuel.

**19.0 PROVIDENT FUND**

The CONTRACTOR shall strictly comply with the provisions of Employees Provident Fund Act and register the establishment with the concerned Regional Provident Fund Commissioner before commencing the work. The CONTRACTOR shall deposit "Employees" and "Employers" contributions in the designated account with the designated Authority every month. The CONTRACTOR shall furnish along with each running bill, the challan/ receipt for the payment of provident fund made to the RPFC for the preceding month(s).



In case the Provident Fund Authority's received challan referred to above is not furnished, OWNER shall deduct 5% (five percent) of the payable amount from the CONTRACTOR'S running bill and retain the same as a security for the payment of the Provident Fund. Such retained amounts shall be refunded to the CONTRACTOR only on production of challan/ receipt of the Provident Fund Authority for the period covered by the related deduction.

**20.0 ENTRY PASSES, GATE PASSES, WORK PERMITS AND SAFETY REGULATIONS**

As such, CONTRACTOR is required to abide by safety and security regulations of OWNER enforced from time to time. CONTRACTOR shall establish a valid photo ID pass system for entry and exit of workers inside the Project Site. CONTRACTOR shall also establish pass system for entry and exit of all kinds of vehicles entering the Project Site.

**20.1 VEHICLE PERMIT**

- I. The following requirements are to be met to obtain vehicle permit:
  - i) Vehicle/Equipment etc. should be brought to site in good conditions.
  - ii) Valid Road tax certificate, fitness certificate, PUC and insurance policy from competent authority.
  - iii) Valid operating/ driving licence of driver/operator

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## 20.2 WORK PERMIT

For works during pre-commissioning, commissioning and startups and operation areas, Contractor shall follow MRPL work permit system.

## 20.3 SAFETY REGULATIONS



- I. The work shall be carried out inside the project site as per safety practices enforced by OWNER and instructions of Engineer-in-charge issued from time to time. Many times it may happen that the working hours shall be drastically reduced or increased to meet certain safety requirements and the CONTRACTOR shall meet these requirements without any argument for time and financial implications.. No claim for idling of machinery, plant, manpower etc. for safety reasons shall be considered.
- II. The CONTRACTOR shall abide by all safety regulations in project site and ensure that safety equipment for specific job kit as stipulated in the factory act/ safety handbook is issued to the employee during the execution of work, failing which all the works at site shall be suspended Welding & electrical cables should be of approved quality, and no jointing and loose connection shall be permitted.
- III. At the end of the working day the CONTRACTOR must inform electrical section to switch off power.
- IV. The CONTRACTOR must provide cotton dress, safety shoe, safety helmet, safety belt, hand gloves of approved quality to his workers to meet the safety requirement of various jobs to be carried out inside the project site.
- V. Regarding use of Vehicle:
  - i) Vehicle must not ply on any road within the project site at speed exceeding 10KM/hr.
  - ii) Mobile crane/ loaded trucks/ trailers must not exceed speed limit of 10 KM/hr inside the project site.
  - iii) No crane is allowed to move inside the project site with load.

## 20.4 DEDUCTION TOWARDS ACCIDENTS

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 lump sum Price(maximum of Rs.2,00,000) per injury in addition to Rs.5,000/-.



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

## 21.0 HEALTH, SAFETY AND ENVIRONMENT (HSE) MANAGEMENT

Safety is to be given prime importance. During construction and operation CONTRACTOR shall strictly follow the safety procedures, precautions, norms laid down by OWNER. In case of non-compliance, Engineer-in-Charge shall give notice to the Contractor. In case of repeated failure of the Contractor, Engineer-in-Charge is free to take actions such as withholding of bills, heavy penalty etc. The quantum of such actions will be decided by the Engineer-in-Charge.

Bidder shall include in his offer the Health, Safety and Environment (HSE) Management and procedures which is required to be adhered to during the execution of contract. After the award of the contract, detailed Health, Safety and Environment (HSE) programme to be followed for execution of contract under various divisions of works will be mutually discussed and agreed to.

The CONTRACTOR shall establish document and maintain an effective Health, Safety and Environment (HSE) management system.



In case CONTRACTOR fails to follow the instructions of Engineer-in-charge with respect to above clauses, next payment due to him shall not be released unless until he complies with the instructions to the full satisfaction of Engineer-in-charge.

The Contractor shall also adhere to the requirements of OWNER specifications on Safety, enclosed as **Annexure- V** to this SCC.

## 22.0 COMPUTERISED CONTRACTOR'S BILLING SYSTEM

Without prejudice to stipulation in General Conditions of Contract, CONTRACTOR should follow following billing system:

The bills will be prepared by the CONTRACTOR shall be computerised and as per the standard formats and codification scheme proposed by PMC/OWNER. The CONTRACTOR will submit soft copy in native format to PMC/OWNER in an electronic media along with the hard copy of the bill with necessary enclosures and documents. The CONTRACTOR will also ensure the correctness and consistency of data so entered with the hard copy of the bill submitted for payment. OWNER will utilize these data for processing and verification of bill of the CONTRACTOR.

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### 23.0 INTEGRITY PACT

Pro-forma of Integrity Pact (IP) as per **FORM - M1 along with format of AFFIDAVIT W.R.T. INTEGRITY PACT (FORM M2)** of Proposal Forms shall be returned by the bidder along with the un priced bid, duly signed on all pages by the same signatory who is authorized to sign the bid documents. Bidder's failure to submit the Integrity Pact duly signed shall result in the bid not being considered for further evaluation.

### 24.0 SETTLEMENT OF DISPUTE BETWEEN GOVERNMENT DEPARTMENT AND PUBLIC SECTOR UNDERTAKINGS

If the CONTRACTOR is a PSU or Enterprise or is a Govt. Department, any disputes or differences between the Contractor and OWNER hereto arising out of any notified claim of the CONTRACTOR in terms hereof and/or arising out of any amount claimed by OWNER (whether or not the amount claimed by OWNER or any part thereof shall have made to the CONTRACTOR in respect of the work), then in suppression of the provisions of Section 9 of the General Conditions of Contract, the following provisions shall apply, namely; such disputes or differences shall be resolved amicably by mutual consultation or through the good offices or empowered agencies of the Government.



If such resolution is not possible, then the unresolved disputes or differences shall be referred to arbitration of an arbitrator to be nominated by the Secretary, Department of legal affairs (Law Secretary) in terms of the Office Memorandum No. DPE/4(10)/2001-PMA-GL-I date 22<sup>nd</sup> January, 2004 issued by the Cabinet Secretariat (Department of Cabinet Affairs) as modified from time to time.

The Arbitration Act shall not be applicable to the arbitrator under this clause. The award of the arbitrator shall be binding upon parties to the dispute, provided, however any party aggrieved by such award may make a further reference for setting aside or revision of the award to Law Secretary whose decision shall bind the parties finally and conclusively. The parties to the dispute will share equally the cost of arbitration as intimated by the arbitrator.

### 25.0 COMBINED REGISTER UNDER VARIOUS LABOUR LAWS RULES, 2017:

As per the Notification issued by Ministry of Labour and Employment vide their gazette notification no. G.S.R.154 (E) dated 21/02/2017, for ease and for expedient compliance of the requirement of the various labour related laws, a combined registers has to be maintained under certain labour related laws. If the combined register is required for inspection by the concerned inspector appointed under any of the enactments referred in



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the rules, the concerned persons shall make available the combined registers or provide necessary particulars for the purpose of accessing the information as the case may be.

## 26.0 THIRD PARTY INSPECTION AGENCIES



Pursuant to clause no 4.7.4.0 of General Conditions of Contract the CONTRACTOR shall arrange Third Party Inspection through approved agencies of the PMC/OWNER for items sourced & supplied within India and also for Imported Items as per **Annexure XII**.

## 27.0 PRICE ADJUSTMENT FOR SLIPPAGE IN MECHANICAL COMPLETION

1. The Clause No. 4.4.0.0.of GCC stand partially modified to the following extent:

In case of any delay in **MECHANICAL COMPLETION OF THE LSTK-B PACKAGE** beyond the Time schedule as defined in Table A of **Annexure I** to SCC, the Owner shall be entitled to a discount in the total Lump sum price (SOP). The discount shall be applicable at the rate of 0.5% (half percent) of the total Lump sum price of LSTK-B Contract for every week of the delay or part thereof subject to a maximum of 5% of the total Lump sum price of LSTK-B Contract. The above discount shall be recovered by the Owner out of the amounts payable to the Contractor or from any Bank Guarantees or Deposits furnished by the Contractor or the Retention Money retained from the Bills of the Contractor, either under this contract or any other Contract with Owner.

2. Price Adjustment, if applicable, shall be made only after settlement of the contractor request for time extension. Until finalization of this aspect, whether price adjustment or extension of time schedule, the contractor shall submit a bank guarantee for the amount of price adjustment, in a format approved by OWNER
3. As an alternative the contractor shall have an option to provide a Bank Guarantee from a scheduled 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 LSTK-B Package. 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 or 18 months from date of Commissioning whichever is earlier.

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4. In case the Contractor submits a BG in lieu of “Price Adjustment for slippage in completion” which has been deducted/ proposed to be deducted, the amount withheld on account of “Price Adjustment for slippage in completion” would be released/ “Price Adjustment for slippage in completion” would not be deducted.

## 28.0 MECHANICAL COMPLETION

Definition of Mechanical completion clause 1.0.32.0 of GCC, stands modified and replaced as given below:

The LSTK-B Package is said to have achieved Mechanical Completion when:

- the construction of the all works has been completed in all respects as detailed in this LSTK-B Package Tender.
- attending to all punch list items as provided by OWNER/PMC and Statutory bodies like OISD, CCE, TAC, Factory Inspectorate, Pollution control authorities etc.
- all the works are tested and ready for integration with other LSTK Works for Pre-Commissioning and Commissioning and Start-up of the Petroleum Storage & Marketing Terminal.

## 29.0 COMMISSIONING

Definition of "Commissioning" as provided in clause 1.0.10.0 of GCC, stands modified and replaced as given below:

Carrying out following activities shall be defined as "Commissioning".



After completion of all the scope as listed in technical specification and Bidding document and achieving of Mechanical completion, the Petroleum Storage & Marketing Terminal is said to have achieved commissioning when:

- Pressing into service the unit(s), equipment(s), vessels, pipeline(s), Machinery and systems & sub systems comprised in the the Petroleum Storage & Marketing Terminal in accordance with approved procedures/operation manual.
- Commissioning means the successful introduction of hydrocarbon in the Terminal system and the stable operation of the units for a continuous period of not less than seventy two (72) consecutive hours thereafter.

## 30.0 DEFECT LIABILITY

Defect Liability Clause 5.4.1.0 of GCC stands modified and replaced as given below:

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

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- 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 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 ensure(s) for a period in excess of the primary Defect Liability Period specified above.
- iii. Following additional guarantees shall be make good: -
  - a) Guarantee with respect to meeting all statutory requirements
  - b) Performance guarantee mentioned elsewhere in the Bidding document.
  - c) Guarantee for engineering and workmanship.

**31.0 POLICY FOR PROVIDING PREFERENCE TO INDIAN MANUFACTURED IRON & STEEL PRODUCTS IN GOVERNMENT PROCUREMENT (DMI & SP).**



“Ministry of steel, Govt of India, vide their notification The gazette of India, extraordinary part II no.357 dated 09.05.2017”, notified the policy for providing preference to domestically manufactured iron & steel products in government procurement”:

Under the policy, purchase of the iron & steel products covered under column “a” of **Annexure – IX TO SCC (Enclosed)** of the policy shall be subject to minimum value addition as stipulated in the Appendix. Value addition shall be determined by formula specified in clause 7.2 of the policy.

The bidder shall be the manufacturer of offered product except if the specific enquiry permits sole selling/authorized distributors/authorized dealers/authorized supply houses etc. Of the domestic manufacturers.

In case of detection of mis-declaration by the bidder of the prescribed domestic value addition, in the tender document, at any stage before or after award, the following actions shall be taken by the procuring company:

- A. Forfeiture of CPBG depending upon the stage of detection.
- B. Banning of business dealings in line with the policy.

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In case of any complaint or doubt regarding the domestic value addition furnished by a bidder in his bid, PMC/OWNER shall reserve the right to verify the domestic value addition. The bidder shall provide unhindered access to his relevant records in this regard, to the authorized representatives of PMC/OWNER. In case of such verification, if the bidders claim is found to be incorrect, in addition to the actions stipulated in 64.3 above, the bidder shall pay Rs. 10 Lakh to OWNER as the lump sum cost of verification.

Bidder shall furnish self-certification as per format enclosed FORM-1 (Enclosed as **Annexure-X with** SCC) with the policy else bid of such bidder shall be rejected. The same is enclosed here with for bidder compliance.

**Clause 7.2 of the policy:**



*In case the iron & steel products are made-*

- a) *Using domestic input steel (semi-finished/finished steel), invoices of purchases from the Actual domestic producers along with quantities purchased and other related documents must be furnished to procuring government agency.*
- b) *Using a mix of imported and domestic input steel, the invoices of purchase from the actual producers along with quantities purchased and other related documents must be furnished separately. to derive the extent of domestic value addition, the weighted average of both (imported & domestic) input steel shall be considered to ensure that the minimum stipulated domestic value addition requirement of the policy is complied with.*
- c) *Using only imported input steel, the following formula shall apply to calculate the Percentage of domestic value-addition. Domestic value addition (%) = (net selling price- landed cost of imported steel at the plant)\*100/(landed cost of imported input steel at the plant).*

Bidder to comply with the above requirement of the Gazette.

**32.0 DETAILS OF MINIMUM PAYMENT TO WORKFORCE EMPLOYED BY CONTRACTOR**

The contractor shall pay Minimum as per the following table to the workforce deployed by him under various categories (Unskilled / Semiskilled / Skilled / Highly Skilled) as applicable;



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Sl no	Description	Payment basis			
1	Basic Wages per day	As per Minimum wages act issued from time to time by ALC			
2	PF/Admin charges	13.00 % of Basic Wages & MRPL Special Allowance			
3	ESI	3.25 % of Basic Wages, MRPL Special Allowance & Shift allowance (if applicable).			
4	Leave Wages	5 % of Basic Wages (As per ALC)			
5	Bonus	8.33 % of min wages or Rs 7000 /- per annum whichever is higher			
6	Holiday wages	10 days per year			
7	MRPL Special Allowance per day	Unskilled (in Rs)	Semi Skilled (in Rs)	Skilled (in Rs)	Highly skilled (in Rs)
		34	50	70	90

**Note:** Please refer details of the Minimum wages as mentioned in the SCC/Scope of Work (as applicable).

The following to be complied:

- a) Shift allowance (if applicable) – Shift allowance @ Rs 25/- per shift to be provided to Secondary work force coming in rotational shift (i.e., morning, evening and night shifts) working in Project Site area.
- b) Annual Medical Check-up for Workforce to be complied by the contractor.
- c) PF/ESI remittance to be ensured on MRPL Special Allowance.
- d) Rates of MRPL special allowance which has to be paid by the Contractor shall be Rs 34, Rs 50, Rs 70 & Rs 90 for Unskilled, Semi-Skilled, Skilled & Highly Skilled Category respectively.
- e) Gratuity to be paid as per the statutory norms based on the government directives.
- f) Number of closed Holidays shall be 10 days per year.
- g) Extended working hours shall be compensated suitably as per statutory provisions.
- h) Group term life Insurance cover to be taken having a risk coverage 24 X 7 death coverage (Natural/Accidental death) with a sum assured of Rs.10,00,000/- (Rs. Ten lacs only) per person.
- i) Statutory provisions if in contradiction will prevail over any Special conditions of the Contract.

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- j) Transportation facility in respect of Secondary Workforce for commuting to entry gates of project site shall be in the scope of the contractor.
- k) For ensuring compliance to the above, suitable number of welfare officers to be placed by contractors with respect to all statutory provisions.
- l) Helmet, Shoes, Raincoat to be provided to the workforce and proof to be submitted.

### 33.0 INSURANCE

Following clauses shall be read in conjunction with GCC Clause No. 8.5.0.0 pertaining to insurance:

Within 30 days of placement of Letter of Acceptance by the OWNER, the CONTRACTOR without restricting in any manner any other provisions of the Contract, and in particular any such provision pertaining to his obligation, liability or responsibility shall take out and keep in force at his expenses the various insurance policies specified herein for the benefit of and in the joint names of the OWNER and the CONTRACTOR against all risks for physical losses or damages suffered by Works and Temporary works or part of the Works up to the Contract Value thereof or such additional sum as may be specified in the Contract in such a manner that the OWNER and the CONTRACTOR are covered.



CONTRACTOR shall at his own cost and expense take out from a suitable insurance company acceptable to OWNER and maintain for the entire period until ACCEPTANCE OF WORKS or until such time thereafter as the CONTRACTOR may consider appropriate Insurances as described under this Clause below and quoted Lumpsum price (SOP) shall be inclusive of the same.

The CONTRACTOR shall be solely liable in the event of his and/or SUBCONTRACTOR's having caused any loss or damage of any nature arising out of or in connection with the execution of the WORK and shall indemnify the OWNER and /or his representative in respect of any claim in respect of any such loss or damage.

The CONTRACTOR shall take out following Insurances, as a minimum :



- 1) All the material and equipment's within Project premises to be incorporated in permanent works shall be covered by under Comprehensive "All Risks" Insurance policy. The Contractor at his own cost shall take an "all risk" type Comprehensive Insurance policy. CONTRACTOR's All Risks Insurance (CAR) covering physical loss or damage to the Works at the site, occurring prior to Acceptance of the Works.
- 2) Insurance Cover for Workmen: The CONTRACTOR shall obtain adequate Insurance Policy in respect of his workmen to be engaged for the work compulsorily towards compensations as admissible under the Workmen's Compensation Act 1923 and rules framed there under upon death/disablement of a worker and the same has to be produced to the concerned in charge of Administration Section before start of the work. All workers whose salary is more than Rs 21,000/- per month (Prevailing rate as per the act) need not to be covered by ESI. However, CONTRACTOR to take



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insurance policy to cover the risk towards temporary disablement and permanent disablement for the workmen.

- 3) Workmen's Compensation Insurance (WCI) : This insurance shall confirm to and satisfy all the requirements of the applicable laws and regulations of the country, state territory or province having jurisdiction over the Contractor's employees engaged in the WORKS.
- 4) Employer's Liability Insurance (ELI): The insurance shall cover the liability of the CONTRACTOR as employer, for compensation beyond the coverage of the Workmen's Compensation Insurance for bodily injury to or loss of life the CONTRACTOR's employees while engaged in the WORKS.
- 5) Third Party Liability Insurance (TPL): This insurance shall cover legal liability for bodily injury to loss of life of and/or damage to and loss of properties of the third person party arising out of the performance by the CONTRACTOR of the works.
- 6) Automobile Liability Insurance (ALI): This insurance shall cover all the CONTRACTOR's liabilities in connection with use by the CONTRACTOR for the WORKS of any mobile equipment and automobile and when used which are owned, non-owned hired and otherwise placed under the CONTRACTOR's administration and control, for bodily injury to loss of life of and/or property damage of any person or party.
- 7) Movable All Risks Insurance (MRI): This insurance shall cover the damage to and/or loss of the CONSTRUCTION EQUIPMENT and further including the CONTRACTOR's TEMPORARY WORKS, owned, non-owned, hired or otherwise placed under the CONTRACTOR's administration and control with the full replacement value coverage for each and every occurrence.
- 8) Other Insurance  
 Other insurance which shall be necessary or which the CONTRACTOR deems necessary for proper performance of the WORK, e.g :
  - Overseas (and/or Domestic) Travellers' accident Insurance.
  - Burglary Insurance
  - All Risks marine cargo Insurance for the CONTRACTOR's construction Equipment, tools and machinery, and for equipment and materials that the CONTRACTOR's TEMPORARY WORKS and that the CONTRACTOR under the CONTRACT may supply for the WORKS and/or the PERMANENT WORK and
  - Fidelity Guarantee Insurance.
  - Group term Life insurance cover to be taken having a risk coverage 24X7 death coverage (Natural / Accidental death) with a sum assured of say Rs. 10,00,000/- (Rs. Ten lakh ) by the CONTRACTOR.

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**34.0 BROAD GUIDELINES FOR EFFECTIVE IMPLEMENTATION OF CONTRACT MANAGEMENT SYSTEM AND MEETING OF STATUTORY REQUIREMENTS IN ENGAGEMENT OF SECONDARY WORKFORCE**

A. Wherever a work order is issued following documents are required to be submitted to HR Department by Contractor duly signed by Engineer in Charge :

I) Where labour engaged by the Contractors is less than 19 :

1. Copy of the valid Work Order/ LOA Copy.
2. Work Commencement letter by the Contractor in Form 6A/ Notice of commencement.
3. Register of Workmen in Form No. XIII.
4. Copy of PF Code allotted by the Competent authority.
5. Copy of ESI code allotted by the competent authority.
6. Workmen's compensation policy.
7. Age proof, Aadhar card number and Bank account details of the worker.



II) Where labour engaged by the Contractors is more than 19 :

1. Copy of the valid Work Order.
2. Work Commencement letter by the Contractor Form 6A/ Notice of commencement.
3. Register of Workmen in Form No. XIII.
4. Copy of PF Code allotted by the Competent authority.
5. Copy of ESI code allotted by the Competent authority.
6. Request letter from the Contractor for issuance of Form No. V for apply labour license through EIC.
7. Submission of Form No. IV for proof of applying labour license attested by the ALC.
8. Interstate migrant license copy if labour engaged more than five from other states.
9. Workmen's compensation policy.
10. Age proof, Aadhar card number and Bank account details of the worker.



III) Documents required on monthly basis duly certified by Engineer in Charge:

1. Wage Register duly certified by the Engineer Incharge.
2. Attendance Register duly certified by Engineer Incharge.



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3. Payment of wages should be disbursed within 7 days from the close of wage period.
  4. ESI/ PF Challans receipt along with PF-ECR Copy & Monthly contribution details for payment permitted to Statutory Authorities in respect of the wages paid for the previous month with covering letter.
  5. Bank Statement for wages paid.
  6. Insurance copy for those who are not covered under ESI Act.
  7. Form No. 5 & 10 and Male and female data for each month.
- B. Documents required on Annual basis for release of Bank Guarantee / Security Deposit duly certified by the Engineer In charge:
1. Work Completion letter by the Contractor in Form 6A/ Notice of completion.
  2. Annual Medical Check-up data.
  3. Payment of bonus as per Statue.
  4. Payment of leave with wages @ 1day for the every 20 days worked by workers.
  5. Payment of gratuity if applicable (on completion of 5years of continuous service).
  6. Register of overtime. Form No. XXIII.
  7. Wage slip in Form no. XIX.
  8. Register of damages or loss Form no. XX.
  9. Register of fine. Form No. XXI.
  10. Register of Advance form no. XXII.
  11. Employment card XIV.
  12. Indemnity bond
  13. Half yearly/ yearly labour return in form XXIV (see rule 82(1)) to the licensing officer under contract labour returns.
  14. Half yearly return in form 5A (regulation 26) on ESI contribution.
- C. PROCEDURE ADOPTED BY HR IN DEALING WITH CONTRACTORS:
1. Contractor shall submit the documents as specified above with a cover note signed through EIC to HR Department on monthly basis for audit
  2. On submission of compliance report/ recommendations from EIC, HR will give clearance to Finance for release of payment.
  3. Any deviation from the above procedure and non-production of required documents will result in delay in ~~issuance of gate pass~~ and payment of monthly bill, final bill and release of retention money/ Security Deposit/ Bank Guarantee.

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4. Contractor should also give an indemnity bond to OWNER absolving OWNER of all statutory, non-statutory clearance by their employees, sub-contractors and suppliers.

### **35.0 COORDINATION WITH CONSULTANT**

CONTRACTOR shall coordinate with Consultant for PMC services for his day-today activities and provide free access and assistance during the inspections and other activities to be carried out by consultant. CONTRACTOR shall comply to the requirements of Consultant and obtain all the clearances from Consultant for his work. Information regarding the Project management Consultant (PMC) will be given to the successful bidder after placement of LOA.

### **36.0 ERRANT BIDDER**



In case after price bid opening the lowest evaluated bidder (L1) is not awarded the job for any mistake committed by him in bidding or withdrawal of bid or varying any term in regard thereof leading to re-tendering, OWNER shall debar such bidders from participation in re-tendering of the same job(s)/item(s).

### **37.0 CORRUPT AND FRAUDULENT PRACTICES**

Bidders are required to furnish the complete and correct information/ documents required for evaluation of their bids. If the information/ documents forming basis of evaluation is found to be false/ fake/ forged, the same shall be considered adequate ground for rejection of the bids.

OWNER requires that the CONTRACTOR observes the highest standard of ethics during the execution of Contract. In pursuance of this policy, OWNER defines, for the purposes of this provision, the terms set forth below as follows:

- a. "Corrupt Practice" means the offering, giving, receiving, or soliciting of anything of value to influence the action of public official in contract execution; and
- b. "Fraudulent Practice" means a misrepresentation of facts in order to influence the execution of a Contract to the detriment of OWNER, and includes collusive practice among bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive OWNER of the benefits of free and open competition.
- c. "False/Fake" means to make or construct falsely. "Faked alibi" is a made, manufactured, or false alibi. Something that is not what it purports to be; counterfeit, an imposter.
- d. "Forgery" means the false making or the material altering of a document with the intent to defraud. A signature of a person that is made without the person's consent

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and without the person otherwise authorizing it. A person is guilty of forgery if, with the purpose to defraud or injure anyone or with knowledge that he is facilitating a fraud or injury to be perpetrated by anyone, the actor (i) alters any writing of another without his authority (ii) makes, completes, authenticates, executes, issues or transfers any writing, so that it purports to be the act of another who did not authorize that act or to have been executed at a time or place or in a numbered sequence other than was in fact the case, or to, be a copy of an original when no such original exists. Utters any writing which he knows to be false in a manner specified in (i) & (ii) above.

OWNER may terminate the Contract if it discovers subsequently that the Contractor had engaged in Corrupt Practices or Fraudulent Practices in competing for the Contract. The Contractor is required to execute the “Integrity Pact” if specified in the Bidding Document.

In case, the information/ document furnished by the Contractor forming basis of evaluation of its Bid is found to be false / fake/ forged after the award of the Contract, OWNER shall have the right to terminate the Contract and get the remaining Works executed by a third party at the risk & Cost of the Contractor and without any prejudice to other rights available to OWNER under the Contract such as forfeiture of the Contract Performance Bank Guarantee, withholding of payment etc.



In case, this issue of submission of false/fake documents comes to the notice after execution of the Works, OWNER shall have full right to forfeit any amount due to the Contractor along with forfeiture of the Contract Performance Bank Guarantee furnished by the Contractor.

Further, any Contractor which is found guilty of any Corrupt or Fraudulent Practice or submission of false/fake /forged documents, shall be put on the negative/ holiday list of OWNER debarring them from future business with OWNER.

### **38.0 PURCHASE PREFERENCE LINKED WITH LOCAL CONTENT (PP-LC 2017)**

MOP&NG has notified the purchase preference (linked with local content)-PP-LC for the Procurement of goods and services under Oil & Gas Projects in India. Under this Policy, the bidders are allowed to avail the purchase preference linked with attaining the stipulated Local content.

MRPL reserves the right to allow Manufacturers or Suppliers or Service providers, purchase preference as admissible under the prevailing policy, subject to their complying with the requirements/conditions defined herewith and submitting documents required to support the same. In order to avail the Purchase preference under this policy, bidder

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shall achieve minimum Local Content (LC) for enquiries floated year-wise (Date of Notice inviting tender) as per table given below.

**Table of Local Content-Enclosure-1.**

Items	Local Content (%)		
	2017-18	2018-20	2020-22
Service Contracts	20%	22%	25%
Supply Contracts	20%	22%	25%
EPC Contracts (others)	30%	35%	40%

**Notes**

1. Above policy is not applicable for Domestically Manufactured Electronic Products (DMEP) and MSME as there being specific policies for products / services.
2. The prescribed local content in above table shall be applicable on the date of Notice Inviting Tender.



**A) Margin of Purchase Preference**

The manufacturers/service providers having the capability of meeting/ exceeding the local content targets given above shall be eligible for 10% purchase preference under the policy. i.e where the quoted price of eligible LC manufacturers/LC service providers is within 10% of the lowest price, purchase preference may be granted at the lowest valid price bid.

**B) Procedure for availing benefits under Purchase Preference (Make in India Policy)**

The option in case of MSE bidders qualifying under both Policies, namely, Purchase Preference under the Public Procurement Policy – 2012 (PPP-2012) for MSE bidders and Purchase Preference Linked with Local Content (PP-LC 2017) shall be exercised as under:

- i. The MSE bidder can avail only one out of the two applicable purchase preference policies, i.e., PP-LC 2017 for PPP-2012 and therefore, bidder will be required to furnish the option under which he desires to avail purchase preference. This option must be declared within the offer and in case bidder fails to do so although he is eligible for both the Policies, MRPL shall evaluate his offer considering PPP- 2012 as the default chosen option.
- ii. In case a MSE bidder opts for preference under PPP-2012, he shall not be eligible to claim benefit under PP-LC 2017 (irrespective of the fact whether he furnishes the details of LC in his offer and this LC meets the stipulated LC criteria).
- iii. In case a MSE bidder opts for purchase preference based on PP-LC 2017, he shall not be entitled to claim benefit of purchase preference benefit as applicable for MSE bidders under

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PPP-2012. However the exemptions from furnishing Bid security Declaration Form shall continue to be available to such a bidder.

iv. In view of the above:

- a) The bidder's quoted prices against various items of enquiry shall remain valid even in case of splitting of quantities of the items, except in case of items where the quantity cannot be split since these are to be awarded in a Lot or as a package or Group.
- b) While evaluating the bids, for price matching opportunities and distribution of quantities among bidders, the order of precedence shall be as under:
  - MSE bidder (PPP-2012)
  - PP-LC complied bidder (PP-LC)

In case the bidder has not declared his status as to whether he is an MSE Bidder or PP-LC Bidder during bid submission, then he will be considered as non PP-LC compliant bidder and evaluated accordingly. No further correspondence will be made in this regard.

#### **Examples of Purchase Preference:**

##### **Non divisible item**

L1 bidder is non MSE, non PP-LC bidder

L2 bidder is PP-LC (**within 10%**)

L3 bidder is MSE bidder (**within 15%**)

MSE bidder shall be given preference to match the L1 price. If L3 bidder matches the L1 price, Order shall be placed on him, otherwise, option for matching the L1 price shall be given to L2 bidder (PP-LC).

##### **Divisible item**

L1 bidder is non MSE, non PL-LC bidder



L2 bidder is PP-LC (**within 10%**)

L3 bidder is MSE bidder (**within 15%**)

MSE bidder shall be given preference to match the L1 price. If bidder matches the L1 price, order shall be placed on him for the quantity specified in the bidding document. For the balance quantity (i.e. 50% of tendered quantity/value) option for matching the L1 price shall be given to L2 bidder (PP-LC). Balance quantity shall be awarded to natural lowest bidder.

For further clarification, in case an item has quantity 4 nos. then 1 no. can be given to MSE bidder, 2 to PP-LC bidder and left out 01 no. to natural L1 bidder.

#### **Note:**

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The above two examples are not applicable to the Works Contracts since the Purchase Preference under PPP-2012 is not applicable to works contracts:

- In case lowest bidder is a MSE bidder, the entire work shall be awarded to him without resorting to purchase preference to bidders complying with Local Content.
- In case lowest bidder is a PP-LC bidder, purchase preference shall be resorted to MSE bidder as per provisions specified in the enquiry document w.r.t. PPP-2012 only.

**The PP-LC Policy shall be implemented in the following manner**

Quantum of purchase preference for bidders qualifying under local content (for LC Bidder) meeting minimum local content, subject to accepting L1 Price and tender applicability criteria, referred to as eligible LC bidder as explained under previous sections are stated below:

A. For goods:

- 1) If L-1 is LC bidder, entire quantity will be awarded to such LC bidder
- 2) If L-1 is non-LC bidder,
  - a) 50% of the quantity will be awarded to LC bidder and rest to non-LC bidder
  - b) If quantity cannot be split in the ratio of 50:50, the next higher quantity greater than 50% that is practically splittable shall be awarded to LC bidder and rest to non-LC bidder
  - c) If quantity is indivisible, 100% shall be awarded to LC bidder
  - d) If there are more than one LC bidders, 50% quantity shall be awarded to lowest LC bidder and rest to non LC bidder

B. For Services/ LSTK contracts:

Normally the service / LSTK contract are not splittable and therefore the eligible LC bidder shall be awarded 100% of the contract. However, in cases where the contract are splittable the LC bidder shall be awarded contract as explained under section A.2) above as in procurement of goods.



C. CERTIFICATION OF LOCAL CONTENT

Manufacturers of goods and/or providers of service, seeking Purchase preference under the policy, shall be obliged to certify the LC of goods, service or LSTK contracts as under:

**At bidding stage:**

**The bidder shall provide the percentage local content in the bid (Unpriced Bid)  
The bidder must have LC in excess of the requirement specified in table given in Enclosure-1**



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- The bidder shall submit an undertaking from the authorized signatory of the bidder having **the power of attorney** along with the bid stating the bidder meets the mandatory minimum local content requirement, which shall become part of the contract.
- In cases of procurement for an estimated value in excess of Rs 10 Crores, the undertaking submitted by the bidder shall be supported by a certificate from the **statutory auditor or cost auditor** of the company (in case of companies) or from a **practicing cost accountant or practicing chartered accountant** (in respect of other than companies) **giving the percentage of local content.**
- However, in case of foreign bidder, certificate from the statutory auditor or cost auditor of their own office or subsidiary in India giving the percentage of LC is also acceptable. In case office or subsidiary in India does not exist or Indian office/subsidiary is no required to appoint statutory auditor or cost auditor, certificate from practicing cost accountant or practicing chartered accountant giving the percentage of LC is also acceptable.

#### **After awarding of Contract/Purchase Order**



**The LC Certificate as per Table attached as per relevant Enclosures (II, III & IV) shall be submitted along with each Invoice as per following criteria**

**a) Where the total quoted value is less than INR 5 Crore:**

In the case of procurement of goods and or services with the value less than Rs Five Crores, the local content shall be calculated (self-assessment) by the supplier of goods and/or the provider of services and certified by the Director/ Authorised representative of the company.

**b) Where the total quoted value is INR 5 Crore or above** -The verification of the procurement of goods, services or LSTK contracts with the value Rupees Five Crore and above shall be carried out as follows:

- i. The Proprietor and an independent Chartered Accountant, not being an employee of the firm, in case of a proprietorship firm.
- ii. Any one of the partners and an independent Chartered Accountant, not being an employee of the firm, in case of a partnership firm.
- iii. Statutory auditors in case of a company. However, where statutory auditors are not mandatory as per laws of the country where bidder is registered, an independent chartered accountant, not being an Employee of the bidder's organization.

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However, procuring company shall also have the authority to audit as well as witness production processes to certify the achievement of the requisite local content and/or to obtain the complete back up calculation before award of work failing which the bid shall be rejected and appropriate action may be initiated against the bidder.

### **C) CALCULATION AND DETERMINATION OF LOCAL CONTENT**



**Bidder claiming Local Content have to calculate the LC and indicate the same in the Unpriced Bid and substantiate the calculation while submitting each invoice.**

1. LC shall be calculated on the basis of verifiable data. In the case of data used in the calculation of LC being non verifiable, the value of LC of the said component shall be treated as nil.
2. Format for calculation of LC is enclosed as
  - a) Enclosures II, for procurements of:
    - i) Supply of goods
    - ii) Supply of goods along with installation and commissioning.
    - iii) Supply of goods along with installation , commissioning & AMC
  - b) Enclosure III for calculation of LC for Services
  - c) Enclosure IV for calculation of LC for LSTK
3. Determination of Local Content
  - a) For Goods/installation & commissioning/AMC as evaluated under Enclosure II:
    - i. LC of goods shall be computed on the basis of the cost of domestic components in goods, compared to the whole cost of product. The whole cost of product shall be constituted of the cost spent for the production of goods, covering: direct component (material) cost; direct manpower cost, factory overhead cost and shall exclude profit, company overhead cost and taxes for the delivery of goods.
    - ii. The criteria for determination of local content cost shall be as following:
      - In the case of direct component (material) based on country of Origin.
      - In the case of manpower, based on INR component.
      - In the case of working equipment/facility, based on the country of Origin
    - iii. The calculation of LC of the combination of several kinds of goods shall be based on the ratio of the sum of the multiplication of LC of each goods with the acquisition price of each goods to the acquisition price of the combination of goods.
  - b) For services as evaluated under Enclosure III:



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- I) LC of service shall be calculated on the basis of the ratio of service cost of domestic component in service to the total cost of service.
- II) The total cost of service shall be constituted of the cost spent for rendering of service covering.
- Cost of component (material) which is used.
  - Manpower and consultant cost, cost of working equipment/facility and
  - General service cost excluding profit, company overhead cost, taxes and duties
- III) The criteria for determination of cost of local content in the service shall be as follows
- In the case of material being used to help the provision of service, based on country of origin.
  - In the case of manpower and consultant based on INR component of the services contract.
  - In the case of working equipment/facility, based on the country of Origin and
  - In the case of general service cost, based on the criteria mentioned under 3.b)III above.
  - Indian flag vessels in operation as on date.
- c) LC of LSTK contracts given under Enclosure IV.
- I) LC of LSTK contracts shall be ratio of the whole cost of domestic components in the combination of goods and services to the whole combined cost of goods and services.
- II) The whole combined cost of goods and services shall be the cost spent to produce the combination of goods and services, which is incurred on work site. LC of the combination of goods and services shall be counted in every activity of the combination work of goods and services.
- III) The spent cost as mentioned above(3.c.II) shall include production cost in the calculation of LC of goods as mentioned in 3.a.I and service cost in the calculation of LC of services as mentioned in clause 3.b.II.
- d) Determination of LC of the working equipment/facility shall be based on the following provision. Working equipment produced in the country is valued as 100% local content and working equipment produced abroad is valued as Nil Local Content (0%).
- e) As regards cases where currency quoted by the bidder is other than INR, exchange rate prevailing on the date of Tender (NIT) shall be considered for the calculation of LC.

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**The onus of submission of appropriately certified documents lies with the bidder and purchaser shall not have any liability to verify the contents & will not be responsible for same.**

**However, in case the procuring company has any reason to doubt the authenticity of the Local Content, it reserves the right to obtain the complete back up calculations before award of work failing which the bid shall be rejected.**

**D) Failure of bidder in complying with the local content post award:**



In case a bidder, who has specified in his bid that the bid meets the minimum Local Content specified in the enquiry document fails to achieve the same the following actions shall be taken by the procuring company:

a. Pre-determined penalty @ 10% of total contract value.

b. Banning business with the supplier/contractor for a period of one year

To ensure the recovery of above pre-determined penalty, payment against dispatch/shipping document shall be modified to the extent that the 10% payment out of this milestone payment shall be released after completion of this milestone as well as submission of certification towards achievement of Local Content, as per provision of enquiry document.

Alternatively, this payment can be released against submission of additional bank guarantee valid till completion Schedule Plus 3 months or as required by purchasing company.

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**Enclosure-II**



**CALCULATION OF LOCAL CONTENT - GOODS**

Name of Manufacturer	Calculation by manufacturer Cost per one unit of product			
	Cost (Domestic component) a	Cost (Imported component) b	Cost Total Rs/US\$ C=a+b	% Domestic component d=a/c
Cost component				
I. Direct material cost				
II. Direct labour Cost				
III. Factory overhead				
IV. Total production cost				

**Note:**

$$\% \text{ LC Goods} = \frac{\text{Total cost (IV.c)} - \text{Total imported component cost (IV.b)}}{\text{Total Cost (IV.c)}} \times 100$$

$$\% \text{ LC Goods} = \frac{\text{Total domestic component cost (IV.a)}}{\text{Total Cost (IV.c)}} \times 100$$

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**Enclosure-III**



**CALCULATION OF LOCAL CONTENT – SERVICE**

NAME OF SUPPLIER OF GOODS/PROVIDER OF SERVICE							
			Cost Component				
			Domestic	Imported Rs/US\$	Total	LC	
						%	Rs/US\$
			b	c	d	e=b/d	f=d x e
A	Cost component						
	I. Material used cost	Rs US\$					
	II. Personnel & Consultant cost	Rs US\$					
	III. Other services cost	Rs US\$					
	IV. Total cost (I to IV)	Rs US\$					
B	Taxes and Duties	Rs US\$					
C	Total quoted price	Rs US\$					

**Note:**

$$\% \text{ LC Service} = \frac{\text{Total cost (A. IV. d)} - \text{Total imported component cost (A. IV. c)}}{\text{Total Cost (A. IV. d)}} \times 100$$

$$\% \text{ LC Service} = \frac{\text{Total domestic component cost (A. IV. b)}}{\text{Total Cost (A. IV. d)}} \times 100$$

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**Enclosure-IV**

**CALCULATION OF LOCAL CONTENT - LSTK (GOODS AND SERVICE)**



A.	COST COMPONENT (Rs/US\$)	Cost Summary				
		Domestic	Imported Rs/US\$	Total	LC	
					%	Rs/US\$
		<b>b</b>	<b>c</b>	<b>d</b>	<b>e=b/d</b>	<b>f=d x e</b>
I	GOODS					
1	Material used cost					
2	Equipment cost					
<b>3</b>	<b>Sub Total I</b>					
II	SERVICES					
1	Personnel & Consultant cost					
2	Equipment & Work Facility Cost					
3	Construction/Fabrication Cost					
4	Other Services Cost etc					
<b>5</b>	<b>Sub Total II</b>					
<b>III.</b>	<b>TOTAL COST GOODS + SERVICES</b>					
B.	Non Cost Component					
C.	TOTAL QUOTED PRICE					

**Note:**

% LC Combination =

$\frac{\{\text{Total domestic component cost of goods (AI3b)} + \text{Total domestic component cost of service (AII5b)}\}}{\text{Total Cost (AIII d)}} \times 100$

Total Cost (AIII d)

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**Domestically Manufactured Electronic Items (DMEP)**

Ministry of Electronics and IT (MeITy) has specified the preference to local content in Domestically Manufactured Electronics Items as follows:

Electronic Items	Local Content	Purchase Preference
1. Desktop computers	45%	50%
2. Laptop personal computers	40%	50%
3. Tablet personal computers	45%	50%
4. Dot-matrix printers	55%	50%
5. Smart cards-contact type	65%	50%
6. Smart cards-contactless type	70%	50%
7. LED products	65%	50%
8. Biometric Access control/authentication	45%	50%
9. Biometric fingerprint sensors	45%	50%
10. Biometric Iris Sensors	45%	50%
11. Servers	40%	50%



**Certification of Local Content For electronics goods:**

It is mandatory for the bidder should submit a certificate duly certified by a practicing cost accountant/chartered account, in line with the said along with prescribed Form (enclosed) in the technical bid, mentioning the location(s) at which local value addition is made. In case of companies, the certification shall be from the statutory auditor or cost auditor for the company. In case the procurement value is <Rs 10Crores self-certification is acceptable.

**The bidder claiming benefits of Purchase Preference on the above shall provide at least 2 sets of data each under the following heads:**

**1. Domestic Bill of Materials**

- a) Sum of the costs of all the inputs which go into the product (including duties and taxes levied on procurement of inputs except those for which credit/setoff can be taken) and which have not been imported directly or through a domestic trader or a intermediary.

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- b) Ex-factory price of product minus profit after tax minus sum of imported bill of material used (directly or indirectly) as inputs in producing the product (including duties and taxes levied on procurement of inputs except those for which credit/setoff can be taken) minus warranty costs.
- c) Market price minus post production freight, insurance and other handling cost minus profit after tax minus warranty cost minus sum of imported bill of material used as inputs in producing the product (including duties and taxes levied on procurement of inputs except those for which credit/setoff can be taken) minus sales and marketing expenses.

## 2. Total Bill of Materials

- a) Sum of the costs of all the inputs which go into the product (including duties and taxes levied on procurement of inputs except those for which credit/setoff can be taken).
- b) Ex-factory price of product minus profit after tax, minus warranty costs.
- c) Market price minus post production freight, insurance and other handling cost minus profit after tax minus warranty cost minus sales and marketing expenses.

**The percentage domestic value addition shall be calculated as per the following formula,**

$$\% \text{ Domestic Value addition} = \text{Domestic Bill of Material} / \text{Total Bill of Material}.$$



Under “notification for electronics products under public procurement order 2017” **Public procurement (Preference to Make in India)-order 2017-Notification on Cellular Mobile Phones.**

In furtherance of above order, MeITy has added cellular Mobile Phones vide notification no 33(5)/2017-IPHW dated 1/08/2018 and can be downloaded from [http://dipp.nic.in/sites/default/files/Meity\\_dated\\_01082018.pdf](http://dipp.nic.in/sites/default/files/Meity_dated_01082018.pdf)

## **Public Procurement (Preference to Make in India) Order 2018 for Cyber Security Products**

MeITy has issued notification viz File No 1 (10)/2017-CLSES dated 2/7/2018 to give purchase preference to domestically manufactured /produced Cyber Security Products as per the above Order.

The definition of cyber security product, local supplier of domestically manufactured Cyber Security Products, exclusions, Verifications etc are available under <http://meity.gov.in/cyber-security>

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The local supplier at the time of bidding shall provide self-certification that the item offered meets the definition of local supplier of domestically manufactured/ produced Cyber Security Products.

Certification authority for estimated values beyond Rs 10 Crores shall be statutory auditor or cost auditor of the company (in case of companies).

In case of false declarations, provisions under clause-24-Instructions to Bidders of Section-1 of Tender Document will apply. Complaints received against claims of a bidder regarding supply of domestically manufactured Cyber Security Product shall be referred to STQC under MeITy.

For certification of local content in electronic goods shall be as per the circular F.No.33(1)/2017-IPHW issued by Government of India Ministry of Electronics and Information Technology dated 14<sup>th</sup> September 2017, which may be downloaded from <http://meity.gov.in/esdm/ppo>



**Purchase Preference in case where Negotiation is also required:**

In case purchase preference is applicable, but negotiation is to be conducted with L1 bidder, negotiation shall be carried out MSE and/or LC-complied bidder shall be offered to match the negotiated prices (even if, post negotiation, they are higher by more than 10% as compared to L1 bidder provided they were within 10% of L1 bidder as per original quoted prices) and left out quantity, if any, as per provisions of enquiry document shall be awarded to that bidder.

**Note:**

**Relevant policy guidelines issued including modifications made from time by the concerned Ministry in respect to Purchase Preference to Make in India, shall be applicable.**



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**UNDERTAKING (To be submitted on Company's Letterhead)**



(Where the total quoted value is less than INR 5 Crore)

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 \_\_\_\_\_ has submitted its bid no \_\_\_\_\_ dated \_\_\_\_\_ against bidding document no \_\_\_\_\_ dated \_\_\_\_\_ for \_\_\_\_\_ item / works for \_\_\_\_\_.
3. That the Company is fully aware of the provisions of Purchase Preference (Linked with Local Content) 2017 (PP-LC) Policy, enclosed in the above bidding document.
4. We hereby confirm that our offer is achieving the minimum local content target as per of PP-LC Policy.
5. I confirm that I am aware of the implication of the above undertaking and our liability on account of wrong declaration.

(Authorized signatory of Supplier)

Note : This undertaking shall be certified by the authorized signatory of the bidder, signing the bid.

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**UNDERTAKING (To be submitted on Company's Letterhead)**

(Where the total quoted value is INR 5 Crore or above)

Certification by the bidder

I \_\_\_\_\_, Son/ Daughter of \_\_\_\_\_, do solemnly affirm and state as under:

1. I am the \_\_\_\_\_ <<Designation of the authorized signatory>> of \_\_\_\_\_ and I am duly authorized to furnish this undertaking declaration on behalf of \_\_\_\_\_.
2. That \_\_\_\_\_ has submitted its bid no \_\_\_\_\_ dated \_\_\_\_\_ against bidding document no \_\_\_\_\_ dated \_\_\_\_\_ for \_\_\_\_\_ item / works for \_\_\_\_\_.
3. That the Company is fully aware of the provisions of Purchase Preference (Linked with Local Content) 2017 (PP-LC) Policy, enclosed in the above bidding document.
4. We hereby confirm that our offer is achieving the minimum local content target as per of PP-LC Policy and the break-up of the same is provided in the Priced bid.
5. I confirm that I am aware of the implication of the above undertaking and our liability on account of wrong declaration.

(Authorized signatory of Supplier)

Certification by the statutory auditor / 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 its 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 / Director and not having any interest in the company.

We have understood the provisions of Purchase Preference (Linked With Local Content) 2017 (PP-LC) Policy, enclosed in the above bidding document.

We hereby certify that offer is achieving the minimum local content target as per of PP-LC Policy.

(Statutory auditor / Chartered Accountant of the bidder)

Note : This undertaking shall be certified by:

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The Proprietor and an independent Chartered Accountant, not being an employee of the firm, in case of a proprietorship firm.

ii. Any one of the partners and an independent Chartered Accountant, not being an employee of the firm, in case of a partnership firm.



iii. Statutory auditors in case of a company. However, where statutory auditors are not mandatory as per laws of the country where bidder is registered, an independent chartered accountant, not being an Employee of the bidder's organization.

**LIST OF ITEMS / SERVICES TO BE PROCURED FROM INDIAN MANUFACTURERS/SERVICE**

The list of items to be procured from Indian manufacturer /services are as follows:



- 1
- 2
- 3
- 4

\*\*\*\*\*

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**39.0 Special Tender Clause on Procurement from a Bidder from a country which shares Land Border with India**

- I. The Department of Expenditure ( Ministry of Finance) of the Govt. Of India through OMs no. 6/18/2019- PPD dated 23rd July and 24th July'2020 has issued guidelines regarding procurement from bidders from a country or countries which share land boundary with India. The detail guidelines are available on the website of DoE (<https://doe.govin/>).
- II. 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 specified in Annexure I of the DoE OM dated 23.07.2020 (attached for reference). The Competent authority for the purpose of registration shall be the Registration Committee constituted by the Department of Promotion of industry & internal Trade (DPIIT) of Govt. of India.
- III. "Bidder" (including the term 'tenderer', 'consultant' or 'service provider' in certain contexts) means any person or firm or company, including any member of a consortium or joint venture (that is an association of several persons, or firms or companies), every artificial juridical person not falling in any of the descriptions of bidders stated hereinbefore, including any agency branch or office controlled by such person, participating in a procurement process.
- IV. "Bidder from a country which shares a land border with India" for the purpose of this Order means:-
  - 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 or joint venture where any member of the consortium or joint venture falls under any of the above

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V. The beneficial owner for the purpose of (iii) above will be as under:

1. 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, has a controlling ownership interest or who exercises control through other means.

**Explanation-**

- a) "Controlling ownership interest" means ownership of or entitlement to more than twenty-five per cent. of shares or capital or profits of the company,
- b) "Control" shall include the right to appoint majority of the directors or to control the management or policy decisions including by virtue of their shareholding or management rights or shareholders agreements or votings agreements.



2. 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 entitlement to more than fifteen percent of capital or profits of the partnership.

3. In case of an unincorporated association or body of individuals, 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 the property or capital or profits of such association or body of individuals;

4. Where no natural person is identified under (1) or (2) or (3) above, the beneficial owner is the relevant natural person who holds the position of senior managing official;

5. In case of a 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 the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership.

VI. An Agent is a person employed to do any act for another, or to represent another in dealings with third person.

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- VII. In tenders for Works Contracts, including Turnkey contracts - The successful bidder shall not be allowed to sub-contract works to any contractor from a country which shares a land border with India unless such contractor is registered with the Competent Authority.
- VIII. Bidder mandatorily requires to submit "Certificate of Compliance" in the enclosed Form : A. This certificate need to be submitted in the Company's Letter Head and should be sealed and signed by the authorized signatory on behalf of the bidder. None submission of Form A may lead to disqualification for Techno- Commercial evaluation of the submitted bid. (Refer Form B in case of Works Contract).



In case at any stage pre or post order placement it is found that that the certification furnished is false their bid shall be summarily rejected or order terminated as applicable. MRPL may at its discretion initiate penal action against such bidders which may include Black Listing Holiday Listing the party /encashment of EMD or PBG submitted as per contractual provision etc.

- IX. Compulsory submission of Valid Registration Certificate from Competent Authority is required as and when a party claims to have registered themselves with the Competent Authority or else bid shall be rejected without evaluation.
- X. Wherever Tenders are floated Registration with Competent Authority should be valid at the time of submission of Bid and at the time of acceptance and evaluation of bids / LOA or Order Placement. In case where tender is not floated registration should be valid at the time of placement of Order. A Bidder who is validly registered at the time of acceptance / placement of order in such cases valid registration will not be a relevant consideration during contract execution.

**Note I:** For better clarity and to obtain information in detail bidders are requested to go thru the Govt Circular issued by the Department of Expenditure Govt of India to this effect.

**Note II:** For information on Exclusion from restriction under Rule 144 (xi) of the GFR, 2017 and Special Cases for exemption under the purview of this policy, bidders are requested to refer to the Govt Circular & Annexures therein accordingly.

**Special Note:** It is the responsibility of the Bidders to keep themselves updated over any revisions or changes in conditions mentioned in this circular. For all practical purpose the latest applicable circular will be considered for this tender as published by the Govt time to time.

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**FORM A**

**BIDDER'S UNDERTAKING  
(On Company's Letter Head)**

To,  
Mangalore Refinery & Petrochemicals Limited  
Mangaluru, Karnataka.

Sub: Certificate of Compliance

Bidder's Details :

Name of the Tender : \_\_\_\_\_

Tender No : \_\_\_\_\_

We/ I have read carefully the clause regarding restrictions on procurement from a bidder of a country which shares land boundary with India attached with this Tender Document and hereby certify that M/s. \_\_\_\_\_ (Name of the Company/ Bidder) is :-



- A. Not from such a country and is eligible to be considered for evaluation : YES / NO (\*)  
 B. (i) If from such a country but is registered with the Competent Authority : YES/NO (\*)  
 B. (ii) If from such a country valid Registration Certificate from Competent Authority is submitted with the bid : YES / NO (\*)

I as the authorized signatory on behalf of the bidder certify that the company fulfils all the criteria stipulated in the Govt OM and is eligible to be considered for this tender.

(\*) : Tick Yes / No whichever is applicable.

Place : \_\_\_\_\_ Signature : \_\_\_\_\_  
 Date : \_\_\_\_\_ Name : \_\_\_\_\_  
 Designation : \_\_\_\_\_  
 Seal of the Company : \_\_\_\_\_



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**FORM B**

**BIDDER'S UNDERTAKING IN CASE OF WORKS CONTRACT**

(On Company's Letter Head)

To,  
Mangalore Refinery & Petrochemicals Limited  
Mangaluru, Karnataka.

Sub: Certificate of Compliance

Bidder's Details:

Name of the Tender : \_\_\_\_\_

Tender No : \_\_\_\_\_

We / I have read carefully the clause regarding restrictions on procurement from a bidder of a country which shares land boundary with India attached with this Tender Document and on sub-contracting to contractors from such countries and hereby certify that M/s. \_\_\_\_\_ (Name of the Company/ Bidder) is :-

B. Not from such a country and is eligible to be considered for evaluation : YES / NO  
(\* )

B. (i) If from such a country but is registered with the Competent Authority : YES/NO  
(\* )

B. (ii) If from such a country valid Registration Certificate from Competent Authority is submitted with the bid : YES / NO  
(\* )



M/s. \_\_\_\_\_ (Name of the Company) certify that we will not sub-contract any work to a party/ contractor from such countries unless they are registered with the Competent Authority.

I as the authorized signatory on behalf of the bidder certify that the company fulfils all the criteria stipulated in the Govt OM and is eligible to be considered for this tender.

(\* ) : Tick Yes / No whichever is applicable.

Place : \_\_\_\_\_ Signature : \_\_\_\_\_  
Date : \_\_\_\_\_ Name : \_\_\_\_\_  
Designation : \_\_\_\_\_  
Seal of the Company :



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**FORM C**

**BIDDER'S UNDERTAKING (For Transitional Cases)**  
**(On Company's Letter Head)**

To,  
Mangalore Refinery & Petrochemicals Limited  
Mangaluru, Karnataka.

Sub: Certificate of Compliance

Bidder's Details:



Name of the Tender : \_\_\_\_\_

Tender No : \_\_\_\_\_

We/I have read carefully the clause regarding restriction on procurement from a bidder of a country which shares land boundary with India attached with this tender document and hereby certify that M/s. \_\_\_\_\_ (Name of the Company) is not from such a country and is eligible to be considered.

We/I do solemnly resolve to submit valid registration certificate from Competent Authority as applicable in case any such requirement arises for evaluation and acceptance of bid purpose.

Place : \_\_\_\_\_ Signature : \_\_\_\_\_  
Date : \_\_\_\_\_ Name : \_\_\_\_\_  
Designation : \_\_\_\_\_  
Seal of the Company : \_\_\_\_\_

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#### 40.0 INTERFACE MANAGEMENT

##### INTERFACE WITH CONCURRENT OTHER JOBS AT SITE:

OWNER is setting up Petroleum storage & Marketing Terminal at the Site and hence Works for other LSTK packages / contractors shall take place concurrently at the Site. These works will have execution in the same period which may have interface with the CONTRACTOR for LSTK-B Tender.

The CONTRACTOR shall cooperate with the OWNER/PMC and other contractors engaged at Site, access to the works 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 cooperate with the OWNER/PMC or other contractor(s) / agency(ies) involved in such work and shall ensure harmonious working between the CONTRACTOR and the Owner /PMC/ contractor(s) /agency(ies) involved, and shall comply with any instructions issued by the Engineer-in-Charge for the purpose.

CONTRACTOR shall ensure that his interface with other CONTRACTORS is smooth and cordial. In case of any dispute, PMC/OWNER decision shall be binding.

CONTRACTOR shall allow movement of persons/material/equipment/vehicles belonging to other CONTRACTORS or PMC/OWNER through the roads constructed by him.



CONTRACTOR shall coordinate with “neighbouring” contractors for maintaining elevations/levels of various interconnecting devices.

CONTRACTOR shall not dump his earth, scrap or any unserviceable material in other CONTRACTOR’s area. He shall cooperate with PMC/OWNER in maintaining good housekeeping throughout the project site.

CONTRACTOR shall ensure proper drainage and no water logging in his areas/other Areas.

PMC/OWNER may arrange weekly/fortnightly/monthly interface meetings. The CONTRACTOR shall depute concerned personnel to attend these meetings.

CONTRACTOR shall clearly define in the interface meeting with other contractors their

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erection/construction interface at their Battery limits.

CONTRACTOR shall submit Erection/Construction schedule and there shall be pre-construction meetings which shall be held prior to commencement of construction works. It is intended that the meetings shall be attended by all the CONTRACTORS of various LSTK jobs specified above. The schedule shall be discussed with other CONTRACTORS and should it become necessary to modify/rearrange the activities for continuity of the work the CONTRACTORS shall do the needful accordingly.

It shall be endeavour of all the CONTRACTORS and OWNER/PMC to resolve any site related construction/interface issues of any nature and adjust the schedule to avoid interface delays and ensure that project is completed as per schedule. Periodic meetings convened by PMC/OWNER to discuss the interface issues shall be attended by all the CONTRACTORS. Minutes of the meeting shall be recorded and binding on all parties.

#### **41.0 CONTRACT SECURITY DEPOSIT/PERFORMANCE BANK GUARANTEE**

The Security Deposit/Performance Bank Guarantee shall be of an amount equivalent to 3% (three percent) of the Contract Value. Clause 2.1.1.0 and 2.1.2.0 of the GCC stands modified on this account.

Further, the following paragraphs are appended to the security deposit clause 2.1.2.0 of GCC:



The irrevocable Bank Guarantee (BG) in the prescribed format if submitted against PBG/SD shall be subject to verification from the issuing Bank, the email ID of bank for the same must be incorporated in the BG.

The BG issued by the issuing Bank on behalf of Bidder/CONTRACTOR/Supplier in favour of “Mangalore Refinery and Petrochemicals Limited” shall be in paper form and also be made available under the “Structured Financial Messaging System” (SFMS).

A separate advice of the BG will invariably be sent by the issuing bank to the Beneficiary’s Bank through SFMS and SFMA transmission message number (currently 32digits code) is to be sent along with BG directly to OWNER through speed post/regd. Post.

The details of beneficiary for issue of BG under SFMS platform is furnished below: Name of Beneficiary: Mangalore Refinery and Petrochemicals Limited Beneficiary Bank,

Branch and address:

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Union Bank of India (Erstwhile Corporation Bank), Kuthethoor Post Mangalore 575030, Karnataka

IFSC code: UBIN0905925

SWIFT Code: UBININBBMAP

MICR Code: 575026018

Any bank guarantee submitted in physical mode which cannot be verifiable through SFMS will not be accepted under any circumstances.

#### **42.0 AMENDMENT TO EMD PROVISIONS IN THE GCC**

All the relevant Clauses of GCC for Bid Security/Earnest Money Deposit (EMD) stands modified to mean that the requirement of Bid Security/EMD has been waived. However, in lieu of Bid Security/EMD, declaration to be provided by the Bidder as per format provided in the NIT. Accordingly:


Appendix – V (Form of Bank Guarantee in Lieu of EMD) of the GCC stands deleted.

Appendix – VIII (Form of Tender for Priced Bid and Commercial Bid) have been revised and enclosed as FROM-A1 and FORM-A2 under PROPOSAL FORMS to the ITB of VOLUME-I of the Bidding document.

#### **43.0 LIMITATION OF LIABILITY**

43.1 It is expressly understood and agreed by and between Bidder and M/s Mangalore Refinery and Petrochemicals Limited (A Subsidiary of ONGC) that M/s Mangalore Refinery and Petrochemicals Limited 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 hereunder.

43.2 It is expressly understood and agreed that M/s Mangalore Refinery and Petrochemicals Limited is an independent legal entity with power and authority to enter into Contracts solely on its own behalf under the applicable Laws of India and general principles of Contract Law. The Bidder expressly agrees, acknowledges and understands that M/s Mangalore Refinery and Petrochemicals Limited 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, Bidder hereby

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expressly waives, releases and foregoes any and all actions or claims, including cross claims, impleader claims or counterclaims against the Government of India arising out of this Contract and covenants not to sue Government of India as to any manner, claim, cause of action or thing whatsoever, arising of or under this agreement.

#### **44.0 INDEMNITY BOND**

CONTRACTOR shall sign an Indemnity Bond before starting the work, indemnifying the OWNER and PMC from any damages, prosecution, other legal suits and claims arising out of any mishaps occurring at the site due to faulty from work, faulty construction and for violating rules and regulations for which the CONTRACTOR shall be solely responsible. The Indemnity Bond shall be executed only in the form as in the General Conditions of Contract on a non judicial stamp paper of value Rs 200/-. The cost of the stamp paper shall be borne by the Contractor.

#### **45.0 SINGLE POINT RESPONSIBILITY**



The entire work as per Scope of Work covered under this contract shall awarded on single point responsibility basis. The Contractor shall be solely and fully responsible for completion of the of the entire Scope of Work as per the Tender document.

#### **46.0 MECHANISATION OF CONSTRUCTION ACTIVITIES, MOBILISATION OF CONSTRUCTION EQUIPMENT AND EQUIPMENT ERECTION**

The CONTRACTOR shall mechanise the construction activities to the maximum extent by deploying all necessary construction equipment/machinery in adequate numbers and capacities. However based on the instruction of PMC / OWNER, manual excavation may be needed to be carried out in some critical areas.

Wherever Structural/ Piping works are included in the scope, the responsibilities of CONTRACTOR shall include establishing and maintaining of a proper fabrication workshop with transportation facilities to site to carryout fabrication of steel structures, piping specials etc., preparing approaches working areas for the movement/operation of cranes and levelling the areas for assembly/erection to ensure effective mechanisation on the works. The CONTRACTOR shall acquaint himself with availability of access, facilities such as railway siding, local labour etc.and the CONTRACTOR may have to build temporary access roads to aid his work and the same is included in the Lumpsum Price (SOP).

All erection shall be carried out by deploying a crane(s) of suitable capacity. Erection by derrick shall not be permissible. The CONTRACOTR shall submit erection schemes for

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erection to PMC for his approval. No equipment shall be erected in the absence of an approved erection scheme for such equipment. CONTRACTOR shall be arrange for load testing of the crane as required to establish the lifting capacity of the crane.

#### 47.0 PRICE VARIATION FOR SUPPLY OF STEEL

- 47.1 The price variation shall be applicable on supply price of bulk steel material for site fabrication / construction for permanent incorporation in work i.e. for structural steel & reinforcement bars(TMT) only.
- 47.2 The price variation shall be applicable for structural steel and reinforcement bar (TMT) procured from primary producers only (SAIL/ TATA/ RINL/JSW/ VIZAG/JINDAL).
- 47.3 The Contract Price shall be adjusted for any increase/decrease on account of variation in steel price as per the formula below:

$$V = P \times Q \times \frac{M - M_0}{M_0}$$



Where,

V=Total Variation in material (steel) cost i.e. increase or decrease in the amount (in Rupees) to be paid or recovered.

P= Base Price (excluding taxes and duties) of steel shall be that as issued from O/o Chief Engineer, CPWD, Bangalore for the month for which the last price bid is submitted. (For example purpose, the copy of the base price circular as issued by O/o Chief Engineer, CPWD, Bangalore for the month of January 2021 is attached Annexure XIII to SCC)

Q= Qty of structural steel / Reinforcement steel supplied during the month

M<sub>0</sub> = Price Index for steel reinforcement bars, Structural Steel shall be the All India Wholesale Monthly Price Index for **MILD STEEL: LONG PRODUCTS** released by Office of Economic Advisor to Government of India, Department of Industrial Policy and Promotion (DIPP), Ministry of Commerce and Industry corresponding to the period of the base price for the month for which the last price bid is submitted. (For example purpose, the website snap shot of the same for the month of January 2021 is attached as Annexure XIV to SCC)

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M= Price Index for steel reinforcement bars, structural steel shall be the All India Wholesale Monthly Price Index for **MILD STEEL: LONG PRODUCTS** released by Office of Economic Advisor to Government of India, Department of Industrial Policy and Promotion (DIPP), Ministry of Commerce and Industry two months prior to the month in which steel is received at the project site and IMIR (Incoming material inspection report) is approved by PMC.

- 47.4 Bidder while submitting their offer will consider the base price of steel as given above (i.e. the value of P). The variation payable by OWNER shall be based on the base price of steel (i.e. the value of P) as the reference point.
- 47.5 Upto two months prior to the contractual completion date or approved extended completion date (\*), upward price variation will be payable considering the applicable indices as per the above formula.
- 47.6 However, beyond two months prior to the contractual completion date or approved extended completion date (\*), the final indices (i.e the value of M) used for upward price variation shall be restricted to indices prevailing prior two months of the contractual completion date or approved extended completion period (\*) as applicable.  
 (\*) Approved extended completion period shall mean the justified extension in completion period.
- 47.7 In case of delay by the contractor beyond contractual delivery date for reasons attributable to contractor, final indices used for upward price variation shall be restricted prior to indices prevailing at two months of the contractual completion period only.
- 47.8 However, for downward / negative price variation, indices used for the purpose shall be two months prior to the month in which steel is received at the project site and IMIR (Incoming material inspection report) is approved by PMC.
- 47.9 In case the extension of contract period is on grounds of additional scope of work, the price escalation shall be paid only on additional scope of work.

*(Example for understanding is provided in table below for reference purpose only)*

Suppose the contractual delivery date (CDD) (i.e Mechanical completion) is 31<sup>st</sup> May 2021 and two month prior to CDD is 31<sup>st</sup> March 2021. Then price variation shall be payable as follows beyond 02 months of CDD for various cases:



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Case	Upward Price Variation beyond 31 <sup>st</sup> Mar, 2021	Negative Price variation beyond 31 <sup>st</sup> Mar, 2021
No delay beyond CDD	Indices shall be restricted to March 2021	Actual indices of the month prior to two months in which steel is received at the project site and IMIR (Incoming material inspection report) is approved by PMC.
Delay beyond CDD for reasons not attributable to Contractor & approved extension upto 30 <sup>th</sup> Sep 2021	Indices shall be restricted upto two months prior to Sept, 2021, i.e. Jul 2021	
Delay beyond CDD upto 30 <sup>th</sup> Sep, 2018 for reasons attributable contractor	Indices shall be restricted to March 2018	

47.10 For the purpose of SCC Clause 27, Price adjustment for slipage in completion, the contract value shall be considered inclusive of price variation on account of steel price variation.



47.11 Even if there is no price adjustment claim, contractor shall submit all relevant data to prove that there is no downward variation.

47.12 Price variation for materials shall be applicable for measured and certified quantity only.

47.13 The purchase orders along with all the backup documents for all items, for which price variation is applied as mentioned above shall be sent to PMC/OWNER within 15 days of placement of purchase orders to vendor(s).



47.14 Since the prices are on Lumpsum basis, Contractor shall submit total requirement of structural steel, reinforcement bars involved in the work based on the Scope of Work and his AFC drawings, which would be reviewed and approved by the PMC. The quantities of various item(s) /material(s) approved by PMC as above shall only be considered for the purpose of price variation.





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#### **48.0 DEFINITIONS**

- 48.1 For the purpose of the Contract, unless otherwise specified or repugnant to the subject or context, the following terms shall be deemed to have the following meanings. These are in addition to the defined words appearing in General Conditions of Contract (GCC) and wherever there are contradictions, the definitions appearing in the SCC shall take precedence.
- 48.2 "CONTRACTOR"/ "VENDOR" means any person, Vendor, company, firm or body who may be engaged by OWNER for works and services connected with construction, installation, erection and commissioning of the facilities for the Project with supply of equipment/material.
- 48.3 "Consultant"/"PMC" means service provider for Consultancy / PMC services for this Project. MRPL has appointed Nauvata Engineering Pvt Ltd, Bangalore as Project Management Consultant (PMC), herein after referred as "PMC", who shall be responsible for Overall Project Management of the Project
- 48.4 OWNER/MRPL/Client means Mangalore Refinery & Petrochemicals Limited. Mangaluru
- 48.5 "Engineer – In –charge" means PMC /CONSULTANT of the project.
- 48.6 "Project" means LSTK-B PACKAGE FOR CIVIL AND STRUCTURAL WORKS at MRPL Marketing Terminal, Devangonhi, Bangalore - Tender No.: 3200000490
- 48.7 "ITB" means Instructions to Bidders
- 48.8 "EMD" means Earnest Money Deposit.
- 48.9 "GCC" means General Conditions of Contract.
- 48.10 "SCC" means Special Conditions of Contract
- 48.11 "SOP" means Schedule of Prices
- 48.12 "Bidder/ Tenderer" means any person, Vendor, company, firm or body who are issued the Bidding Document by OWNER for submission of bid.
- 48.13 "Bidding Document/ Tender Document" means document to be issued to Bidder based on which Bid is to be submitted.
- 48.14 "Bid/ Offer" means the documents/proposal submitted by Bidder.
- 48.15 "CD" means Compact Disc.
- 48.16 "CDD" means Contractual Delivery date
- 48.17 "IMIR" means Incoming Material Inspection Report
- 48.18 "AFC" means Approved for Construction



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**ANNEXURES TO SCC**

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## **TIME SCHEDULE**

**[ANNEXURE I TO SPECIAL CONDITIONS OF CONTRACT]**

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### 1.0 TIME SCHEDULE FOR THE CONTRACT:

TABLE A		
Sl. No.	DESCRIPTION OF WORK	TIME OF COMPLETION
1	<b>LSTK-B PACKAGE at MRPL Marketing Terminal, Devangonhi, Bangalore, as per scope of work detailed in Tender No 3200000490</b>	<p><b><u>Mechanical Completion:</u></b> Within eighteen months from date of LOA/PO</p> <p><b><u>Commissioning:</u></b> Within twenty months from date of LOA/PO</p> <p><b><u>Closure of Contract:</u></b> Within six (6) months from the date of Mechanical Completion.</p>



### 2.0 INTERMEDIATE MAJOR MILESTONES TIMELINE SCHEDULE:

Contractor has to strictly achieve the intermediate major milestones timeline schedules mentioned below in Table B in addition to the above mentioned TIME SCHEDULE in Table A.

The Lump Price (SOP) in the Contract is based on the completion of the work as per the Time Schedule mentioned in Table A above and includes time schedule for intermediate major milestones specified in Table B below.



In the event of delay in achieving the following intermediate major milestone specified in Table B below for reasons not attributable to OWNER, the OWNER shall impose penalties as specified in ANNEXURE 1A of SCC.

TABLE B		
Sr. No.	Intermediate major milestones	Time of Completion
1	Power sanction + Work estimate from BESCO for permanent power	Within 30 days from the date of LOA/PO
2	Cutting, auctioning and disposal of Trees	Within 45 days from the date of LOA/PO
3	Compound Wall (new)	Within 4 months from the date of LOA/PO
4	TLF gantries (2 Nos)	Within 12 months from date of LOA/PO
5	Product Pump House Shed	Within 12 months from date of LOA/PO
6	Substation/MCC building	Within 14 months from date of LOA/PO
7	Control room+admin building	Within 14 months from date of LOA/PO
8	Warehouse	Within 15 months from date of LOA/PO

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**PENALTIES FOR NON ADHERENCE TO THE INTERMEDIATE MAJOR  
MILESTONES TIME SCHEDULES**

**[ANNEXURE IA TO SPECIAL CONDITIONS OF CONTRACT]**

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**PENALTIES FOR NONADHERENCE TO THE INTERMEDIATE MAJOR MILESTONES TIME SCHEDULES:**

In the event of delay in achieving the following intermediate major milestone specified in Table C below for reasons not attributable to OWNER, the OWNER shall be entitled to impose Penalty amount as specified against each intermediate milestone which are delayed beyond the given schedule. Such penalty amount shall be fully recovered / deducted from the Contractor's next RA bill.

Owner may without prejudice to any methods of recovery, deduct the amount of such penalty from any money due or which may at any time become due to Contractor from its obligations and liabilities under the contract. A decision of PMC/OWNER in the matter of applicability of Penalties shall be final and binding on the Contractor.



<b>TABLE C</b>			
<b>Sr. No.</b>	<b>Intermediate Milestone</b>	<b>Time of Completion</b>	<b>Penalty amount (Rs)</b>
1	Power sanction + Work estimate from BESCO for permanent power	Within 30 days from the date of LOA/PO	Rs 1,00,000/-
2	Cutting, auctioning and disposal of Trees	Within 45 days from the date of LOA /PO	Rs 1,00,000/-
3	Compound Wall (new)	Within 4 months from the date of LOA/PO	Rs 3,00,000/-
4	TLF gantries (2 nos)	Within 12 months from date of LOA/PO	Rs 15,00,000/-
5	Product Pump House shed	Within 12 months from date of LOA/PO	Rs 15,00,000/-
6	Substation building	Within 14 months from date of LOA /PO	Rs 15,00,000/-
7	Control room+admin building	Within 14 months from date of LOA /PO	Rs 15,00,000/-
8	Warehouse	Within 15 months from date of LOA/PO	Rs 10,00,000/-

The penalty amount listed above are over and above ( additional to) the PRICE ADJUSTMENT FOR SLIPPAGE IN MECHANICAL COMPLETION clause in SCC ( Clause 27.0).

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## **TERMS OF PAYMENT**

**[ANNEXURE II TO SPECIAL CONDITIONS OF CONTRACT]**

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### TERMS OF PAYMENT

#### 1.0 MOBILISATION ADVANCE

Not applicable.

#### 2.0 SECURED ADVANCE ON MATERIALS

Secured advance on materials is not applicable.

#### 3.0 ON ACCOUNT PAYMENTS

Progressive payments shall be released to Contractor against running account bills as per the approved billing schedule duly certified by Engineer-in-charge after affecting the necessary deductions/recovery, if any within 15 days of receipt of duly certified invoice forwarded by PMC. Maximum of two RA bills per month shall be processed.



#### 3.1 TERMS OF PAYMENT

##### 3.1.1 Payment terms:

Billing breakup shall be worked out based on progress of execution of work for stage payment on mutually agreement after KOM.

- I. **10% (ten percent)** of total Lumpsum price as quoted in SP-0 form shall be paid progressively on placement of PO/Sub-Orders by the Contractor for structural steel, reinforcement steel, RO, STP & HVAC Packages against submission of all documents including proof of placement of PO/ Sub-orders and submission of equivalent amount of Bank Guarantee valid till completion period plus three months claim period. However, the bank guarantee shall be released after receipt, acceptance an installation of materials at project SITE.
- II. **80% (eighty percent)** of total Lumpsum price as quoted in SP-0 form shall be paid on pro rata basis every month on progress of execution of work as certified by PMC/OWNER in accordance with the break-up of prices as per the approved billing schedule.
- III. **5 % (five percent)** of total Lumpsum price as quoted in SP-0 form shall be paid against successful completion of Mechanical Completion and issue of Mechanical Completion certificate.
- IV. **5% (five percent)** of total Lumpsum price as quoted in SP-0 form shall be paid on
  - a. Commissioning and issue of Commissioning Certificate



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- b. Submission and acceptance of Final “As built” Drawings along with Electronic native files for all documents as per PMC/OWNER Documentation Procedure.
- c. Submission of final invoice along with all documents.

### 3.2 PENALTIES



Payments are subject to deductions towards the Penalties as per various penalties mentioned elsewhere in the tender.

### 3.3 SUBMISSION OF INVOICES

The contractor on completion of milestone activity as explained above shall submit invoice in triplicate to CONSULTANT along with proof of completion for claim of payment against completion of milestone activity or part thereof. CONSULTANT after scrutinizing the same shall recommend to MRPL for release of payment against the same. The contractor shall also submit payment status schedule updated along with the invoices.



#### NOTE:

1. The above payment terms commensurate with the work executed.
2. The above progress payments are subject to deductions towards income tax and other deductions as applicable as per terms of the Contract.
3. Withholding Tax at the prevailing rate shall be deducted as per the Indian Income Tax Act. TDS certificate shall be issued by the PMC/OWNER.
4. Unless otherwise specified, 100% Payment will be made for the actual work done / supply of materials/Job/services performed and bills duly certified by Engineer In-charge / PMC (subject to submission of SD/PBG, if applicable). Such payment will be made within 15 days of receipt of duly certified invoice forwarded by PMC.
5. Retention money, if specified, will be withheld before releasing all payments i.e either monthly or progressive/ stage-wise payments.
6. Bills can be submitted after completion of work on monthly basis against progressive work completion/as per milestones specified as per Tender and Approved Billing Schedule.
7. All payments shall be through electronic mode (RTGS/NEFT). Therefore, vendors are requested to furnish the information as per attached format on issue of order to successful bidder. Any change in the particulars shall be immediately informed to MRPL.
8. Completion certificate is the certificate issued after attending the defects prior to taking over as specified in the General Conditions of Contract. In case separate

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nomenclature is provided for Completion certificate in GCC for various clients, the same shall be replaced by that certificate accordingly.

9. Wherever milestone payment has been recommended on receipt and acceptance of material, the same shall be released against "Incoming Material Inspection Report". Engineer-in-charge shall release the progressive payment towards supply in such a way ensuring that the total quantity against which the payment is released towards supply shall not exceed the final installed quantity of the item.
10. The above mile stone or progress payments are subject to submission of PBG/Security deposit to MRPL and Signing of contract agreement.

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**FORMAT FOR SUB-CONTRACTOR'S APPROVAL**



**[ANNEXURE- III TO SPECIAL CONDITIONS OF CONTRACT]**

- 1) NAME OF MAIN CONTRACTOR : \_\_\_\_\_
- 2) NAME OF WORK, LOCATION : \_\_\_\_\_
- 3) NAME OF PROPOSED SUB-CONTRACTOR : \_\_\_\_\_
- 4) SCOPE OF WORK PROPOSED TO BE SUB-CONTRACTED  
(BRIEF): \_\_\_\_\_
- 5) ESTIMATED VALUE OF THE PROPOSED WORK TO BE SUB-CONTRACTED  
(INR): \_\_\_\_\_
- 6) CREDENTIALS OF SUB-CONTRACTOR:

7) Based on above information, we M/s \_\_\_\_\_ (Name of Main Contractor) propose M/s. \_\_\_\_\_ (Name of proposed subcontractor) as our sub-contractor for the above mentioned works. We understand that notwithstanding above approval, we shall remain fully responsible for the performance of the said sub-contractor and any failure of the sub-contractor shall not absolve/relieve us of our responsibility to complete the works as per the terms and conditions of the Contract.

**(STAMP & SIGNATURE OF CONTRACTOR)**

**8) QUALIFICATION STATUS (TO BE STAMPED BY PMC/OWNER):**

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**QUALIFICATION & EXPERIENCE REQUIREMENT OF KEY CONSTRUCTION PERSONNEL**

**[ANNEXURE- IV TO SPECIAL CONDITIONS OF CONTRACT]**

**CONTENTS**

**1.QUALIFICATION & EXPERIENCE (POST QUALIFICATION) AND DEPLOYMENT –**



<b>CATEGORY</b>	<b>QUALIFICATION &amp; EXPERIENCE (POST QUALIFICATION) REQUIRED</b>		
Resident Construction Manager/ /Site-In-Charge <b>One</b>	Degree or Diploma in Engineering with following minimum relevant experience in construction:		
	Contract value (Rs) →	≤20 Cr. works	> 20 Cr. works
	Degree holders	6 years	10 years
	Diploma holders	8 years	12 years
Lead Discipline Engineer (Mechanical, Civil, Electrical) <b>Minimum one from  each discipline</b>	Degree or Diploma in relevant Engineering discipline with following minimum experience in Construction:		
	Contract value (Rs)→	≤20 Cr. works	> 20 Cr. works
	Degree holders	2 years	4 years
	Diploma holders	4 years	6 years
Lead Welding/ NDT Engineer <b>As and when required  based on the quantum  of the job.</b>	Degree or Diploma in Mechanical Engineering/ Metallurgy with the following minimum experience in Welding & NDT (Non Destructive Testing) and possessing valid Level-II certificate in the relevant NDT methodology (RT/UT)		
	Contract value (Rs)→	≤20 Cr. works	> 20 Cr. works
	Degree holders	2 years	4 years
	Diploma holders	4 years	6 years

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<b>Lead QA/QC Engineer</b> Minimum One from each discipline of Civil, Mechanical, Electrical	Degree or Diploma in Engineering with following minimum experience:		
	Contract value (Rs)→	≤20 Cr. works	> 20 Cr. works
	Experience	4 years of construction Experience of which 2 years in QA/QC.	5 years of construction Experience of which 2 years in QA/QC.
<b>Lead Planning Engineer</b> <b>One</b>	Degree/Diploma in Engineering with following minimum experience in Planning & Scheduling:		
	Contract value (Rs)→	≤20 Cr. works	> 20 Cr. works
	Experience	3 year	4yr
<b>Safety Officer/ Supervisor</b> <b>Minimum two</b>	As per specification for HSE Management at construction sites enclosed elsewhere in the bid.		
<b>Discipline Engineer</b> (Including welding/ NDT, QA/QC and Planning) <b>Based on the quantum of the job</b>	Degree in relevant Engineering Discipline with minimum 1 years of relevant experience in construction or Diploma in relevant Engineering Discipline with minimum 2 years of relevant experience in Construction. Welding /NDT engineer shall possess valid Level-II certificate in the relevant NDT methodology (RT/UT)		

**Notes:**

1. CVs of key construction personnel proposed to be deployed shall be submitted to PMC/OWNER prior to their mobilization at site.
2. The mobilization of key personnel shall be done at site subject to prior approval of their CVs by PMC/OWNER.
3. Mobilisation of personnel shall done as per approved mobilisation plan and as directed by PMC/OWNER.

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**MRPL CONTRACT WORKERS SAFETY POLICY**

**ANNEXURE-V TO SPECIAL CONDITIONS OF CONTRACT**



**CONTRACT WORKER'S SAFETY POLICY**

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### CONTRACT WORKER'S SAFETY POLICY

1. **SCOPE:**

This policy is applicable to all the contractors and their employees working in MRPL. This is also applicable to sub-contractors, suppliers, vendors and visitors. All the contractors are required to ensure that they and their employees comply with relevant safety requirements as mentioned in this Safety Policy depending on the nature of work. This policy is not a substitute to the statutory rules and regulations and also the prevailing MRPL Safety Requirements. This is to further reinforce the existing Safety Standards in Refinery and Project Site.



2. **REFERENCE** : This document should be read in conjunction with following :

- General Conditions of contract (GCC)
- Special Conditions of Contract (SCC)
- Job specifications

3. **SAFETY REQUIREMENTS FOR CONTRACTORS:**

- Contractor shall furnish Safety policy and Safety Manual of their Company and his track record in safety for past three years to the Engineer Incharge.  
Contractor shall furnish details of their safety department with CVs of safety officers in his bid document to Engineer Incharge.
- The contractor MUST employ Qualified Safety Officers as per the table below, having about 5 years of relevant experience in chemical units or Petrochemical Plants or refineries, as per The Factories Act 1948 / Building and other construction workers (Regulation of Employment and conditions of service) Act 1996 and Central Rules 1998 / The Karnataka Factories Rules 1969. Contractor shall ensure that all his workmen are aware about the nature of risk involved in their work and have adequate training for carrying out their work safely. Such Safety Officers appointed shall be dedicated and responsible only for safety. They should not be given any other responsibility. The contractor and his sub-contractor, if any, shall comply with the instructions given by MRPL Engineer In- Charge or his authorized nominee regarding safety precautions, protective measures, house-keeping requirements etc. Engineer-In-Charge from MRPL shall have the right to stop the work of the contractor, if in his opinion, proceeding with the work will lead to an unsafe and dangerous condition. Engineer-In-Charge shall get the unsafe condition removed or provide protective equipment at the contractors cost, whichever is applicable.



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**Table**

Max. no. of employees < 30	One discipline (Engr. / Supervisor) with safety experience can function as Safety Staff on part time basis.
No. of employees: 30 – 100	One Safety Supervisor on full time responsibility.
No. of employees: 101 – 250	For Manpower Supply – Oriented Maintenance contract One Safety Supervisor on full time responsibility.  For Service – Oriented Maintenance / Project contract One Safety Engineer on full time responsibility + One Safety Supervisor on full time responsibility
Upto 250 Persons deployed by him at site	Deploy one Safety Officer and additionally deploy Three Safety Supervisors
For 251 to 500 Persons	Two Safety Officers, Six Safety Supervisors and Ten Safety Stewards
For more than 500 persons	Three Safety Officers, Ten Safety Supervisors and Twenty Safety Stewards

Qualification criteria of safety officer:

BSc /Diploma in engineering with post graduate Diploma in Industrial safety with min of 5 years experience in supervisory cadre.

OR



BE/BTech with post graduate Diploma in Industrial safety with min of 2 years experience in supervisory cadre.

Qualification criteria of safety supervisor:

BSc/Diploma in engineering with qualification in industrial safety



Or

Diploma in Industrial Safety



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4. **PERSONNEL:**

- Personnel / workmen (age 18 years & above) deployed at site should be physically / medically fit. Labours/workers shall not bring children/babies inside the refinery/ project site.  
SMOKING IS STRICTLY prohibited inside the refinery/ project site.
- Contractors and their workmen should restrict their activities to the site allocated to them.
- All contract men shall wear IS make PPEs like gloves, goggles, face shields, full body safety harness, safety belt, Safety Helmets, Safety Shoes etc during the work. They will not be permitted to enter the Refinery/ project site without wearing Safety Helmet, Safety Goggles & Safety Shoes. Damaged PPEs shall be taken out from use and disposed off properly.
- The contractor shall ensure that their men do not tamper with the facilities in operation. They shall not operate any Valves/ Switches etc.
- The contractor shall ensure that his workmen do not move around freely inside refinery/ project site premises other than the assigned place of work & also do not sleep anywhere (Below piperacks / equipments / trucks / etc.) inside refinery/ project site premises.
- The personnel engaged by the Contractor shall maintain good conduct and discipline commensurate with Industrial standard. If in the opinion of the Engineer-in-charge any of the personnel have not maintained good conduct and discipline, the Contractor shall remove such personnel immediately from MRPL premises and provide alternate personnel.
- The contractor Supervisors and Engineers must get themselves conversant with MRPL's Standard Operating Procedures (SOP), safety norms, Rules and Regulations that are in force. They must also be conversant with the MRPL's Emergency Procedures and Emergency telephone numbers and should ensure display of same at prominent place.
- Special safety precautions to be taken by the contractor or their personnel working in an operating refinery/ project site are given below. The safety procedure may undergo a change from time to time, which will be intimated to the contractor to follow and implement them.
- In addition to the following minimum safety requirements, the contractor must comply with the safety requirements, norms, rules and regulations as per the Factories Act 1948 and Karnataka Factories Rules 1969, OISD Guidelines 207 and other OISD standards / guidelines and Indian Standards.



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- The contractor must prepare a detailed “Safety Programme” and submit it to Engineer In-charge of MRPL immediately after the finalization of contract / placing of LOI / order. This will include Safety Policy, Safety Responsibilities at various levels, Formations of Safety Committees and meetings, Method statements, Job Safety Analysis (JSA), Safety inspections, various pre-inspection checklists, Safety manuals, Safety Audits, Emergency Plans, Safety procedures to be implemented for all the activities, deputation of Safety Officers, enforcement of safety practices.
- Contractor shall devise a procedure on Accident Reporting. All accidents including Near Misses and property damages to be reported as per the MRPL’s Accident Reporting Procedure in force. All Accidents including Near Misses to be communicated immediately to Engineer Incharge over telephone / verbally / and later submit the accident report. All accidents must be investigated, classified, analysed & comply with the recommendations to avoid its recurrence. Monthly Accident statistics must be developed and circulated. Contractor shall maintain a register of all such accidents.
- During the mobilization, equipments, machines, tools, tackles etc. to be inspected at the site from where it is being mobilized. Damaged ones should be discarded and ensured not mobilized at MRPL site. The statutory checks, inspections and certification is carried out before mobilizing at MRPL site. Necessary repairs and maintenance to be carried out and equipment, machine, tools, tackles etc. is mobilized at MRPL site in working condition. The previous records of maintenance and the competent person’s certificates to be made available during mobilization and submitted to MRPL Engineer Incharge. The equipments, machines, tools, tackles, etc to be tagged and mobilized.
- A Safety Committee must be formed to discuss accidents, Unsafe Acts and Unsafe conditions. This should be chaired by the High ranking Official / Site-In-Charge with equal participation both from supervisory and non-supervisory cadres of employees. Engineer In-Charge of MRPL also should be involved in such meetings as an observer. The frequency of meetings shall be once in a month minimum and actions taken to avoid recurrence of Nearmiss, Minor injuries etc.
- Circular of the meeting must also be issued to MRPL Engineer Incharge at least one-week in advance. Minutes of the meetings to be prepared on the same day and submitted on next day of the meeting.
- The contractor shall take all safety precautions during the execution of awarded work and shall maintain and leave the site safe at all times. At the end of each working day and at all times when the work is temporarily, suspended, he shall ensure that all materials, equipment and facilities will not cause damage to existing

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property, personal injury or interfere with other works of the Refinery/ project site. The contractor shall comply with all applicable provisions of the safety regulations, clean up programme and other measures that are in force at the site.



- Safety Inspections of the site to be conducted daily and Safety Audits to be conducted once in three months by a team of Senior Officials of the contractor. Report on findings of such Audit to be submitted to the Engineer Incharge and compliance report of the suggestions on findings to be submitted weekly to Engineer Incharge.
- Daily Safety Inspection of jobs and safety audit to be conducted every month and the report and protocol signed by all parties, Contractor's safety officers with signatures of Site Incharges of contractor shall be part of subsequent RA bill.
- Method statement along with Job Safety Analysis to be submitted at least 15 days in advance before starting of any activity.
- Prior information of high risk jobs as planned shall be informed with short details of the work, job safety analysis report to the Engineer Incharge at least 48 hours before starting of such jobs.
- High risk jobs like fabrication at height, lifting and shifting, erection of equipments etc shall be video recorded by the contractor.
- The contractor shall provide and maintain all lights, guards, fencing, warning sign, caution boards, other safety measures and provide for vigilance as and where necessary or as required by the Engineer-In-Charge or by any duly constituted authority for the protection of workers or for the safety of others. The caution boards shall also have appropriate symbols visible during night also.
- Adequate lighting facilities, including emergency lighting, such as floodlights, hand lights and area lighting shall be provided along with ELCBs by the contractor at the site of work with isolation switch known to all at site with proper display, storage area of materials and equipment and temporary access roads within his working area. The contractor shall obtain written approval of the Engineer-In-Charge to the lighting scheme and place of tapping prior to its installation.
- Use of devices like Distress alarm system for all personnel entering into confined space to be mandatory. Biometric attendance of personnel entering confined space should be maintained. Necessary Biometric punch machine to be arranged by the contractor at his own cost for this purpose. Staircases shall have temporary hand rail and guard till permanent handrails are fabricated and installed.
- The contractor shall plan his operations so as to avoid interference with the other departmental works, other contractors or sub-contractors at the site. In case of any interference, necessary coordination shall be sought by the contractor from the Department for safe and smooth working.

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- The contractor shall be held fully responsible for non-compliance of any of the safety measures, procedures and delays, implications, injuries, fatalities, property damage and environmental degradation and compensation arising out of such situations or incidents. The contractor should device a procedure to maintain head count of his personnel manually or with an installation of punching machine at site and ensure evacuation of his personnel through defined emergency exit in case if situation demands and also during confined space entry.
- Smoking is prohibited in the Refinery/ project site / work site / offices. Consumption of alcohol and any other intoxicating material shall be also treated as safety violation and heavy penalty shall be levied on the main contractor.
- Radiography source and also the Explosives used for controlled blasting will not be permitted to be stored at site. Detailed accident report with photographs to be submitted to factory manager and Engineer In-charge from MRPL immediately.
- Contractor's Vehicles/Engines and approved electrical / mechanical equipments & lifting tools / tackles, welding generator that are to be used inside refinery/ project site are to be certified by competent authority. Statutory checks are to be carried out and records are to be maintained by contractors to ensure healthiness. These certificates will be regularly checked by MRPL engineer in-charge.
- The Contractor shall ensure that all industrial consumables such as Oxygen, Acetylene, Argon, Nitrogen, welding electrodes etc. are approved by MRPL, tested and records maintained by the contractor as per Gas Cylinder Rules before they are used for the job. LPG for gas cutting purpose is not allowed.
- The Fire prevention / protection and safety equipments (including Personal Protective Equipments) should be certified by MRPL engineer in-charge.

**5. HEALTH AND HYGIENE:**

- Sufficient number of toilets shall be provided by the contractor for its workmen and hygiene standard should be maintained.  
Contractor to ensure no water stagnation at site.  
Potable water facility for all workers shall be provided and maintained by the contractor.  
Inspection of drinking water, sanitation, shall be done by MRPL. Availability of dust masks shall be ensured by the contractor at site.  
Contractor to maintain affordable hygienic canteen for the workers.
- The contractor must maintain record of medical examinations of its employees as per The Factories Act 1948 and The Karnataka Factories Rules, 1969 and The

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Building and other construction workers (Regulation of Employment and conditions of service) Act 1996 and Central Rules 1998. This will include eye test of crane operators, vehicle drivers and all others. Also

- Fitness certificate by the Medical Officer for working at height to be produced for each employee requiring to work at height.
- Adequate means and personnel for rendering first aid should be readily available at site and during working hours at places where work is carried out.
- Medical aid for First-Aid should be available.
- First Aid kits or boxes, as appropriate, should be provided at the workplaces and on motor vehicles, cranes, etc. and be protected against contamination by dust, moisture, etc.
- When workers are employed underground or beneath structures or pits or other conditions in which they may need to be rescued, suitable rescue equipment like tripod with pulley and safety belt should be readily available at site at or near the work site along with trained rescue workers.

#### 6. **VEHICLE MOVEMENT:**

- The contractor shall conduct his operation so as not to interfere with the use of existing roads at or near locations where the work is being performed.
- Speed limit inside the refinery/ project site is 16 KMPH which should be strictly followed. For heavy machinery like cranes / forklift / RMC trucks, etc. the speed limit is 5 KMPH maximum.
- Special precautionary measures should be taken during transportation of long sized cargo, route as defined should be followed and for safety of personnel (with proper escort) and damages to the facilities should be avoided. Procedure for vehicle entry and Speed limits in Refinery/ project site should be strictly followed. Vehicles and cargos passing through refinery should have PESO approved spark arrestor fitted.
- When interference to traffic is inevitable, notice of such shall be given to the Engineer- In-Charge of MRPL well in advance with the details of start of the work and time required, storage of materials, and details of the proposed methods of providing the required facilities for safe and continuous use of roads and obtain his clearance.
- The contractor shall exercise full care to ensure that no damage is caused by him or his workmen, during the operation, to the existing water supply, sewerage, power or telecommunication lines or any other services or works. The contractor shall be required to provide and erect before starting of the work, substantial barricades,





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guardrails and warning signs. He shall furnish, place and maintain adequate warning lights, signals etc, as required by the Engineer-In-Charge.

- Vehicles must have green red flags and whistles for the cleaner to guide driver. All vehicles entering MRPL premises shall have cleaner / helper.
- The vehicles must be maintained as per the preventive maintenance schedule of the manufacturer / supplier. Only Drivers that are trained in Defensive Driving shall be deployed inside Refinery/ project site.
- Vehicles to be inspected fortnightly by trained technicians as per the inspection checklist.
- Pre-inspection checklist to be formed to that effect.
- All vehicles to bear a sticker. "If you notice this vehicle is over speeding then please inform on telephone no 08242882192 / 2191 / 2194 / 2771 / 2731".
- Tractors and trucks / cranes / forklift should not be used for transporting personnel.
- Every vehicle should have the contractor's name prominently displayed on Tractor Trolleys, trucks, jeeps, cranes, JCBs, Poclains, trailers. The display board should be put on front and rear side of each of the vehicle.
- Tractor trolleys must have independent brake systems both on tractor as well as on trolleys.
- All vehicles must be fitted with PESO approved spark arrestors.
- Tippers/trucks carrying debris and soil/mud/sand shall ensure that there is no spillage of material on road. If any such spillage observed the same need to be cleaned and cleared by the contractor immediately. Wheels of the trucks and vehicles shall be clean and free from mud.
- Contractor to maintain Inspection and maintenance logs for every vehicle.
- Any kind of repair work on contractor's vehicle is to be carried out only inside the work shop or designated place and not allowed inside the battery area or anywhere at on road or at site.



#### **7. SAFE MEANS OF ACCESS:**

- The contractor must possess adequate numbers of self retractable type fall arresstors (of different sizes viz. 6m, 20m, 40m, and 60m), Safety nets and Safety Belts (Full Body Safety Harness) (ISI approved).

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- Adequate and safe means of access and exits shall be provided for all work places, at all elevations. Using of scaffolding members (avoiding a ladder) for approach to high elevation shall not be permitted.
- Suitable scaffolds shall be provided for workmen for all works that cannot be done safely from the ground, or from solid construction except such short duration work as can be done safely from ladders. Ladder shall be of rigid construction having sufficient strength for the intended loads and made of metal and all ladders shall be maintained well for safe working condition. If the ladder is used for carrying materials as well, suitable foot holds and handholds shall be provided on the ladder. Ladders shall not be used for climbing carrying materials in hands. While climbing both the hands shall be free. Ensure positioning of person at base / grade level while it is in use. All ladders, platforms, full body safety harness and safety nets should be inspected regularly and records should be maintained. Damaged items shall immediately be taken out of service and disposed off.
- Scaffolding staging more than 1.5 m above the ground or floor, swung or suspended from an overhead support or erected with stationary support and ladder shall conform to relevant IS specification. Timber bambToo scaffolding is not allowed inside the Refinery/ project site.
- Working platforms of scaffolds shall have toe boards 15cms in height to prevent materials from falling down.
- A sketch of the scaffolding proposed to be used shall be prepared and approval of the contractor's Mechanical Engineer obtained prior to start of erection of scaffolding. All scaffolds shall be examined and certified with proper display of tags by contractors Mechanical Engineer before use.
- Safe means of access shall be provided to all working platforms and other elevated working places. Every ladder shall be securely fixed. No single portable ladder shall be over 9m in length. For ladders upto 3m in length the width between side rails in the ladder shall in no case be less than 300mm. For longer ladders this width shall be increased by atleast 20mm for each additional metre of length. Step shall be uniform and shall not exceed 300mm.
- Working platform and gangway along the side of pipe racks shall be provided. Under no circumstance the contractor employees should step on pipes at pipe racks.



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#### 8. EXCAVATION, TRENCHING AND EARTH REMOVAL:

- A Work Permit must be taken for any excavation or earth removal inside the existing refinery/ project site premises from Engineer In-Charge MRPL, as the area of work has underground pipelines, cables etc.
- All trenches 1.2m or more in depth shall at times be supplied with at least one ladder for each spacing of 3.0m in length or fraction thereof. Ladder shall be extended from bottom of the trench to at least 1m above the surface of the ground.
- The sides of the trench which are 1.2m or more in depth shall be stepped back to give suitable slope (angle of repose) or securely held by timber bracing (i.e. shoring of the excavated trench or pit should be done), so as to avoid the danger of sides from collapsing. The excavated material shall not be placed within 2m of the edges of the trench or half of the depth of the trench, whichever is more. Cutting shall be done from top to bottom. Under no circumstances under-cutting shall be done.
- The contractor shall ensure the stability and safety of the excavation, adjacent structures, services and the works.
- Open excavations shall be fenced off by railing (ledger pipes) and warning signals installed at well-lit places so as to prevent persons falling into the excavations.
- All blasting operations shall be carried out on the basis of procedures approved by Inspector of explosives. All works in this connection shall be carried out as per IS code of practice. Barricades, Warning signs etc. shall be placed on the roads / open area. Prior approval of such operation shall be obtained from Engineer-In-Charge of works. The blasting procedure being followed by the contractor must be submitted with MRPL engineer in-charge.
- The contractor must submit the methodology, safety aspects, schedule, License and other relevant features of control blasting operations.
- Wherever manual removal of earth is involved, earth shall be removed from the top by maintaining the proper slope equal to the angle of re-pose of the earth. Manual removal of earth / lowering of person in a pit should be done with tripod and pulley besides use of Full body Safety Harness by person.
- Such work shall be constantly supervised by the contractor's responsible persons.

#### 9. DEMOLITION:

Before any demolition work is commenced and also during the progress of the work:



- Proper approvals shall be taken from Engineer in-Charge MRPL before commencing demolition.

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- Area around shall be barricaded with cautionary signs and posting of security guards or supervisors for preventing unauthorised entries of personnel.
- All roads and open area adjacent to the work site shall either be closed or suitably protected. Appropriate warning signs shall be displayed for cautioning approaching persons.
- No floor, roof or other part of the building shall be overloaded with debris or materials as to render it unsafe.
- Entries to the demolition area shall be restricted to authorized persons only.
- Contractor to place separate collection facility of waste like metal, on metal non degradable and bio degradable wastes and shall dispose to designated place daily basis.
- Contractor shall be responsible to clear dry grass and wooden items etc from and around his working site/storage/fabrication yard etc to prevent any fire accidents.

10. **PERSONAL PROTECTIVE EQUIPMENTS:**



- All proper “ISI” marked Personal Protective Equipments (PPEs) as considered necessary by the Engineer-In-Charge shall be kept available by contractor for the use of the persons employed on the site and maintained in a condition suitable for immediate use. Also the contractor shall take adequate steps to ensure proper use of equipment by those concerned. The PPEs are to be provided by the contractor.
- All persons employed at Refinery/ project site shall use safety helmets, safety shoes and safety goggles as minimum safety gears. For other types of works, persons working in that area shall also use the required PPEs, as advised by the Engineer-In-Charge of MRPL.
- Workers employed on mixing asphaltic materials, cement and lime mortars shall use Gumboots, safety goggles, hand gloves and proper respirator.
- Persons engaged in welding and gas-cutting works shall use suitable welding face shields with welder’s helmet. The persons assisting the welders shall use suitable goggles. Protective goggles shall be worn while chipping and grinding.
- Stonebreakers shall use protective goggles. They shall be seated at sufficiently safe intervals or distance.
- Persons engaged in or assisting in shot blasting (Sand blasting is prohibited) operations and cleaning the equipment after shot blasting shall use suitable gauntlets, overalls, dust mask, dust proof goggles, safety shoes and protective hood supplied with fresh air.

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- All persons working with 3M lifeline and hook at height above ground or floor and exposed to risk of falling down shall use safety belts (Full Body Safety Harness with double life line and scaffolding hooks, ISI marked) which should be properly secured to solid object unless otherwise protected by cages, guard railings, etc. In places where the use of full body safety harness is impractical, suitable safety net of adequate strength fastened to substantial supports shall be employed under proper valid permit.
- When workers are employed in sewers and inside manholes, which are in use, the contractor shall ensure that the manholes are opened and are adequately ventilated at least for an hour. The atmosphere inside the space shall be checked for the presence of any toxic gas or oxygen deficiency and recorded in the confined space entry permit, availability of standby person at manhole must be ensured before the personnel are allowed to get into the man-holes. The manholes opened shall be cordoned off with suitable railing and provided with warning signals or caution boards or barricade tape to prevent accidents. There shall be proper illumination in the night.

11. **PAINTING:**



- Respirators shall be provided by the contractor for use when paint is applied, safety of personnel in vicinity also should be considered while painting.
- Overalls shall be supplied by the contractor to the workmen and adequate facilities shall be provided to enable the painters for decontamination at the cessation of work.
- All solvent-based paints, thinners shall be stored in separate well ventilated storage kept under proper surveillance.
- Smoking, open flames or sources of ignition / hot work shall not be allowed in places where paints and other flammable substances are stored, mixed or used. A caution board, with the instructions written in national / regional language, "SMOKING / HOT WORK - STRICTLY PROHIBITED" shall be displayed in the vicinity where painting is in progress or where paints are stored. Symbols shall also be used for caution boards.
- Suitable IS marked First Aid Fire Fighting equipments shall be kept available at a place where flammable paints are stored, handled or used.
- When painting work is done in a closed room or in a confined space, adequate ventilation shall be provided. Workers shall wear suitable supplied air type breathing apparatus. Work shall be carried out under a valid work permit.

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- Epoxy resins and their formations used for painting shall not be allowed to come in contact with the skin. The workers shall use PVC gloves and / suitable barrier creams.
- Adequate ventilation shall be provided especially when working with hot resin mixes.
- Increased personal hygiene shall be practiced to control inadvertent contact with the resin and eliminate its effects.
- Workers shall thoroughly wash hands and feet before leaving the work. Work clothes shall be changed and laundered frequently.
- Care must be taken while carrying out painting inside confined space. There shall be safety devices to monitor the personnel working inside confined space like vessels during painting of internal surface. Suitable painting methods shall be adopted as specified elsewhere. It should not be clubbed with hot work and proper ventilation should be available to draw out the solvent vapours. Manual painting is to be adopted instead of spray painting.

**12. LIFTING MACHINES TOOLS AND TACKLES:**

- Supplier's / Manufacturer's manual for operations / safety / periodical maintenance of all Cranes, winches, JCBs, Poclains, Excavators, Trucks, tractors, Vehicles, etc. MUST be made available at site from the moment it is brought at site and the same should be strictly adhere to.
- Lifting machines, tools and tackles shall be of good mechanical construction, sound material, adequate strength, free from any defects and shall be kept in good working condition.
- Lifting machines, tools, tackles, equipments etc. to have identification tags of steel plate of size 2"x 2" tied to it using steel wire of 4 mm size. The details like reference number, Safe Working Load (SWL), date of testing, next due date of testing, etc. to be punched on this plate.
- Contractor must produce Competent Authority's (Authorised by The Directorate of Factories, Karnataka state) Certificate of testing in the prescribed form of Lifting Machines, Chains, ropes and lifting tackles well in advance. Only valid Lifting Machines, tools etc. to be used and to be re-certified before expiry of certificate. Also, these equipments will be inspected by Engineer In-Charge of MRPL as and when required. The same procedure is applicable for all other Electrical Equipments, tools, machines, D.G sets, compressors, etc.



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Lifting equipments for testing by competent authority to include JCB, Poclain, Excavators, etc.

The ringer crane to be tested and certified every time by Competent Person it is dismantled and reassembled. This certification must also include stability of soil on which it is assembled.

Use of Hydra is not permitted inside refinery/ project site/construction premises. Hydraulically jacked lifting machines to be used.

- Lifting machines, tools, tackles, equipments etc. to be inspected in addition to the Competent Authority's certification. This should be done fortnightly by experienced trained mechanical foreman and technicians and record of such inspection to be maintained.
- Every rope and sling used in hoisting or lowering of materials or as a means of suspension shall be of good quality and adequate strength and free from any defect.
- Every crane operator or lifting appliance operator shall have a driving License for Heavy Vehicle, proper physical fitness such as eye sight etc. and with adequate experience. No persons under the age of 21 years shall be in charge of any hoisting machine or give signal to operator of such machine.
- In case of every lifting machine (and of every chain, ring, hook, shackle, swivel and pulley block used in hoisting or as means of suspensions) the safe working load shall be ascertained and clearly marked. In case of a lifting machine having a variable safe working load, each safe working load and the conditions 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.
- The contractor shall notify the safe working load of the machine to the Engineer-In-Charge whenever he brings any machinery to site for work and get it verified by the Engineer-In-Charge, supported by a valid test certificate by the competent person.
- Motors, gearing transmission, couplings, belts, chain drives and other moving parts of hoisting appliances shall be provided with adequate safeguards. Hoisting appliances shall be provided with such means as to reduce to the minimum risk of any part on a suspended load becoming accidentally displaced or lowered.
- The contractor must have a team of Experienced Mechanical Personnel (having minimum of 5 years. experience in carrying out safety inspection and testing of Lifting machines, Tools and Tackles etc.), to conduct periodical (Daily, fortnightly, monthly and quarterly) inspection and testing of Lifting machines, Tools and Tackles and to maintain its records.

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- Crane shall not be used as hoist. In case cranes are used as hoist then factory Inspector's permission to be taken in advance and to be subject to biannual testing by competent person as required for hoist under Factories Act 1948. Also, the design of cage to be got approved by the competent person well in advance. Two ropes or chains to be provided to the cage, separately connected with the cage, suspended independently and capable of carrying the whole weight of the cage.
- Contractor to maintain operation, inspection and maintenance logs for every lifting equipment, tool and tackle.



13. **TEMPORARY SHEDS:**

- Before erecting temporary shelters like sheds or tents anywhere at site, written permission of the concerned Engineer In-charge must be obtained.
- Temporary sheds for site office should be avoided. Instead contractor shall arrange for portal cabins for site office / stores.
- Temporary shed should not be erected using scaffolding pipes. The shed should be made of safe construction material.
- The temporary shed should be erected after proper designing following engineering design practices in conformance with normal safety standards to ensure the stability and safety.
- Temporary shed should bear the contractor's name.
- Temporary piping, hose connections and electrical wiring to these temporary sheds must be laid in such manner that they do not cause tripping, hitting or electrocution hazards.



14. **ERECTION:**

- At the planning stage consideration should be given, by those responsible for the design, to the safety of the workers who will subsequently be employed in the erection of such structures. A detailed erection scheme / schedule shall be furnished well in advance for all the critical erections.
- Care should be exercised by design engineers and other professional persons, not to include anything in the design which would necessitate the use of unwarrantably dangerous structural procedures and undue hazards, which could be avoided by design modifications.
- Facilities should be included in the design for such work to be performed with the minimum risk.





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- Detailed Safety Procedure should be submitted as a part of Heavy Equipment erection scheme. Heavy Equipment erection scheme must be submitted at least one month in advance.
- Erection engineer to conduct training on rigging before every heavy lift / erection for crane operator, foreman and riggers.
- Erection of structural platforms, gratings and hand rails to be done on priority. The procurement of gratings, structural members for hand rails to be done on priority.
- Prefabricated parts should be so designed and made that they can be safely transported and erected.
- As far as practicable the safety of prefabricated parts while erection should be ensured by appropriate means, such as provision and use of:
  - a) Ladders;
  - b) Gangways;
  - c) Fixed platforms;
  - d) Platforms, Buckets, boatswain's chairs, etc. suspended from lifting appliances;
  - e) Safety belts and lifelines; and
  - f) Safety nets or catch platforms.
- Ladders to be inspected fortnightly by experienced trained mechanical foreman and mechanical technicians and record of such inspection to be maintained.
- The boatswain's chairs/ platforms used in structural erection to be inspected and checked once in fortnight and record maintained.
- In addition to the conditions of stability of the part when erected, when necessary to prevent danger the design should explicitly take into account:
  - a) The conditions and methods of attachment in the operations of stripping, transport, storing and temporary support during erection; and
  - b) Methods for the provision of safeguards such as railings and working platforms, and, when necessary, for mounting them easily or prefabricated parts.
- The hooks and other devices incorporated in 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; and
  - b) Not set up in the part stresses that could cause failures, or stresses in the building not provided for in the plans.
- Prefabricated parts made of concrete should not be stripped before the concrete has set and hardened sufficiently to ensure the safety of the operation.



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- Store places should be so constructed that:
  - a) There is no risk of prefabricated parts falling or overturning; and
  - b) Storage conditions generally ensure stability having regard to the method of storage and atmospheric conditions.
- Prefabricated parts made of concrete should not be erected before the concrete has set and hardened to the extent provided for in the plans.
- While they are being stored, transported, raised or set down, prefabricated parts should not be subjected to stresses prejudicial to their stability.
- Trailers only to be used for transportation of pipes. Crane to be used for erection at site.
- Every lifting appliance should:
  - a) Be suitable for the operation; and
  - b) Be approved by a competent person, or tested under a roof load 20 percent heavier than the heaviest prefabricated part.
  - c) Ringer mode of a heavy crane MUST be inspected, checked and certified by competent person every time it is dismantled and erected. The report must bear the stability of the soil on which it is erected.
- Lifting hooks should have the maximum permissible load marked on them.
- Tongs, clamps and other appliances for lifting prefabricated parts should:
  - a) Be of such shape and dimensions as to ensure a secure grip without damaging the part; and
  - b) Be marked with the maximum permissible load in the most unfavourable lifting conditions.
- Prefabricated parts should be lifted by methods or appliances that prevent them from spinning accidentally.
- The temporary basket cages / Platforms / Buckets / boatswain's chairs, etc. used for lifting / working at height suspended from lifting appliances or suspended from structures or beams MUST be certified by competent person and provisions or conditions as stipulated during certification to be adhere to.
- While prefabricated parts are being lifted measures should be taken to prevent workers from being struck by objects falling from a height and area around such site should be barricaded with cautionary signs.
- When necessary to prevent danger, before they are raised from the ground, prefabricated parts should be provided with safety devices such as railings and working platforms to prevent falls of persons.
- If workers are exposed to danger when releasing prefabricated parts from lifting appliances, adequate safety measures should be taken.



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- At workplaces adequate instructions should be given to the workers on the methods, arrangements and means required for the construction, storage, transport, lifting and erection of prefabricated parts.
- When it is not practicable to install protective guardrails and toe boards the workers should be provided with and use safety belts and lifelines to limit the height of the fall.
- Overhead screens to be provided to prevent workers from being struck by falling objects.
- The safety devices (guard-rails, toe-boards, safety belts and lifelines) should not be removed so long as the risk remains.
- Precautions should be taken to prevent fires being caused by rivet-heating equipment.
- Rivet heaters should extinguish their fires before leaving work.
- Extra care should be taken to prevent fall of objects, tools, etc. from height.
- Before structural steel parts are lifted, care should be taken that any object that could fall is fastened or removed.
- Structural steel parts should not be dragged while being lifted if that could cause danger.
- Steel trusses that are being erected should be adequately shored, braced or guyed until they are permanently secured in position.
- While structural members are being moved into place the load should not be released from the hoisting rope until the members are securely fastened in place.
- 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.
- No load should be placed on open-web steel joists until they have been placed in position and secured.
- Erection of pipes to be done using web belts only. Web belts must be inspected and checked fortnightly internally by the contractor and records maintained. Damaged ones to be cut to pieces and record to be maintained.
- Nipples and other accessories used for hydrotest and subject to high pressures to be inspected, checked and tested by experienced trained mechanical foreman and mechanical technicians and records maintained. Damaged parts to be replaced immediately with the new ones.
- Discarding criteria of web belts to be procured from the supplier / manufacturer by the contractor and submitted to MRPL Engineer Incharge.

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15. **WORK ON TALL CHIMNEYS:**

**SCAFFOLDS:**

- All workmen should be certified medically fit by medical practitioner before working at height. Mock up drills MUST be conducted by the contractor for all these workmen and issue Working at Height passes to only those who has experience of working at height, is declared medically fit and shows confidence during mock up drills.
- For the erection and repair / painting of tall chimneys and vertical structures scaffolding should be provided. Scaffolds after erection should be certified by competent mechanical engineer for its strength before use and be displayed with a tag "Certified for use".
- Scaffolds should confirm to relevant Indian Standards. Contractor MUST have a team of trained scaffolders including trained Scaffolding engineer.
- Fixed inside scaffolding should be securely anchored in the chimney wall.
- The scaffold floor should always be at least 65 cm (26 in) below the top of the chimney.
- Under the working floor of the scaffolding the next lower floor should be left in position as a catch platform.
- Suspended outside platform (inspection scaffolds) should be provided as per the relevant standards as stated above.
- Use of Catch platforms, stairs, ladders and Iron rung, lifting tools, tackles and work with hot asphalt, tar should be carried out as per the procedures outlined in relevant ILO manual.
- Full Body Safety Harness (Safety Belt) with lifelines (of various sizes 2', 5' and 9' double lanyards) and safety nets being used should confirm to relevant standards and are to be inspected, tested, periodically and records be maintained. Damaged safety belts and nets should be discarded, taken out of service and disposed off.
- Safety belts must be used while working at height. The life lines (lanyard) MUST be tied to firm support. Incase of absence of firm support provision of wire rope of adequate size tied with lifting tackles to be made to tie the safety belt life line (lanyard).
- All Safety belts to be inspected once in a month and damaged ones to be discarded. Suppliers /Manufacturers Discarding criteria of safety belts to be submitted to MRPL. The record of inspection and the results to be maintained. And a copy to be submitted to Engineer Incharge.
- The scaffolds to be inspected and certified by the competent mechanical Engineer before use and subsequently, at least once in a week.

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**16. SAFETY OF ELECTRICAL WORKS:**

Before starting work in live electrical panels, proper electrical isolation shall be ensured. The same to be inspected by the electrical in charge and necessary isolation tag shall be attached. Proper electrical isolation permit system along with LOTO (Locking Out / Tagging Out) system shall be maintained by the contractor. Triplicate copy of such permits shall be submitted to MRPL.

**17. CATCH NETS:**

- Where workers cannot be protected against falls from heights by other means they should be protected by catch nets.
- Catch nets should be made of good quality fiber cordage, wire or woven fabric or material of equivalent strength and durability.
- The perimeter of catch nets should be reinforced with cloth-covered wire rope, manila rope or equivalent material.
- Catch nets should be provided with adequate means of attachment to anchorage.
- Catch nets to be inspected fortnightly, tested and records maintained. Damaged safety nets should be discarded and record maintained.

**18. PROTECTION AGAINST MOVING VEHICLES:**

Workers who are regularly exposed to danger from moving vehicles should wear;

- a) Distinguishing clothing, preferably bright yellow or orange in colour; or
- b) Devices of reflecting or otherwise conspicuously visible material.



Light Vehicle shall have reverse horn and Heavy Vehicles shall have trained helpers with whistle and red and green flags for directing the driver.

**19. HANDLING MATERIALS:**

- Mechanical means should be provided and used for lifting and carrying loads.
- Personnel should have knowledge of safe ways of material handling.



**20. STACKING AND PILING:**

- Materials and objects should be so stacked and unstacked that no person can be injured by materials or objects falling, rolling, overturning, falling apart or breaking.
- Area earmarked for stacking and piling should be barricaded and only authorised personnel be allowed to carry out stacking and piling jobs.
- Proper stacking and piling should be done as per the guidelines of ILO.

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## 21. WELDING AND GAS CUTTING:

- Welding and gas cutting operations shall be done only by qualified and authorised persons and as per IS specification and code of practice.
- All the hoses used on compressed gas cylinders (Acetylene, Oxygen etc.) to be as per IS.
- Welding and gas cutting shall not be carried out in places where flammable or combustible materials are kept and where there is danger of explosion due to presence of flammable / gaseous mixtures. Contractor shall continuously monitor the area with Explosimeter / H2S meters.
- Welding and gas cutting equipments including hoses and cables shall be maintained in good condition. It should be checked daily by the user and fortnightly by the supervisor and recorded.
- Barriers shall be erected to protect other persons from harmful rays from the work. When welding or gas cutting is done in elevated positions / on trenches / inside refinery/ project site units, precautions shall be taken to prevent sparks or hot metals falling on persons or flammable materials (Welding booths shall be constructed).
- Use of proper PPEs by personnel involved in Gas cutting / Electric Arc welding should be ensured. Use of Welders Helmet with face shield by the welders is a MUST.
- Fire extinguisher shall be available near the location of welding operations. Valid permit shall be obtained before flame cutting / welding is taken up & comply with all the permit requirements.
- Contact of personnel with the electrode or other live parts of electric welding equipment shall be avoided.
- Extreme caution shall be exercised to prevent accidental contact of electrodes with ground.
- The welding cables shall not be allowed to get entangled with power cables. It shall be ensured that movement of materials does not damage the cables.
- Oxy-Acetylene cylinders must be mounted on trolley with chain holding the compressed gas cylinders. The compressed gas cylinders must have pressure gauges fitted over it and Oxy-Acetylene Gas cutting set should be fitted with flash back arrestor at both the torch and cylinder ends.
- Under no circumstance the compressed gas cylinder should be taken inside the confined space or excavated pits. Hydraulic test certificates of all compressed gas cylinders should be maintained and furnished as and when required.

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**22. GRINDING:**

- All portable grinders shall be used only with their wheel guards in position to reduce the danger from flying fragments should the wheel break during the use.
- Grinding wheels of specified diameter only shall be used on a grinder – portable or pedestal- in order not to exceed the prescribed peripheral speed.
- Helmet with face shield shall be used during grinding operation.



**23. HOUSE KEEPING:**

The contractor shall at times keep his work spot, site office and surroundings clean and tidy from rubbish, scrap, surplus materials and unwanted tools and equipment.

- Welding and other electrical cables shall be routed as to allow safe traffic by all concerned.
- No materials on any of the sites of works shall be so stacked or placed as to cause danger or inconvenience to any person or the public. The Engineer-In-Charge may require the contractor to remove any materials which, are considered to be of danger or cause inconvenience to the public.
- At the completion of the work, the contractor shall have removed from the work premises all scaffoldings, surplus materials, rubbish and all sheds and sanitary arrangements used / installed for his workmen on the site.
- House keeping of the workplace shall be done strictly by the Contractor on daily basis or as required by the Engineer-in-charge. Contractor to collect all debris/ scrap and dump at designated Scrap Yard as defined by MRPL authorities.
- A separate housekeeping team to be formed and made available round the clock.

**24. FIRE SAFETY:**

- Adequate number of duly calibrated Explosimeters, Oxygen meters, Hydrogen Sulphide detectors (Portable / Fixed) or any other multiple gas detector should be made available at site by the contractor.
- Combustible materials like timber, bamboos, paints etc. shall not be used at MRPL site for scaffolding or for supports.
- Containers of paints, thinners and allied materials shall be stored in a separate room, which shall be well ventilated, and free from excessive heat, sparks, flame or direct rays of the sun. The containers of paint shall be covered or properly fitted with lid shall not be kept open except while using.
- Fire extinguishers as approved by Engineer-In-Charge shall be located at the work site at appropriate places.

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- Adequate number of contract workmen shall be given education and training in fire fighting and extinguishing methods.

25. **WORK PERMIT SYSTEM: DELETED**

26. **WORK IN AND AROUND WATER BODIES:**

When the work is done near any place, where there is a risk of drowning, all necessary rescue equipment such as life buoys and life jackets shall be provided and kept ready for use and all necessary steps taken for prompt rescue of any person in danger and adequate provision shall be made for prompt first-aid treatment of all injuries likely to be sustained during the course of the work. Persons who do not know swimming shall not be engaged alone for any work where risk of drowning exists. Sufficient number of life buoys or life jackets shall be provided.



27. **PUBLIC PROTECTION:**

The contractor shall make all necessary provisions to protect the public. He shall be bound to bear the expenses for defense of every action or other proceedings of law that may be brought by any person for injury sustained owing to neglect of any precaution required to be taken to protect the public. He shall pay the damage and cost which may be awarded in any such suit, action or proceedings to any such person, or the amount which may be fixed as a compromise by any such person.

28. **OTHER STATUTORY PROVISIONS:**

Notwithstanding the above clauses there is nothing in these to exempt the contractor from the provisions of any other Act or Rules or Indian Standards or OISD standards or OISD guidelines in force in the Republic of India. In particular, all operations involving the transport, handling, storage and use of explosives shall be as per the standing instructions and conform with Indian Explosives Act, 1884 and the explosives Rules, 1983. The Factories Act 1948 and The Karnataka Factories Rules, 1969, Handling, transport, storage and use of Compressed gas cylinders and Pressure vessels shall conform with the Gas Cylinders rules 1981 and Static and Mobile Pressure Vessels (Unfired) Rules 1981. In addition, The Building and other construction workers (Regulation of Employment and conditions of service) Act 1996, The Indian Electricity Act, 1910 and Indian Electricity Rules 1956, The Atomic Energy Act 1962, The Radiation Protection Rules 1971, Radiation Protection Manual of Nuclear Facilities and the Atomic Energy (Factories) Rules 1988 and various rules and Act relevant to the activities being performed shall also be strictly complied with.





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- No Child labour should be brought in for work.
- MRPL holds the right to issue warnings / Heavy penalties (monetary fine) / suspend work at any time or terminate the contract for a loss / damage and a pattern of frequent failure to adhere to Safety Laws, regulations and Onsite Safety procedures. In general, a heavy monetary fine will be deducted straight from the contractor's bill for each violation of Safety Rules / Unsafe Act / Unsafe Condition observed, for each First-Aid injury, for each Lost Time injury / Near Miss Accident and for each fatality.

**29. GUIDELINES AND GENERAL PROCEDURES FOR SUPPLY AND USE OF ELECTRICITY AT SITE:**



Following safety requirements shall be complied with before the contractor uses the power supply.

- The contractor shall submit a list of licensed electrical staff to be posted at site.
- It shall be the responsibility of the contractor to provide and maintain complete installation on the load side of the supply point with regard to the safety requirements at site. All cabling and installation shall comply with the appropriate statutory requirements given below and shall be subject to approval of the Departmental Engineer-In-Charge / Electrical Engineer.
  - a) Indian Electricity Act, 1910
  - b) Indian Electricity Rules, 1956
  - c) National Electric code, 1985
  - d) Other relevant rules of Local bodies and Electricity Boards.
- Where distribution boards are located at different places the contractor shall submit schematic drawing indicating all details like size of wires, overhead of cable feeders, earthing etc. The position and location of all equipment and switches be given.
- The contractor shall make his own arrangements for main earth electrode and tapings thereof. The existing earth points available at site can be used at the discretion of the Departmental Electrical Engineer with prior permission. Method of earthing, installation and earth testing results shall conform to relevant I.S. Specifications.
- Overhead High Tension (HT) cable routes to be marked and physically barricaded to prevent crane coming in contact with it.
- All three-phase equipment shall be provided with double earthing. All light fixtures and portable equipment shall be effectively earthed to main earthing.
- All earth terminals shall be visible. No gas pipes and water pipes shall be used for earth connection. Neutral conductor shall not be treated as earth wire.
- Every electrically operated machine or equipment to be independently earthed.



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- Earth pits to be provided near DG sets, electrically operated machines, equipments etc.
- DG sets used in Refinery/ project site shall be installed inside acoustic enclosure to minimize noise pollution.
- Exhaust of DG sets shall be routed to safe height.
- Continuity and resistance of all earth connections to be inspected and checked and tested fortnightly and records to be maintained.
- The contractor shall not connect any additional load without prior permission of Departmental Electrical Engineer.
- Joints in earthing conductors shall be avoided. Loop earthing of equipment shall not be allowed. However, tapings from an earth bus may be done.
- The entire installation shall be subjected to the following tests before energisation of installation including portable equipment:
  - a) Insulation resistance test
  - b) Polarity test of switches
  - c) Earth continuity test
  - d) Earth electrode resistance
- The test procedures and their results shall conform to relevant IS specifications. The contractor shall submit a test report for his complete installation every 2 months or after rectifying any faulty section in the specimen test report. One such test report for the complete installation shall be submitted before onset of monsoon.
- Only persons having valid wireman's license shall be employed for carrying out electrical work and repair of electrical equipment installation and maintenance at site. The job shall be supervised by a qualified licensed supervisor.
- Electricians to be provided with red helmet for easy identification.
- Electrical equipment and installations shall be installed and maintained as to prevent danger from contact with live conductors and to prevent fires originating from electrical causes like short circuits, overheating etc. Installation shall not cause any hindrance to movement of men and materials.
- Materials for all electrical equipment shall be selected with regard to working voltage, load and working environment. Such equipment shall conform to the relevant Indian Standards.
- The minimum clearance to be maintained for all overhead lines along roads and across roads shall be as per the statutory requirements.
- Grounding conductor of wiring system shall be of copper or other corrosion-resistant material. An extra grounding connection shall be made in appliances / equipment where chances of electric shock is high.





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- Electric fuses and / or circuit breakers installed in equipment circuits for short circuit protection shall be of proper rating. It is also recommended that high rupturing capacity (HRC) fuses are used in all circuits. The Earth Leakage Circuit Breaker (ELCB) of 30mA max capacity shall be provided in the circuits. (ELCB) of 30mA max shall be provided on each Extension board.
- Wherever cables or wires are laid on poles, a guard wire of adequate size shall be run along the cables / wire and earthed effectively. Metallic poles as a general rule, shall be avoided and if used shall be earthed individually. Anticlimbing guards and danger notices shall be provided on poles. Each equipment shall have individual isolating switches.
- Wires and cables shall be properly supported and an approved method of fixing shall be adopted. Loose hanging of wires and cables shall be avoided. Lighting and power circuits shall be kept distinct and separate.
- Reinforcement rods or any metallic part of structure shall not be used for supporting wires and cables, fixtures, equipment, earthing etc.
- All cables and wires shall be adequately protected mechanically against damages. In case the cable is required to be laid underground, it shall be adequately protected by covering the same with bricks, Plain Cement Concrete (PCC) tile or any other approved means and provided with cable markers.
- All armored cables shall be properly terminated by using, suitable cable glands. Multistranded conductor cables shall be connected by using cable lugs/sockets. Cable lugs shall preferably be crimped. They shall be of proper size and shall correspond to the current rating and size of the cable. Twisted connections will not be allowed.
- All cable glands, armoring and sheathing of electric cables, metal circuits and their fittings, metallic fittings and other non-current carrying parts of electrical equipment and apparatus shall be effectively grounded.
- All the Distribution Boards, switches, fuse units, bus bar chambers, ducts, cubicles etc. shall have MS enclosures and shall be dust, vermin and water proof. The Distribution Boards, switches etc. shall be so fixed that they shall be easily accessible, change shall be done only after the approval of the Departmental Electrical Engineer. Distribution Boards used inside the process units shall be of Flame Proof type (Intrinsically safe type).
- Each Distribution Board shall have ELCB of 30mA max capacity.
- The contractor shall provide proper enclosures / covers of approved size and shape for protection of all the switchboards, equipment etc. against rain. Exposed live parts of all electrical circuits and equipment shall be enclosed permanently. Crane trolley



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wires and other conductors which cannot be completely insulated shall be placed such that they are inaccessible under normal working conditions.

- Iron soclad industrial type plug outlets are preferred for additional safety.
- Open type Distribution Boards shall be placed only in dry and ventilated rooms; they shall not be placed in the process units, vicinity of storage batteries or otherwise exposed to chemical fumes.
- Isolating switches shall be provided close to equipment for easy disconnection of electrical equipment or conductors from the source of supply when repair or maintenance work has to be done on them.
- In front of distribution boards a clear space of 90cm shall be maintained in order to have easy access during emergency.
- Adequate working space shall be provided around electrical equipment, which require adjustment or examination during operation.
- As far as possible electrical switches shall be excluded from a place where there is danger of explosion. All electrical equipment such as motors, switches and lighting fittings installed in workroom where there is possibility of explosion hazard shall be explosion proof.
- All connections to lighting fixtures, starters or other power supplies shall be provided with PVC insulated, PVC sheathed twin/three/four core wires to have better mechanical protection for preventing possible damage to equipment or injury to personnel. Taped joints shall not be allowed. Electric starter of motors, switches shall not be mounted on wooden boards. Only sheet mounting or iron framework shall be used.
- All the lighting fixtures and lamp holders shall be of good quality and in good condition. Badly repaired or broken holders, etc. shall not be used.
- Only PVC insulated and PVC sheathed wires or armoured PVC insulated and sheathed cables shall be used for external power supply connections of temporary nature. Weatherproof rubber wires shall not be used for any temporary power supply connections.
- Taped joints in the wires shall not be used. In case joints are required on electrical cables then only heat shrinkable PVC sleeves will be allowed.
- The bulbs/lamps used for illumination and testing purpose shall have cover or guard to protect them from accidental breakages. Only 24V supply system shall be used for hand lamps etc. while working inside metallic tanks or conducting vessels (Confined spaces).

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- After installation of new electric system and or other extensive extensions to existing installations, thorough inspection shall be made by Contractor's Electrical Engineer before the new system or new extension is put in use.
- All persons who work with electrical installation/equipment shall be aware of the electrical hazards, use of protective devices and safe operational procedures. They shall be given training in fire fighting, first aid and artificial resuscitation techniques, location of isolation switches, etc.
- The supervisor shall instruct the workers in the proper procedure, specify and enforce the use of necessary protective equipment such as adequately insulated pliers, screw drivers, fuse pullers, testing lamps and similar hand tools. Only wooden ladders shall be used to reach the heights in electrical work.
- No material or earthwork shall be allowed to be dumped below or in the vicinity of the bare overhead line conductors.
- Separate work permits shall be issued for individual group leaders working on the same system which shall be returned after the completion of the work to the Engineer-In-Charge.
- Before any maintenance work is commenced on electrical installations/equipment, the circuits shall be de-energised and ascertained to be dead by positive test with an approved voltage testing device. Switches shall be tagged or the fuse holders withdrawn before starting the work. Adequate precautions shall be taken in two important aspects viz. LOTO system to be followed.
- That there shall be no danger from any adjacent live parts and
- That there shall be no chances of re-energisation of the equipments on which the persons are working. (Tag out and lock out LOTO system to be strictly followed).
- While working on or near a circuit, whenever possible the use of one hand may be practiced even though the circuit is supposed to be dead. The other hand may preferably be kept in pocket.
- When it is necessary to touch electrical equipment (for example when checking for overload of motors) back of the hand may be used. Thus, if accidental shock were to cause muscular contractions, one would not "freeze" to the conductor.
- Operation of electrical equipment shall be avoided when standing on wet floor or when hands are wet. Rubber mats should be placed in front of Panels / Distribution Boards as per Indian Standards.
- Before blown fuses are replaced, the circuit shall be locked out and an investigation shall be made for the cause of the short circuit or overload.
- When two persons are working within reach of each other, they shall never work on different phases of the supply.

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- When structural repairs, modification or painting work are to be undertaken, appropriate measures shall be taken for the protection of persons whose work may bring them into the proximity of live equipment / circuit.
- It shall be ensured that the insulation and wire size of extension cords is adequate for the voltage and current to be carried.
- While tapping electricity from the socket, plug top must be used. It shall be ensured that no extension boards are over loaded while tapping. Only standard three pin plugs (Naked Wire is prohibited) shall be used for tapping electricity. Broken sockets/plugs shall be replaced immediately with good ones. Only joint free cables shall be used for connecting equipment/Use of apparatus.
- Floors shall be kept free from trailing electrical cables to avoid tripping hazard.
- Power supply to all the machines and lighting fixture shall be switched off when not in use.
- Temporary electrical connections shall be removed as soon as the stipulated work is over. After completion of the works, the contractor shall dismantle the distribution boards and the other facilities he may have erected.
- Unauthorised tapping of power by others from distribution boards under the control of the contractor shall be prohibited at all circumstances.
- No flammable materials shall be stored in any working area near the switchboards.
- Safety work permits shall be used for switching off the main feeder and equipment by the contractor.
- "MEN ON LINE" "DO NOT SWITCH ON" "DANGER" or "CAUTION" boards as applicable shall be used during maintenance works on the electrical equipment.



**30. PORTABLE ELECTRICAL EQUIPMENT:**

- Portable electrical tools must be examined, maintained and tested daily, fortnightly and quarterly so that the equipment and its leads are in good order. Register shall be maintained for inspection recording the testing dates and results of the equipments. Inspection checklists to be formed to that effect. The recertification of lifting tools, tackles, equipments etc. must be carried out well before the expiry of its validity period.
- All portable appliances shall be provided with three core cable and three pin plugs. The third pin of the plug shall invariably be earthed. It shall be ensured that the metal part of the equipment shall be effectively earthed.
- All connections to portable equipment or machines from the panel/distribution board/extension board shall be taken using 3 core double insulated PVC flexible copper wire in one length. No joints shall be allowed in this flexible wire. In case

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length of wire is not sufficient for a particular location then the supply can be tapped by providing another extension board comprising of switch, socket and ELCB of 30mA max.

- Flexible cables for portable lamps, tools and apparatus shall be regularly examined, tested periodically and maintained to ensure safety.
- For excavations, one-time clearance from electrical is required for a particular area.
- Contractor shall get their welding machine / Stress Relieving (SR) electrical equipment / all portable machine certified by MRPL / MRPL authorized contractor and seal will be fixed on machine to that effect. Certificate from third party mentioning the checks carried out, repairs carried out and safe to use to be submitted to Engineer Incharge.
- Revalidation to be done once in 4 months. In case contractor does not comply, it will be done by MRPL and four times the cost of repair will be back charged to contractor.
- In case of welding, separate return cable from job piece to welding machine to be connected. Wires not to be used. PVC insulated cables only to be used.
- All lighting circuits/temporary connections for portable machine should have ELCB's of 30mA capacity max.
- All ELCBs to be tested once in 15 days using ELCB testers (and not by the lamp with open wires) and record maintained. Also separate register for ELCB trips (TRIP REGISTER) shall be maintained. It shall be daily signed by the site Incharge of the contractor.
- Earthing of Neutral, which will act as return path, is not allowed.
- Electricians should have wireman license.
- During monsoons, monsoon protection for electrical equipment to be done.
- All feeders in contractor distribution panel to be clearly lettered with load details for isolation in case of emergency.
- Insulated tools like screwdriver, cutting plier, tester to be used.
- Each contractor should have one set of multimeter, ELCB tester and tong tester.
- First aid kit to be available.
- The contractor must have a team of Experienced Electricians (having minimum of 10 years. experience in carrying out safety inspection and testing of Electrical Equipments, tools, portable electrical machines and appliances etc.). to conduct periodical (Daily, fortnightly, monthly and quarterly) inspection and testing of Electrical Equipments, tools and portable electrical machines, tools and appliances and to maintain its records.
- All power cable ends should have industrial plug on one side and other end directly into the machine. (No naked end pinning into will be permitted).

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- For any job within MCC / SRR a work permit will be issued by MRPL operation. Job should not be started without these permits.

**31. ROLE OF CONTRACTOR INCASE OF EMERGENCY AND SIREN:**

- Contractor shall instruct his workers to follow instructions strictly in case of fire siren / emergency or if advised or felt necessary by Engg. In-charge. If evacuation is ordered they must leave the work site and proceed towards the nearest designated assembly point. The contractor and its employees MUST follow specific instructions (Roles and Responsibilities in case of fire / onsite emergency) that will be given during training from time to time. All contractor employees MUST undergo such training, before their deployment at the work site. Contractor shall arrange & conduct such trainings for his employees and also employees of sub-contractors.
- Contractor shall instruct his workers to stop all jobs immediately incase release of liquid/gas/toxic/hazardous chemicals etc, and inform the concerned MRPL personnel available at site.



**32. TRAINING:**

- The contractor to conduct Induction training of all employees and record maintained.
- The contractor will have to depute all his employees (including Engineers, supervisors and workmen), before they commence work for the first time at MRPL site and subsequently once in a year, to undergo Safety training. They will get photo gate passes only after the completion of the training. Contractors MUST have and get conversant with Material Safety Data Sheets of all the Chemicals in MRPL. It is a MUST for them to carry the photo passes with them and produce it when demanded at site.
- Tool box talks to be conducted every day before starting of each shift and before commencing of work after lunch break by the concerned Engineer.

**33. LIST OF PERSONAL PROTECTIVE EQUIPMENTS:**

- The contractor must possess the following minimum safety Items cum Personal Protective Equipments. All Personal Protective Equipments used at site to be of approved make.



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34. **MANDATORY FOR THE CONTRACTOR EMPLOYEES WHILE WORKING AT PROJECT SITE:**

\*Deployment of adequate nos. of safety officers as per table above and making available the mandatory items as per the minimum list below is a MUST as a part of mobilization activity.

1. Safety Helmet.
2. Safety shoes (Conforming to IS standards with ankle protection, steel toe and anti-skid / acid, alkali and water proof soles).
3. Hand gloves (Leather impregnated cotton hand gloves).
4. Spectacle type goggles with toughened glass lenses, plain face shields with and without chin guards.

The contractor must use the "ISI" marked Personal Protective Equipments specific to the job.

It is mandatory to have minimum backup stock of all the PPEs in addition to what is already in use at site.

35. **SPECIFICATIONS FOR SAFETY HELMETS-HDPE:**

1. Helmet Safety Industrial HDPE white colour.
2. Contractor's Logo at front side.
3. Conforming to IS 2925, ISI marked & DGMS approved.
4. Nape strap type adj. type 6-point adj. head band & sweat band with 3/4"Cotton Chin strap.

\*Green helmets for Safety Personnel and Red helmets for electricians to be provided and used by them.

36. **SPECIFICATION FOR FULL BODY SAFETY HARNESS) SAFETY BELT**

Full Body Safety Harness (Safety belts) must be double lanyard type with scaffolding hook having self closing latch (spring type).



Different type of hooks to be available based on the nature of job / type of support. Safety belts should be ISI marked and should conform to IS 3521 and DGMS approved and stamped.

Safety belts, safety straps, lifelines, permanent anchors and connections should both separately and when assembled:

- a) Be capable of supporting safely a suspended load of at least 450 kg (1,000 lb) ; and
- b) Have a breaking strength of at least 1,150 kg (2,500 lb).

If hooks are used for attaching safety belts to fixed anchors, they should be self closing safety hooks of various types and sizes.



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When a lifeline or safety strap is liable to be served, cut, abraded or burned, it should consist of a wire rope or a wire-cored fiber rope.

Safety straps should be so fastened to safety belts that they cannot pass through the belt fittings if either end comes loose from its anchorage.

Metal thimbles should be used for connecting ropes or straps to eyes, rings and snaps. Safety belts, safety straps and lifelines should be so fitted as to limit the free fall of the wearer to 1m (3ft 3in).

37. **SPECIFICATION FOR FALL ARRESSTOR DEVICE:**

Fall arrestor device with self-retracting cable integrating locking mechanism combined with an energy deception element fully automatic having cables of various lengths, ISI and DGMS and or any international approval. Only Poly Amide rope shall be used.

38. **SPECIFICATION FOR DUST MASK:**

Dust Mask made of superior quality non-aging chemical-resistant rubber half face piece with reflex sealing flaps for protection against nuisance dust, (<0.5 micron) toxic dusts, gases and vapors with replaceable filters.

39. **SPECIFICATION FOR REPLACEABLE FILTERS**



For protection against nuisance dust, toxic dusts, gases and vapours upto a concentration of 500 ppm. To be fitted on aforesaid Dust Mask.

40. **SPECIFICATION FOR SAFETY SHOES**

1. Safety Shoes, Jodhpury style- as per is 11226- 1985 with guarantee for 1 & 1/2 years (all weather).
2. Acid/ alkali/ waterproof heat resistant, antiskid green PVC Nitrile sole.
3. Steel toe cap as per relevant "IS".
4. Upper plain leather, high ankle, with metallic 4 eyelets.
5. ISI marked.
6. The supplier should give guarantee of use of safety shoes during rainy season.

41. **STANDARD SPECIFICATION FOR PVC HAND GLOVES**

Hand contoured for greater comfort & feature an embossed nonslip grip for handling wet or greasy objects cotton flock lining absorbs perspiration maximises easy on/off black with straight cuff each pair pack.

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42. **SPECIFICATION FOR ELECTRICAL PPE (SHOCK PROOF)**

Hand gloves used for live electrical works shall be of proper electrical rating.  
Electrical (shock proof) Safety Shoes (Jodhpury type) with acid/ alkali/ water proof, heat resistant, antiskid sole with guarantee for 1&1/2 years (all weather).

1. Upper plain leather.
2. ISI marked & latest certificate of testing from any of the govt. recognized institution for electrical resistance.

GUMBOOTS with steel toe should be used by personnel during rainy season.



The aforesaid guidelines are the minimum safety requirements and the contractor should exceed them so as to achieve "ZERO ACCIDENT" which is our MOTO.

43. **TYPE SAFETY VIOLATIONS AND PENALTY SYSTEM:**

All the contractors working for MRPL shall strictly follow the safety norms as per the rules and regulations of MRPL. Contractors who violate safety norms while executing the jobs will be penalized financially.



The details of penalty amount against each safety violations is enclosed as Annexure-B.

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**Annexure B**



SL No	Type of Safety Violations	Amended/New penalty
1	No Lost Time Incident (NLTI) – Reporting back to duty within 48 hrs	First occasion Rs 2,500/- Second occasion Rs 5,000/- Third occasion Rs 10,000/- In addition to other expenses borne by contractor towards treatment. Existing Policy: none
2	Reportable Lost Time Incident (RLTI) – No reporting to duty within 48 hrs	First occasion Rs 10,000/- Second occasion Rs 25,000/- Third occasion Rs 50,000/- In Addition to other expenses borne by contractor towards treatment. Existing Policy: none
3	Disability/ Physical injury	0.5% of the lump sum Price(maximum of Rs.2,00,000) per injury in addition to Rs.5,000/-. Existing Policy: none
4	Fatal	1% of the lump sum Price(maximum of Rs.10,00,000) per fatality in addition to Rs.5,000/-. Existing Policy: none
5	Vehicle Accident – Vehicle damaging Property or Vehicle to Vehicle Accident.	Rs 25,000/- and Repairs/damage/restoration Existing Policy: none
6	For not using Personal Protective Equipment like (Safety Helmet, Safety Goggles, Safety Shoes, Hand gloves, Boiler suit, etc)	Rs 500/- Per day/ per item/ per person for first violation. Rs 1,000/- for second onwards.
7.	Working without permit/ Clearance (Cold Work)	Rs 5,000/- per occasion After 3 violations, holiday listing for 6 months.
8	Hot work without proper permit/ Clearance	Rs 10,000/- per occasion. After 3 violations, holiday listing for 6 months

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SL No	Type of Safety Violations	Amended/New penalty
9	Non-use of safe electricity at work site (non installation of ELCB, using poor joints of cables, using naked wire without top plug into socket, laying wire/ cables on the roads, etc.	Rs 3,000/- per item
10	Working at heights without safety belt (Full Body Safety Harness), using non-standard scaffolding and not arranging fall protection arrangement as required	First occasion Rs 2,500/- Second occasion Rs 5,000/- Third occasion Rs 10,000/- After three occasions, holiday listing for 6 months
11	Unsafe handling of compressed gas cylinders (No trolley, jubilee clips, double gauge regulator, Improper storage/ handling).	Rs 500/- per occasion
12	Non fencing/ barricading of excavated areas	Rs 1,000/- per occasion
13	Use of domestic/ commercial LPG cylinder for cutting purpose	Rs 1,000/- per occasion.
14	Non-display of name board, permit, etc at site	Rs 500/- per occasion
15	Not providing shoring/ strutting/ proper slope and not keeping the excavated earth at least 1.5m away from the excavated area	Rs. 2,000/- per occasion
16	Wrong parking of vehicles or parking the vehicles at non-designated places inside refinery/ project site	Rs 1,000/- per occasion
17	Absence of contractor representative in refinery/ project site safety meetings whenever called	Rs 3,000/- per meeting
18	Non-deployment of safety supervisor/ supervisor responsible for safety at work site required as per Special Safety Conditions	Rs 3,000/- per day
19	Failure to maintain safety register and records by contract Safety Supervisor or the Supervisor responsible for safety	Rs 1,000/- per day
20	Failure to have daily safety site inspection/ audits, monthly safety meetings and maintain records (by contractors themselves)	Rs. 1,000/- for each occasion
21	Failure to submit monthly safety report by the 5th of the next month to the Engineer-In-Charge	Rs. 1,000/- per occasion
22	Poor Housekeeping	Rs 1,000/- per site/ per day



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SL No	Type of Safety Violations	Amended/New penalty
23	Failure to follow injury reporting system	Rs 10,000/- per occasion
24	Violation of safety condition as per Job Safety Analysis (JSA)	Rs 10,000/- per occasion
25	Over-Speeding of vehicle i.e speed > 16 KMPH while driving inside refinery/ project site	The driver will be removed and gate pass will be withdrawn. Contract will be cancelled upon repeated three violations
26	Overtaking of vehicles while driving inside refinery/ project site	The driver will be removed and gate pass will be withdrawn Contract will be cancelled upon repeated three violations
27	Driving of vehicle without valid license	First occasion Rs 1,000/- Second occasion Rs 2,000/- The driver will be removed and gate pass will be withdrawn. Contract will be cancelled upon repeated three violations.
28	Driving vehicle without PESO approved or PESO approved but damaged spark arrester	The driver will be removed and gate pass will be withdrawn. Contract will be cancelled upon repeated three violations.
29	Driving vehicle on "NO ENTRY ROADS"	The driver will be removed and gate pass will be withdrawn. Contract will be cancelled upon repeated three violations.
30	Denying to produce the photo Gate Pass on demand	Rs 500/- per person per occasion
31	Contract worker found drunk/intoxicated state inside the refinery/ project site	Rs 15,000/- per person per occasion

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**Standard Operating Procedure for Social Distancing due to Covid-19 Pandemic ( This is in additional to SOP issued by Govt from time to time)**

Sl. No.	Procedure	Action plan
1	All areas in the premises including the following shall be disinfected completely using user friendly disinfectant mediums a. Entrance Gate of building, office etc. b. Canteens and pantries c. Meeting room, Conference halls / open areas available/ veranda/ entrance gate of site, bunkers, porta cabins, building etc. d. Equipment and lifts. e. Washroom, toilet, sink, water points etc. f. Walls/ all other surfaces	Disinfection of all the areas and on regular intervals to be strictly followed.
2.	For workers coming from outside, special transportation facility will be arranged without any dependency on the public transport system. These vehicles should be allowed to work only with 30-40% passenger capacity.	To be followed
3	All vehicles and machinery entering the premise should be disinfected by spray mandatorily	All vehicles hired by Contractor shall be disinfected at regular intervals.
4	Mandatory thermal scanning of everyone entering and exiting the work place to be done	Body temp monitoring all who are entering and exiting through all the gates in all the shifts to be done.
5	Medical insurance for the workers to be made mandatory.	As per insurance clause elsewhere.
6	Provision for hand wash & sanitizer preferably with touch free mechanism will be made at all entry and exit points and common areas. Sufficient quantities of all the items should be available	Hand wash and sanitisers shall be kept in all the places. And sufficient stock to available at stores
7	Work places shall have a gap of one hour between shifts and will stagger the lunch breaks of staff, to ensure social distancing	Shift/ General shift timings are staggered to ensure social distancing.

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Sl. No.	Procedure	Action plan
8	Large gatherings or meetings of 10 or more people to be discouraged. Seating at least 6 feet away from others on job sites and in gatherings, meetings and training sessions.	Awareness through circular and office orders. Necessary care is taken in seating to maintain distance.
9	Not more than 2/4 persons (depending on size) will be allowed to travel in lifts or hoists.	Awareness through circular and intranet.
10	Use of staircase for climbing should be encouraged	Awareness through circular and intranet
11	There should be strict ban of gutka, tobacco etc, and spitting should be strictly prohibited.	Awareness through circular and intranet
12	There should be total ban on non-essential visitors at sites.	Awareness through circular and intranet
13	Hospitals/clinics in the nearby areas, which are authorised to treat COVID-19 patients, should be identified and list should be available at work place all the times.	List prepared and available in Hospital.



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**SPECIFICATION FOR QUALITY MANAGEMENT SYSTEM**

**[ANNEXURE- VI TO SPECIAL CONDITIONS OF CONTRACT]**

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CLAUSE NO.	TITLE
1.0	SCOPE
2.0	DEFINITIONS
3.0	REFERENCE DOCUMENTS
4.0	QUALITY MANAGEMENT SYSTEM — GENERAL
5.0	QUALITY SYSTEM REQUIREMENTS
6.0	AUDITS
7.0	DOCUMENTATION REQUIREMENTS

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## 1.0 SCOPE

This specification establishes the Quality Management System requirements to be met by BIDDER for following purpose:

- QMS requirements to be met by suppliers/contractors after award of work/ during contract execution.

## 2.0 DEFINITIONS

### 2.1 Bidder

For the purpose of this specification, the word "BIDDER" means the person(s), firm, company or organization who is under the process of being contracted by PMC/OWNER for delivery of some products (including service). The word is considered synonymous to supplier, contractor or vendor.

### 2.2 Project Quality Plan

Document tailored from Standard Quality Management System Manual of BIDDER, Specifying how the quality requirements of the project will be met.

### 2.3 Owner

Owner means the owner of the project for which services / products are being purchased and includes their representatives, successors and assignees.

## 3.0 REFERENCE DOCUMENTS



Specification for Documentation Requirements from Contractors  
Specification for Documentation Requirements from Suppliers

## 4.0 QUALITY MANAGEMENT SYSTEM — GENERAL

Unless otherwise agreed with Owner, the BIDDER proposed quality system shall fully satisfy all relevant requirements of ISO 9001 "Quality Management Systems — Requirements." Evidence of compliance shall be current certificate of quality system registration to ISO 9001 or a recent compliance audit recommending registration from a certification agency. The quality system shall provide the planned and systematic control of all quality related activities for execution of contract. Implementation of the system shall be in accordance with BIDDER'S Quality Manual and PROJECT specific Quality Plan.

## 5.0 QUALITY SYSTEM REQUIREMENTS

- 5.1 BIDDER shall prepare and submit for review / record, Project Quality Plan / Quality Assurance Plan for contracted scope / job. The BIDDER'S Quality Plan shall address all of the applicable elements of ISO 9001, identify responsible parties within BIDDER'S organization, for the implementation / control of each area, reference the applicable procedures used to control / assure each area, and verify the documents produced for each area. The Project Quality Plan shall



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necessarily define control or make reference to the relevant procedures, for design and engineering, purchase, documentation, record control, bid evaluation, inspection, production/manufacturing, preservation, packaging and storage, quality control at construction site, pre-commissioning, commissioning and handing over (as applicable) in line with contract requirement and scope of work.

- 5.2 BIDDER shall identify all specified or implied statutory and regulatory requirements and communicate the same to all concerned in his organization and his sub contractor's organization for compliance.
- 5.3 BIDDER shall deploy competent and trained personnel for various activities for fulfilment of PO / contract. BIDDER shall arrange adequate infrastructure and work environment to ensure that the specification and quality of the deliverable are maintained.
- 5.4 BIDDER shall do the quality planning for all activities involved in delivery of order. The quality planning shall cover as minimum the following:
- Resources
  - Product / deliverable characteristics to be controlled.
  - Process characteristics to ensure the identified product characteristics are realized
  - Identification of any measurement requirements, acceptance criteria
  - Records to be generated
  - Need for any documented procedure



The quality planning shall result into the quality assurance plan, inspection and test plans (ITPs) and job procedures for the project activities in the scope of bidder. These documents shall be submitted to /Owner for review/approval, before commencement of work.

- 5.5 Requirements for sub-contracting / purchasing of services specified in contract / tender shall be adhered to. In general all outsourced items will be from approved vendors. Wherever requirements are not specified, or approved sub vendors do not exist, the sub-contractor shall establish and maintain a system for purchasing / sub-contracting to ensure that purchased product / service conforms to specified requirements. Criteria for selection of sub-contractor, evaluation, re-evaluation, maintenance of purchasing data and verification of purchased product (subcontractor services), constitute important components of this requirement.
- 5.6 BIDDER shall plan and carry production and service provision under controlled conditions. Controlled conditions shall include, as applicable
- a) the availability of information that describes the characteristics of the product
  - b) the availability of work instructions
  - c) the use of suitable equipment

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- d) the availability and use of monitoring and measuring devices
- e) the implementation of monitoring and measurement
- f) the implementation of release, delivery and post-delivery activities

- 5.7 BIDDER shall validate any processes for production and service provision where resulting output cannot be verified by subsequent monitoring and measurement. This includes any process where deficiencies become apparent only after the product is in use or service has been delivered.
- 5.8 BIDDER shall establish a system for identification and traceability of product / deliverable throughout product realization. Product status with respect to inspection
- 5.9 BIDDER shall identify, verify, protect and safeguard / Owner property (material document) provided for use or incorporation into the product. If any Owner / property is lost, damaged or otherwise found to be unsuitable for use, this shall be reported to the / Owner.
- 5.10 BIDDER shall ensure the conformity of product / deliverable during internal processing and delivery to the intended destination. Requirements mentioned in the tender shall be adhered to.
- 5.11 BIDDER shall establish system to ensure that inspection and testing activities are carried out in line with requirements. Where necessary, measuring equipment's shall be calibrated at specified frequency, against national or international measurement standards; where no such standard exists, the basis used for calibration shall be recorded. The measuring equipment's shall be protected from damage during handling, maintenance and storage.
- 5.12 BIDDER shall ensure effective monitoring, using suitable methods, of the processes involved in production and other related processes for delivery of the scope of contract.
- 5.13 BIDDER shall monitor and measure the characteristics of the product/deliverable to verify that product requirement has been met. The inspection (stage as well as final) by BIDDER and / Owner personnel shall be carried out strictly as per the ITPs forming part of the contract. Product release or service delivery shall not proceed until the planned arrangements have been satisfactorily completed, unless otherwise approved by relevant authority and where applicable by Owner /.
- 5.14 BIDDER shall establish and maintain a documented procedure to ensure that the product which does not conform to requirements is identified and controlled to prevent its unintended use or delivery.
- 5.15 All non-conformities (NCs) / deficiencies found by the BIDDER'S inspection / surveillance staff shall be duly recorded, including their disposal action shall be recorded and resolved suitably. Effective corrective and preventive action shall be implemented by the BIDDER so that similar NCs including deficiencies do not recur.

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5.16 All deficiencies noticed and reported by / Owner shall be analysed by the BIDDER and appropriate corrective and preventive actions shall be implemented. BIDDER shall intimate / Owner of all such corrective and preventive action implemented by him.

5.17 BIDDER should follow the standards, specifications and approved drawings. Concessions/Deviations shall be allowed only in case of unavoidable circumstances. In such situations Concession/deviation request must be made by the BIDDER through online system of eDMS. URL of edms is <http://edocx.co.in/portal>.

5.18 BIDDER shall have documented procedure for control of documents.

5.19 All project records shall be carefully kept, maintained and protected for any damage or loss until the project completion, then handed over to / Owner as per contract requirement (Refer Specification Nos. 6-78-0002 - Specification for Documentation Requirements from Contractors and 6-78-0003 - Specification for Documentation Requirements from Suppliers), or disposed as per relevant project procedure.

## 6.0 AUDITS

BIDDER shall plan and carry out the QMS audit for the job. Quality audit programme shall cover design, procurement, construction management and commissioning as applicable including activities carried out by sub-vendors and sub-contractors. This shall be additional to the certification body surveillance audits carried out under BIDDER'S own ISO 9001 certification scheme.



The audit programmes and audit reports shall be available with bidder for scrutiny by Owner. Or Owner's representative reserves the right to attend, as a witness, any audit conducted during the execution of the WORKS.

In addition to above, Owner and third party appointed by /Owner may also perform Quality and Technical compliance audits. BIDDER shall provide assistance and access to their systems and sub-contractor / vendor systems as required for this purpose. Any deficiencies noted shall be immediately rectified by BIDDER.

## 7.0 DOCUMENTATION REQUIREMENTS

BIDDER shall submit following QMS documents immediately after award of work (Within one week) for record / review by / Owner.

- Organization chart (for complete organization structure and for the project)
- Project Quality Plan/Quality Assurance Plan
- Job specific Inspection Test Plans, if not attached with PR
- Job Procedures
- Inspection/Test Formats



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In addition to above QMS documents, following documentation shall be maintained by the BIDDER for submission to / Owner on demand at any point of time during execution of the project.

- Quality Manual
- Certificate of approval for compliance to ISO: 9001 standard
- Procedure for Control of Non-conforming Product
- Procedure for Control of Documents
- Sample audit report of the QMS internal and external audits conducted during last one year
- Customer satisfaction reports from at least 2 customers, during the last one year
- Project QMS audit report
- Technical audit reports for the project
- Corrective action report on the audits

Documents as specified above are minimum requirements. BIDDER shall submit any other document/data required for completion of the job as per /PMC/OWNER instructions.



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**SPECIFICATIONS FOR DOCUMENTATION REQUIREMENTS FROM  
CONTRACTORS**

**[ANNEXURE-VII TO SPECIAL CONDITIONS OF CONTRACT]**

**MRPL FINAL DOCUMENTATION PROCEDURE**

**ATTACHED LATEST REVISED PROCEDURE**



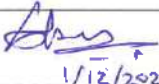


# MANGALORE REFINERY AND PETROCHEMICALS LIMITED

## PROCEDURE FOR FINAL DOCUMENTATION


SPC00009  
Rev.1



**SPC-000009**

Rev No	Rev Date	Description	Prepared By	Checked By	Approved By
1	01/12/2020	Revised and Reissued	 1/12/2020		
0	01/09/2015	Revised, Renumbered and Reissued	HP	AC	HSR

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	<b>PROCEDURE FOR FINAL DOCUMENTATION</b>	<b>SPC00009 Rev.1</b>

## 1. OBJECTIVE

- 1.1 This procedure provides general guidelines to compile and submit the Final Documents to MRPL by the agency is executing specific job against a W.O. or a P.O. issued by MRPL or by any agency on behalf of MRPL.
- 1.2 Final Document as per these guidelines shall be prepared *in addition* to the documents issued during project execution (construction documents), which is normally released in parts while the job is in progress.
- 1.3 This is a general guideline for all projects of MRPL, however any addition or deletion of the clauses based on the specific project requirement shall be approved by PMC or the Engineer-in-charge of MRPL. An approved deviation note shall be furnished for this purpose.

## 2. COMPONENTS OF THE FINAL DOCUMENTS

### 2.1 BASIC DESIGN & EXTENDED BASIC DESIGN PACKAGES

Basic and extended design packages shall be compiled and the revision control shall be maintained by the respective PMC or the similar agency of the project. At the completion of the project complete and updated sets of design packages with all latest revisions shall be handed over to MRPL. Similarly Basic Engineering Design Basis for unit & facilities shall be handed over to MRPL.

### 2.2 MASTER INDEX FOR DOCUMENTS & DRAWINGS


- 2.2.1 These shall be treated as a key document for reviewing completeness of the documentation at any point of time. It shall show details of documents/ drawing applicable for any equipment / system / service. Master Drawing/Document Index shall have following columns :-

Unit	Job/PO No	Folder No.	Sr. No.	Drw./Doc. No.	Rev.	No of Sheets		Equip. No	Drawing /Doc Title	Remarks
						From	To			

Rev	Date	Prepared by	Checked by	Approved by PMC/Consultant	Approved by MRPL

- 2.2.2 A detailed list of PO/Contract to be furnished to MRPL Engineering Documentation Centre to ensure that documentation of equipment / contract is/are submitted in totality.

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**2.2.3** A complete list of drawings and documents including document control index to be submitted in addition to clause 2.2.1.

### 2.3 SECTIONS OF THE FINAL VENDOR/ENGINEERING DOCUMENT FOLDER

#### 2.3.1 Section A : Contents

Shall have following columns:-

Sr. No.	Drawing No.	Rev.	No of Sheet	Equipment	Drawing Title	Digital file name (SOFTCOPY)

This content to be certified by the PMC/Consultant/Engineer-in-charge of MRPL for its completeness in all respects.

#### 2.3.2 Section B : Technical Documents/Drawings

Followings are the various subsections

Sr no.	Documents
<b>Vendor requirement</b>	
1	Detailed technical with PR / Engineering Specification / Design Basis / Design Calculation/Sizing calculation
2	Equipment list.
3	As-Built Specification sheet / data sheet, Performance Curve
4	General arrangement drawing, Cross Sectional drawing, Part Drawing
5	Assembly drawing, Fabrication, structural & foundation drawing
6	Foundation Information Document for Foundation Design
7	Drawings / catalogues, for special items like spring/hangers/ expansion bellows etc
8	Instrument/Electrical system all documents
9	Details documents & drawings, Data sheet, Manual & Catalogues of Bought-out Component,
10	Guarentee certificate, Inspection release note in original
<b>Engineering requirement</b>	
11	Flow Sheet & summaries (System Drawing, P&IDS, Utility Flow Dia., Material flow diagram), Utility and Chemical Consumption Data
12	Layout Drawing, Piping, Civil, Structural general arrangement Drawing
13	Instrument/Electrical specifications, data sheets & drawings
14	Line schedule, Stress analysis documents.

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15	Under ground piping, OWS & CRWS drawings along with standard & specification.
16	Piping material specification, Valve material specification
17	Pipe Support drawings / Standards, Lubricants List
18	Line wise bill of materials and summary
19	Process and mechanical Design / Strength calculations, Hazop report, Stress analysis report.
20	Any other documents like Fire fighting system, soil investigation, survey documents, Statutory documents etc.

### 2.3.3 Section C : Manual / Procedures

Sr no.	Documents
1	Fabrication Procedure / Sequence
2	Inspection and Test Procedure, Quality acceptance procedure, Job procedure & Procedures for Erection and Commissioning
3	Installation, Operation and maintenance Manual
4	Storage & Handling procedure, Protection and Preservation Procedures

### 2.3.4 Section D : Inspection and Test Records including IBR certificates & all reports.

### 2.3.5 Section E : Spare Parts and Tool List

### 2.3.6 Section F : As built drawings

In this section asbuilt drawings for all site fabricated items, engineering drawings like process, piping, civil, electrical, instrumentation, plot plan, fire fighting, line schedules, pipe supports index/register, piping isometrics, fire fighting etc. shall be compiled in an orderly manner.

1. The file format shall be labeled as mentioned in section 3
2. All as built drawings (Hard copy) shall be approved by authorised signatory of (with sign & seal)

Items mentioned from 2.3.2 to 2.3.6 are indicative only, any deviation from this shall be approved by concern EIC of MRPL.

### 2.3.7 Section G : Digital Copy

1. Two sets of digital copies shall be submitted in CD/DVD with proper lable. If size of the total files of a PO/Equipment is crossing more than 10GB same to be submitted in external hard disk. Master index for all the files and file index for individual file must be available in searchable pdf / Excel format.

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2. All drawings shall be on the latest version of AutoCAD. If drawing is prepared in other format same need to be converted in to the latest AutoCAD version..
3. Engineering documents/drawings/design calculation/design specification prepared using any software shall be submitted in native format and same output is also to be provided in searchable pdf version.

Operating manuals and others documents shall be on MS Word / Excel or on searchable pdf. format. Soft copies should be segregated index wise as per clause no. 2.3.1 contents of the document folder. Total document folders must not be scanned in a single file.

4. Hand written/filled test reports to be submitted in pdf format.
5. Radiography films preferably to be submitted in digital format.

### 2.4 FIELD INSPECTION DOCUMENTATION

- 2.4.1 A detailed index to the content shall be available at the beginning of each file
- 2.4.2 Each inspection reports shall be indexed with the report number and number of pages
- 2.4.3 All Documents/Reports shall be approved in its totality by stamping & signing the Master Indexes as per section 2.2.1.
- 2.4.4 Radiography films shall be indexed and included with the final documentation package.
- 2.4.5 All radiographic films shall be put in an aluminum box/container with lock and key.
- 2.4.6 As built drawings if any shall be compiled as per section 2.3.6
- 2.4.7 Digital Copy : as per clause no. 2.3.7

### 3. FILE FORMAT OF DOCUMENTATION FOLDER

- 3.1 **Filing** : As far as possible separate folder has to be prepared for each equipment / system / service, however if documentation for a particular equipment / system /service are required to be filed in more than one files due to the volume, identical folder no. suffixing numbers of files e.g. 1/5, 5/5 etc shall be mentioned. On the other hand if the volume of documentation is less one folder may be used for more than one equipment of the same group, e.g. two or more pumps may be filed in one file, but not pumps, compressors, exchanger etc in one single file.

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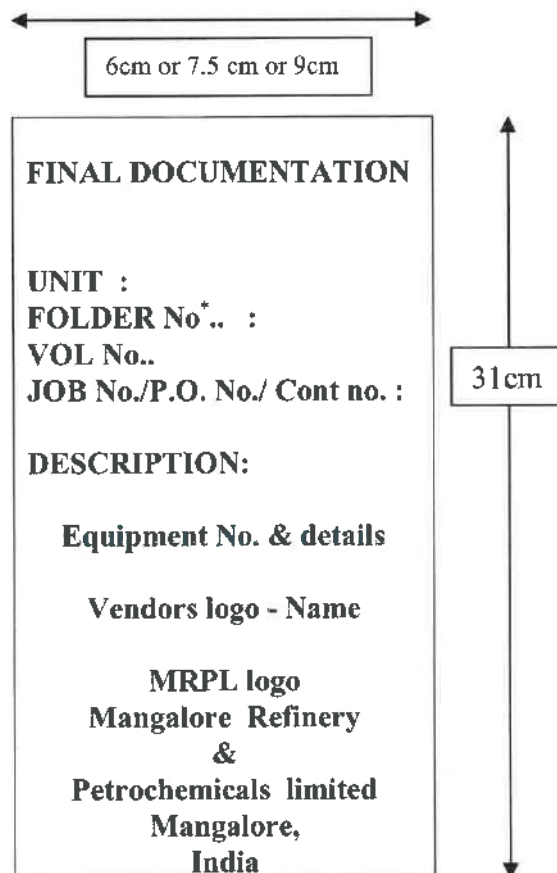


# MANGALORE REFINERY AND PETROCHEMICALS LIMITED

## PROCEDURE FOR FINAL DOCUMENTATION

SPC00009  
Rev.1


- 3.2 **Drawing Filing** : Each single drawing shall be put in separate transparent A/4 size drawing (non sticky) pouch and shall not be punched.
- 3.3 **File size** : All documents and drawings shall be compiled in A4 size file(s) ( 28cm x 31cm), with 2-clips. Width of the file can be, 6.0 cm or 7.5 cm or 9.0 cm. based on the volume of documents
- 3.4 **Document size** : The documents / drawings submitted in file shall be in its original size (A0/A1/A2/A3/A4), and to be folded in A4 size to accommodate in the A4 size drawing pouch as mentioned in 3.2.
- 3.5 **Digital Copies** : Each single CD/DVD shall have proper labels and to be filed in a separate distinct section of the document folder.  
File label : Each file shall display following information on its spine.



\* To be provided in consultation with PMC / MRPL Engineering Documentation Centre.

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	<b>MANGALORE REFINERY AND PETROCHEMICALS LIMITED</b>	
	<b>PROCEDURE FOR FINAL DOCUMENTATION</b>	<b>SPC00009 Rev.1</b>

#### 4. SUBMISSION OF DOCUMENTS

4.1 All final documents duly compiled by this procedure alongwith deviation note as mentioned in section 1.3 shall be handed over to MRPL Engineering Documentation Centre through PMC / consultant / Engineer-in-charge of the project.

4.2 Completion Certificate from PMC/Consultant/Engineer-in charge, as per following format shall be attached in all document folder

-----

#### COMPLETION CERTIFICATE OF FINAL DOCUMENTATION

Name of Supplier/ Contractor :  
Customer :  
Project :  
Project No. :  
Purchase Order No./ Contract No. :  
Purchase Requisition No./ Tender No. : Rev.No.:  
Name of the work/Equipment :  
MRPL Equipment Tag. No. :  
Supplier's / Contractor's Works Order No. :  
Total No. of files :

Certified that the Engineering Documents / Manufacturing & Test Certificates submitted by the supplier are duly checked by us and found complete in all respect in accordance with the final documentation procedure No. SPC-000009 Rev 01.


Signature : .....	Signature : .....
Date : .....	Date : .....
Name : .....	Name : .....
Designation : .....	Designation : .....
Department : .....	Department : .....

Supplier /Contractor

PMC/Overall contractor

4.3 Piecemeal submission shall be avoided.



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 <b>ONGC</b> ॐ ॐ ॐ <b>MRPL</b>	<b>MANGALORE REFINERY AND PETROCHEMICALS LIMITED</b>	
	<b>PROCEDURE FOR FINAL DOCUMENTATION</b>	<b>SPC00009 Rev.1</b>

- 4.4 If any document /drawing is required to be submitted in later date after submission of final folder, shall clearly appear in the content (section 2.3.1) with a note "LATER" duly approved by PMC / Consultant / Engineer-in charge
- 4.5 Work related Piping and Civil area drawings to be updated "Asbuilt" by PMC/Contractor with their respective changes at site.
- 4.6 Number of sets of Final Documents



Sr.No.	Document Group	# Copies	Digital File
1	Basic /Extended Design Packages	1	2
2	Vendor / Engineering Documentation / Drawings (As-Built Final)	1(original)	2
3	Final Field Inspection Reports, Documents & Drawings (Drawings As-Built certified)	1(original)	2
4	Radiography films	1	2

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**CALIBRATION REQUIREMENTS OF MONITORING AND  
MEASURING DEVICES AT CONSTRUCTION SITE**

**[ANNEXURE VIII- TO SPECIAL CONDITIONS OF CONTRACT]**

	<b>MRPL Marketing Terminal Project at Devangonhi, Bangalore</b> <b>Marketing Infrastructure Projects, MRPL</b>	
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CALIBRATION REQUIREMENTS OF MONITORING AND MEASURING DEVICES AT CONSTRUCTION SITES  
(As applicable to LSTK-B Work)



Abbreviations

- ABS : ABS Consultancy  
 BIS : Bureau of Indian Standards  
 BV : Bureau Veritas  
 CEIL : Certification Engineering International Ltd  
 DNV : Det Norske Veritas  
 IRS : Indian Registrar for Shipping  
 LRS : Lloyd's Register Group Limited  
 NABL : National Accreditation Board for Testing and Calibration Laboratories  
 PMI : Positive Material Identification

**Only the items relevant to Civil and Structural Works covered under the LSTK-B Package shall be applicable.**



Requirement for control of monitoring and measuring devices

Sl. No	Description	Calibration requirements	Frequency	Remarks
<b>A.</b>	<b>Civil-Survey</b>			
<b>A.1.</b>	Theodolite	To check for permanent adjustments by traversing and observing the closing error	once in a year or project duration whichever is earlier	Record to be maintained <b>(See note below)</b>
<b>A.2.</b>	Levels	To check by Back sight/ Foresight readings, the temporary adjustments of level	Every use	Record to be maintained (See note below)



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Sl. No	Description	Calibration requirements	Frequency	Remarks
A.3.	Steel measurement tapes	.....	.....	a."Freemans" make or BIS approved make shall be used. b. Mutilated, or broken tapes shall not be used. c. Marking on the tape shall be legible
A.4.	Cross staff	.....	.....	Same as 3b&3c above
A.5.	Distomat	Actual Physical Verification at Site	Before using first time at site	Records to be maintained
A.6.	Total Station	To check for permanent adjustments by traversing and observing the closing error,etc.	once in a year or project duration whichever is earlier	Record to be maintained (See note below)
<b>B.</b>	<b>Civil Laboratory</b>			
B.1.	All balances-Mechanical	Check for zero error	Whenever used	.....
B.2.	Weigh Batcher/Batching Plant	Calibration of scales	Once in three Months	Records to be maintained
B.3.	Cube testing machine	Calibration certificate from manufacturers or from reputed calibrating agency.	As per manufacturer specification or once a year whichever is earlier	Records to be maintained
B.4.	Moisture Meter	Calibration of scales	6 months	Records to be maintained

**Note:-**If Error is found, it has to be sent to manufacturers or their authorized agents for rectification and certification. Reputed calibrating agency shall be NABL accredited for relevant testing.

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Sl. No	Description	Calibration requirements	Frequency	Remarks
<b>C.</b>	<b>Mechanical/Electrical/Welding</b>			
<b>C.1</b>	Pressure Gauges	Calibration certificate from reputed laboratories or calibrate by dead weight testers with standard weights or with master Gauge	Once in 6 months	Records to be maintained
<b>C.2</b>	Dial Gauges	Check for Zero Error	Whenever used	.....
<b>C.3</b>	Dead Weight Tester	Calibration from manufacturer or reputed Calibrating agency. Calibration certificate shall not be older than one month from the date of mobilization.	As per manufacturer's recommendation or once in a six month whichever is earlier.	Records (Calibration certificate) to be maintained
<b>C.4</b>	Vernier Caliper/ screw gauge	Check for Zero error	Whenever used	.....
<b>C.5</b>	Holiday Tester	Calibration from manufacturer or reputed calibrating agency or by calibrating by zeep meter.	Once in 6 months	Records to be maintained
<b>C.6</b>	Elcometer	Check with standard test films supplied by the manufactures	Before use	Records to be maintained
<b>C.7</b>	Universal Testing Machine	Calibration Certificate from any reputed third party inspection agency. viz, CEIL, LRS, BV, ABS, DNV or IRS	As per manufacturer's recommendation or once a year whichever is earlier	Records to be maintained
<b>C.8</b>	Charpy V-notch Impact testing machine	Calibration Certificate from any reputed third party inspection agency. viz, CEIL, LRS, BV, ABS, DNV or IRS	As per manufacturer's recommendation or once a year whichever is earlier	Records to be maintained
<b>C.9</b>	Hardness testing Machine	Check with the standard test block supplied with the machine as per manufacturer's	Before use	Records to be maintained

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Sl. No	Description	Calibration requirements	Frequency	Remarks
		Recommendation		
<b>C.10</b>	Chemical Analysis, ex: PMI etc.	Check with the standard samples	Before use	Records to be maintained
<b>C.11</b>	Various Digital and Analog meters	Calibration Certificate from reputed laboratories or the manufacturer	Once in Six Months or as per manufacturer's recommendation whichever is earlier.	Records to be maintained
<b>C.12</b>	Variable current, voltage and resistance generators	Calibration Certificate from reputed laboratories	Once in 6 months	Records to be maintained
<b>C.13</b>	Temperature/ Pressure Recorders	Calibration from manufacturer or any reputed calibrating agency	Once in 6 months	Records to be maintained

**Note:-**If Error is found, it has to be sent to manufacturers or their authorized agents for rectification and certification. Reputed calibrating agency shall be NABL accredited for relevant testing.

Sl. No	Description	Calibration requirements	Frequency	Remarks
<b>C.14</b>	Temperature gauges	Calibration Certificate from reputed laboratories	Once in 6 months	To be discarded in case of damage or malfunctioning
<b>C.15</b>	Thermocouples	Manufacturer's Certificate or Chemical Check	.....	.....
<b>C.16</b>	Vibration probes	Calibration from reputed laboratory	Once in a year	To be discarded in case of damage or malfunctioning
<b>C.17</b>	Decibel-meter	Manufacturer's Certificate or Chemical Check	Once in a year	- do -



**Note:-**If Error is found, it has to be sent to manufacturers or their authorized agents for rectification and certification. Reputed calibrating agency shall be NABL accredited for relevant testing.



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## **LIST OF IRON & STEEL PRODUCTS**



**[ANNEXURE - IX TO SPECIAL CONDITIONS OF CONTRACT]**

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**Annexure - IX**



**List of Iron & Steel Products**  
(Refer Clause 7.2 of the guidelines)

S.No	Iron & steel products	Inputs (imported or domestic)	Minimum value addition
1.	Ductile Iron Pipe	Pig Iron/Liquid Iron	15%
2.	Wire Rod &TMT Bar	Billet	15%
3.	Structural/Sections	Bloom	15%
4.	HR Coils, Strips, Sheets & Plates	Slab	15%
5.	HR Universal/Quarto Plates	Slab	15%
6.	CR Coils/Strips	HR Coils	15%
7.	Coated Flat Steel Products/ GP/GC Sheets/Al-Zn Coated	Slab/HR Coil/Cold Rolled Coils/Strips	15%
8.	Color Coated, Painted Sheets	Slab/HR Coil/Cold Rolled Coils/Strips	15%
9.	All Kinds Of Steel Pipes & Tubes	Slabs/Plates/HR Coils	15%
10.	Seamless Tubes & Pipes	Bloom	15%
11.	Rails	Bloom	15%

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**FORMAT FOR AFFIDAVIT OF SELF-CERTIFICATION REGARDING DOMESTIC  
VALUE ADDITION IN IRON & STEEL PRODUCTS**

**[ANNEXURE – X TO SPECIAL CONDITIONS OF CONTRACT]**

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**ANNEXURE – X**

**Format for Affidavit of Self-Certification Regarding Domestic Value Addition in Iron & Steel Products to Be Provided On Rs.100/- Stamp Paper for Indian Bidders and as per country rule for Foreign Bidders**

I \_\_\_\_\_ S/o / D/o / w/o \_\_\_\_\_ Resident of \_\_\_\_\_ Hereby solemnly affirm and declare as under: That I will agree to abide by the terms and conditions of policy of government of India issued vide notification no: \_\_\_\_\_

That the information furnished hereinafter is correct to the best of my knowledge and belief and I Undertake to produce relevant records before the procuring agency (i.e. S) for the purpose of assessing the domestic value addition.

That the domestic value addition for all inputs which constitute the said iron & steel products has been verified by me and I am responsible for the correctness of the claims made therein.



That in the event of domestic value addition of the product mentioned herein is found to be Incorrect and not meeting the prescribed value-addition criteria, based on the assessment of procuring agency (i.e. S) for the purpose of assessing the domestic value-addition, I will be disqualified from any government tender for a period of 36 months. In addition, I will bear all costs of such an assessment.

That I have complied with all conditions referred in the notification no. \_\_\_\_\_

Wherein preference to domestically manufactured iron & steel products in government Procurement is provided and that the procuring agency (i.e. S) is hereby authorized to reject / black list undersigned. I also undertake to pay the assessment cost and pay the penalties as specified in the tender document.

I agree to maintain the following information in the company's record for a period of 8 years and shall make this available for verification to any statutory authority.


- I. Name and details of the bidder (registered office, manufacturing unit location, nature of legal entity).
- II. Date on which this certificate is issued.
- III. Iron & steel products for which the certificate is produced
- IV. Procuring agency to whom the certificate is furnished
- V. Percentage of domestic value addition claimed and whether it meets the threshold value of
- VI. Domestic value addition prescribed
- VII. Name and details of the unit of the manufacturer
- VIII. Net selling price of iron & steel products

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- IX. Freight, insurance and handling till project site.
- X. List and total cost value of input steel (imported) used to manufacture the iron & steel products
- XI. List and total cost of the input steel which are domestically sourced
- XII. Please attach value addition certificates from suppliers, if the input is not in-house
- XIII. For imported input steel, landed cost at Indian port with break-up of CIF value, duties & taxes, port handling charges and inland freight cost.



For and on behalf of \_\_\_\_\_ (name of firm/entity)  
Authorized signatory (to be duly authorized by the board of directors)

<Insert name, designation and contact no.>

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**CONSTRUCTION MANAGEMENT REQUIREMENT FOR LSTK PACKAGE**



**[ANNEXURE – XI TO SPECIAL CONDITIONS OF CONTRACT]**

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- 2 Scope
- 3 Reference Documents
- 4 Abbreviations & Definitions:
- 5 Requirements
  - 5.1 General
  - 5.2 Sub-Contracting Plan
  - 5.3 Construction Management Plan
  - 5.4 Construction Execution Plan
  - 5.5 Construction Planning, Scheduling, Monitoring & Reporting
  - 5.6 Quality Assurance and Quality Control
  - 5.7 Warehouse Management & Material Control
  - 5.8 Field Engineering
  - 5.9 Field Tendering
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  - 5.11 Health, Safety and Environment (HSE) Management
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## 1. Purpose

This document describes the requirements of Construction Management to be adopted at site by LSTK contractor while executing construction activities, to achieve overall completion of the project as per contractual schedule complying with construction quality and safety of LSTK-B PACKAGE FOR CIVIL AND STRUCTURAL WORKS at MRPL Marketing Terminal, Devangonhi, Bangalore.

These requirements shall also provide the basis for Owner/PMC to monitor LSTK contractor's control on construction management.

## 2. Scope

This document applies to Construction work, Pre commissioning and Commissioning of the LSTK-B package and final handover to Owner of LSTK-B PACKAGE FOR CIVIL AND STRUCTURAL WORKS at MRPL Marketing Terminal, Devangonhi, Bangalore.

It applies equally to permanent and temporary works, demolition and site clearance.



**Technical portions of this document relevant to Civil and Structural Works covered under the LSTK-B Package shall be applicable.**

## 3. Reference Documents

Contract document, Project execution plan, Construction HSE requirements, Construction Quality requirements and applicable statutory documents.

## 4. Abbreviations & Definitions:



LSTK	Engineering, Procurement and Construction.
Owner	Mangalore Refinery and Petrochemicals Limited (MRPL),
PMC	Nauvata Engineering Pvt Ltd., Bangalore
LSTK Contractor	Contractor engaged by Owner for LSTK packages.
Sub- Contractor	Contractor engaged by LSTK Contractor
QAP	Quality Assurance Plan.
ITP	Inspection and Test Plan.
TPI	Third Party Inspector.
RFI	Request for Inspection.
DCC	Document Control Center.
RFSU	Ready for Startup.
ODC	Over Dimensioned Consignment
RCM	Resident Construction Manager
MTO	Material take off

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## 5. Requirements

### 5.1. General


- 5.1.1. LSTK Contractor shall construct the LSTK-B project facilities in accordance with the requirements of the technical standards, with proven/generally accepted practices and procedures. Such facilities shall be safe, reliable and suitable for their intended purpose.
- 5.1.2. LSTK Contractor shall provide all supervision, labour, construction equipment, tools & tackles materials and consumables, temporary facilities, construction utilities, etc. and render all support services necessary for the construction, mechanical completion, precommissioning and commissioning activities.
- 5.1.3. LSTK Contractor shall plan, execute, manage and control all the construction and commissioning activities for the facilities forming part of this contract. Frontline construction supervision also is to be provided by LSTK Contractor.
- 5.1.4. LSTK Contractor to ensure mechanizing of the construction activities to a great extent and working during monsoon.
- 5.1.5. LSTK Contractor is deemed to be having full knowledge of the applicable laws and regulations, conditions of labour, local conditions, site conditions, environmental aspects and shall comply with the requirements there of.
- 5.1.6. LSTK Contractor's work during construction shall include but not be limited to the following:
- i) Prepare and submit all the plans, procedures and documents to Owner/PMC as specified in the contract.
  - ii) Establish requisite site organization staffed by competent and experienced specialists, supervisors and inspectors.
  - iii) Update overall project schedule on monthly basis.
  - iv) Supervise co-ordinate and manage the activities performed at site by the LSTK contractor himself and by his Sub-contractors for execution of work and render all technical/specialist services.
  - v) Plan and schedule the construction work, monitor and take timely corrective action required to adhere to approved execution schedule.
  - vi) Plan and allocate required resources, manpower, and construction equipment/materials, commensurate with construction plan/schedule.
  - vii) Ensuring quality control and quality assurance as per approved QAP.
  - viii) Report beforehand and take approval from Owner/PMC regarding use of any equipment and/or material not conforming to the contract, drawings and specifications.
  - ix) Execute and supervise all additional works and modification works as required or suggested by Owner/PMC as a part of approved change orders.
  - x) Erect and install the equipment and materials according to the approved specifications and procedures.
  - xi) Establish required field inspection and testing laboratories at site to carry out tests as specified in the standards/specifications of the contract.

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- xii) Organize and obtain all applicable clearances/approvals from statutory bodies/authorities, as required by the laws of land for the work executed by the LSTK Contractor at site under the contract.
- xiii) Carry out inspection, non-destructive tests and certify acceptability of all welds and materials in accordance with specified technical standards/international standards. Carry out inspection and testing of incoming materials as per agreed procedures.
- xiv) Carry out material traceability during all the phases of pre-fabrication and installation as per the procedure approved by Owner/PMC.
- xv) Organize and conduct positive material identification (PMI) of incoming materials and after erection of facilities as per procedure approved by Owner/PMC.
- xvi) LSTK Contractor to provide facilities and cooperation for audits carried out by Owner/PMC.
- xvii) Prepare detailed schemes for ODC/Heavy/Critical Equipment movement/erection/lifting/rigging and submit the same for review/approval to Owner/PMC before undertaking such critical/heavy lifts/movements/erection. Any modifications required including dismantling and re-erection of structures/piping, etc. for the existing facilities for smooth flow of such heavy equipment shall be carried out by the LSTK contractor at his own cost. However, prior approval for such modifications shall be required from the Owner/PMC.
- xviii) Organize and conduct weekly project review meeting related to site construction activities.
- xix) Provide detailed daily, weekly and monthly progress reports. The content of report shall be as per requirement of Owner/PMC.
- xx) Prepare and submit records of all site meetings and any other related documents to all parties concerned within two (2) days of the meeting.
- xxi) Prepare and submit safety and labour relation procedures in line with all applicable codes, regulations and Owner's requirements.
- xxii) Supervise and monitor all safety and labour relations functions as per agreed procedures and applicable laws of the land and report to Owner/PMC immediately for any violations and injuries.
- xxiii) Keep all the records generated during project execution up-to-date and in first rate condition to be made available to Owner/PMC whenever requested. These records shall be handed over to Owner/PMC on completion of the work.
- xxiv) Carry out warehouse management and material control in accordance with approved procedure.
- xxv) Ensure that incoming materials are offered to Owner/PMC for inspection as per approved ITPs and inspection records are maintained at site.
- xxvi) Take all necessary precautions and required actions to protect construction work and materials from damage by local weather conditions and ongoing construction activities in the vicinity, theft and pilferage etc.



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- xxvii) Take insurance policies for materials in transit and storage-cum-erection risk and other insurance covers required for men and materials at site.
  - xxviii) Undertake housekeeping including sweeping, cleanup to maintain cleanliness, sanitation, removing excess materials, temporary facilities, scaffolding, etc. on daily basis.
  - xxix) Ensure the control of all works with regard to its impact on the surrounding environment.
  - xxx) Inspect & certify the short bolting prior to commissioning. Records of bolt tightening for high pressure lines shall be maintained and obtain certification from Owner/PMC.
  - xxxii) Load data of spring supports shall be recorded and certification of the same shall be obtained from Owner/PMC.
  - xxxiii) Ensure all hot works are performed outside hazardous areas and in compliance with Owner's safety permit system requirements wherever applicable.
  - xxxiiii) Arrange and co-ordinate the visits of vendor(s) representative/specialists at site.
  - xxxv) All material handling equipment, tools, tackles, hoisting and lifting equipment/machineries should be subjected to required load test initially and then periodically, to ensure safe/stable operation. LSTK contractor to engage competent TPI certification agency for certification of all lifting tools & tackles.
  - xxxvi) Execute all the tie-ins for the project as per the terms of contract and schedule fixed by Owner/PMC.
  - xxxvii) Organize field engineering work, wherever required and provide assistance to Owner/PMC in timely resolving interface problems/site constraints.
  - xxxviii) Prepare and certify material reconciliation statement on completion of work to enable Owner to take over the balance store materials, if applicable as per the contract.
  - xxxix) Organize the handing over of balance surplus materials (as applicable) and spares/tools and tackles to the Owner on completion of the work.
  - xl) Develop a phased mechanical completion program to facilitate sequential pre commissioning/commissioning activities in a logical manner to meet the overall project schedule.
  - xli) Remove/demolish all temporary structures/establishments/facilities created by the LSTK Contractor/Sub- Contractors during the execution of the work and restore the site to its original condition.
- 5.1.7. LSTK Contractor is required to organize and mobilize "construction management services" in a systematic and sequential manner to ensure that the project site installation is carried out in accordance with the approved engineering drawings, specifications, standards, QA/QC procedures etc. and its mechanical completion is achieved within targeted time schedule. Construction management and supervision is to be carried out by the LSTK contractor himself by deploying persons on his rolls.
- 5.1.8. A construction management team headed by a RCM shall be deployed at site by LSTK Contractor for construction supervision and management of their contractual scope of work. Contractor shall provide the CVs of RCM and all the lead engineers intend to be deployed at site for approval of Owner/PMC. Owner/PMC may ask for face-to-face or telephonic interview of such candidates and reserve the right to accept/reject such candidate from

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deployment at site. However, all HSE personnel will be necessarily interviewed by Owner/PMC prior to their deployment at site. Key personnel including RCM should have sufficient experience to meet the requirement as stated in SCC and should not be changed during course of execution without concurrence from Owner/PMC.

- 5.1.9. The construction supervision, co-ordination and management activities shall be carried out by the LSTK Contractor in accordance with the construction procedures developed and submitted by the LSTK Contractor and approved by Owner/PMC.
- 5.1.10. LSTK Contractor shall extend all necessary assistance and provide all necessary data/documents as required by Owner/PMC for review and monitoring of the jobs performed by the LSTK Contractor
- 5.1.11. LSTK Contractor shall ensure delegation of adequate and sufficient powers (including financial) to his RCM for effective and smooth functioning of the construction management. LSTK Contractor to inform officially Owner/PMC about authorizing their RCM for all Techno commercial authorities related to the project execution. HO support shall be provided to the RCM at site during construction on all matters of project execution including the following:
- Field engineering.
  - Vendor specialists required during construction.
  - Rectification/replacement of defective supplies, if any, noticed during construction.
  - Inspection/expediting of replacement orders/field purchase orders for items ordered by site.
  - Expediting replacement of imported items found short/damaged.
  - Material receiving inspection at site and the required documentation
  - Statutory requirements and the required documentation
- 5.1.12. LSTK Contractor shall depute a project team at site during construction phase under a project co-coordinator for providing above-mentioned support to RCM.
- 5.1.13. LSTK Contractor shall establish and maintain a material testing laboratory for all disciplines for carrying on field tests during execution of contracts at no extra cost to Owner All the test equipment deployed shall have valid test/calibration certificates.
- 5.1.14. Construction supervision and management functions to be performed by the LSTK Contractor, shall include the following as key functions for effective execution, monitoring and control:
- Planning, scheduling, monitoring & reporting.
  - Construction supervision, discipline wise.
    - Quality assurance and quality control, discipline wise.
    - Shipping, custom clearances, inland transportation.
    - Warehouse management and material control.
    - Field engineering & Site procurement.
    - Health, safety and environment (HSE) management.

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- Statutory clearances and enforcement of statutory rules/regulations and Labour Laws.
- Personnel/administration/industrial relations.
- Billing and invoicing.
- Finance and accounts.
- Security.

**5.2. Sub-Contracting Plan**

If LSTK Contractor proposes to engage sub-contractors for the execution of various activities at site, a preliminary sub-contracting philosophy and plan along with the identified scope of work for each sub-contract shall be furnished by LSTK Contractor at the time of bid submission. However, the credentials of proposed sub-contractors shall be submitted by the LSTK Contractor on award of this work, which shall be evaluated by Owner/PMC for acceptance. Sub-contractors can be engaged only after receipt of approval from Owner/PMC. LSTK Contractor shall not be permitted to change the sub-contractors under any circumstances without prior approval of Owner/PMC. Non-compliance of the above shall be strictly dealt within relevant provision(s) of the contract.

**5.3. Construction Management Plan**

LSTK Contractor shall submit Construction Management Plan to Owner/PMC for approval during kick-off meeting. The plan shall detail the management methodology to be applied during the construction phase of the project, along with a list of procedures to be utilized in undertaking the work.



All reference procedures and detail work plans referred to in this document must be submitted for review and approval by Owner/PMC at least (4) four weeks in advance of actual commencement of the activity concerned.

**5.4. Construction Execution Plan**

LSTK Contractor shall submit construction execution plan to Owner/PMC for review/approval during kick-off meeting. The plan shall detail the execution methodology of the LSTK Contractor during construction phase of the project. LSTK Contractor construction execution plan shall include:

- a) LSTK Contractor's manpower and man-hour histogram by major section and discipline and his manpower deployment schedule on monthly basis with distribution of foreign/Indian/local personnel.
- b) Major equipment mobilization plan on monthly basis with short description. LSTK Contractor to develop this plan with due consideration to maximize the mechanization of construction activities.
- c) LSTK Contractor's plan to construct proper approach roads, drains, underground systems, cable trenches and complete major civil works well in advance before start of mechanical job.



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d) Other plans of LSTK Contractor and procedures to be submitted at least four (4) weeks prior to start of respective activity at site, with the following as a minimum:

- Temporary facilities, etc.
- Piling plan (if applicable)
- Excavation and underground work plan
- Civil Construction
- Structural Erection
- Scaffolding plan
- Working during monsoon and de watering
- Monsoon counter measures and preparation
- Storm water management plan
- Working in shifts including holidays. Separate manpower shall be considered for each lift of work
- Heavy transport and heavy lifting plan (Rigging Plan)
- Pre-fabrication plan
- Hydro-test plan
- Other activity plans e.g. piping, equipment and steel structure erection plan etc.
- Instrument loop check plan
- Emergency evacuation procedure
- Sub-Contracting Plan

a. Temporary Facilities

LSTK Contractor's construction execution plan shall include:

- Exact location of temporary work area, access and general layout inside the area.
- Plan and description of the temporary facilities for LSTK Contractor / sub-contractor.
- Identification of borrow earth area (if required)/excess earth dumping yards.
- LSTK Contractor / sub-contractor site office and fabrication yards, open storage area and warehouse.
- Miscellaneous workshops.
- Temporary roads including access road to project site, fencing and gates.
- Security, watch & ward, security gates, watch towers.
- Utility supply systems viz. construction power, construction water, drinking water etc.
- Area lighting.
- Firefighting equipment.
- Drainage and sanitation.
- Labour camp accommodation.
- Field testing laboratory.

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- Communication facilities viz. telephone, fax, e-mail, etc.
- Canteen for staff and workers as per rules and regulations applicable inside PROJECT SITE.
- Vehicle parking area.
- First aid arrangement/medical and health care facilities.
- LSTK Contractor shall develop the temporary facilities layout for approval of Owner/PMC.

- b. Monthly Estimation of all utility consumption including drinking / construction water & power (electricity).

#### 5.5. Construction Planning, Scheduling, Monitoring & Reporting

LSTK Contractor shall be responsible for construction planning, scheduling, monitoring and reporting activities at site in line with the overall master schedule and details stipulated elsewhere in this document.

To ensure timely completion of the project, LSTK Contractor shall establish and maintain an effective Primavera Enterprise 8.2 for Preparation of Project Schedule as Project Management Control System tool for the Project, scheduling, monitoring and control system, including mobilization of required number of professionally qualified and experienced planning engineers for design office and construction site. The system shall be capable of accurate and timely prediction of trend, evolution of adequate preventive actions for likely slippages, and formulation of suitable catch-up schedule for delays, if any, that have occurred.

Schedules, reports and documents to be prepared and submitted by the LSTK Contractor for review of Owner/PMC at various stages and details of meetings to be held are described here.



Following activities are also to be performed by the LSTK Contractor at site:

##### 5.5.1. Construction Master Schedule

Construction master schedule shall be prepared and submitted by the LSTK Contractor for Owner/PMC review/approval covering following aspects:

- Clearly identified activities in the master project schedule
- Major milestones
- Critical path and activity float time
- Activities conforming to the LSTK Contractor's work breakdown structure
- Monsoon and holiday seasons into consideration
- Detailed activity schedule (L3, L4) shall be required for each activity identified in Master Project Schedule two months after award.



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### 5.5.2. Schedule Control

LSTK Contractor shall prepare:

- Three months “Look Ahead”, monthly and weekly construction schedule
- Construction progress measurement method, which is to be based on physical progress Measurement at site as approved by Owner/PMC.
- Reference to schedule change procedures.
- Catch up plans
- Hold up reports in respect of drawings, materials and front, etc.
- Daily, weekly and monthly progress reporting format to Owner/PMC.

### 5.6. Quality Assurance and Quality Control

LSTK Contractor shall submit “Site Quality Assurance Plan” prepared with reference to **Construction Quality Requirement Doc: GINT-8003-000-GEN-000002** applicable to this project to Owner/PMC for their approval. LSTK Contractor shall be responsible for ensuring quality of construction carried out by them/their approved sub- contractors in accordance with the approved quality plan.

The role of Owner/PMC is broadly envisaged as surveillance, auditing and participation in inspection of critical activities as identified. LSTK Contractor shall develop a detailed procedure for field inspection notice and obtain the approval of the same from Owner/PMC for implementation.



#### 5.6.1. Methodology for Construction Quality

The management of construction quality control is divided into the following categories:  
Procurement of materials required for the construction works.

- a) Execution of works
- b) Documentation
- c) QA/QC Audits

##### 5.6.1.1. Procurement of Materials Required for the Construction Works :

LSTK Contractor shall develop list defining the items to be procured by the LSTK Contractor along with likely vendors for approval of Owner/PMC. The vendor list shall be from approved vendor list attached with the contract document. In case, no vendor list exists in the contract for a particular item, the LSTK Contractor will propose a list of vendors to Owner/PMC for approval. LSTK Contractor has to satisfy himself with the capability of the vendor to deliver the product in time with quality before proposing him as a prospective vendor. LSTK Contractor shall submit the QA/QC plans for all major items and carry out their procurement in line with approved plans. The LSTK Contractor can either provide his own adequate qualified staff for inspection or employ a separate

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third-party inspection agency to carry out these functions. Involvement of Owner/PMC in the quality control plan, if required, shall be defined during approval of the same.

**5.6.1.2. Execution of works**

The QA plans for execution shall be developed by the LSTK Contractor. Owner/PMC approval shall be taken well before start of the work for the same. The ITP's, shall be developed by LSTK Contractor as per contract specifications for approval by Owner/PMC. It is likely that the LSTK Contractor may engage sub- contractor s/vendors for performance of the work. LSTK Contractor shall be responsible for ensuring the implementation of approved QA plan, contract specifications and contract conditions through his sub- contractors to achieve the quality during all stages of construction. It shall be the responsibility of the LSTK Contractor to ensure proper co-ordination between his sub- contractors and other agencies working at site.

The sub-contractors /vendors selection shall be done after evaluation by the LSTK Contractor in line with contract requirements and shall be approved by Owner/PMC before engaging them for the works.

LSTK Contractor shall be responsible to arrange verification of products during in process and final inspection. Relevant checks and tests shall be arranged for the works performed and records maintained. Tolerances achieved with respect to contract specification and execution drawings for various activities/processes shall be ascertained and submitted to Owner/PMC for approval. Efforts shall be made to keep checks and controls in such a way that getting a non-conformed product is avoided. However, if in an isolated case, the tolerances are variant beyond the acceptable values given in the contract/execution drawings, non-conformance resolution/waiver need to be raised by the LSTK Contractor and got approved/resolved from Owner/PMC. For alloy and special piping materials and welds, PMI shall be arranged by LSTK Contractor after installation but before final acceptance.



**5.6.1.3. Documentation**

All the necessary documentation shall be maintained by LSTK Contractor till completion of project and handed over to Owner/PMC in requisite copies as a part of completion documents.

**5.6.1.4. QA/QC Audits**

During the execution of the works, LSTK Contractor shall carry out periodical internal quality audits in all areas of work. These audits shall be conducted by a team of specialists in respective areas.

A copy of the audit report containing the findings of the audit team shall be submitted to Owner/PMC within 3 days of completion of an audit. LSTK Contractor to make action plan

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for compliance of the audit findings and submit to Owner/PMC for concurrence before initiating compliance action on the same. A compliance report must also be generated by the LSTK Contractor after completion of certification / modifications / corrective actions taken by the LSTK Contractor on issues indicated in the audit report. A copy of this action plan and the compliance report shall be submitted to Owner/PMC for review.



Over and above the LSTK Contractor's internal QA/QC audits outlined above, Owner / PMC shall also conduct periodical QA/QC audits. The programme along with the scope of such audits, shall be informed to the LSTK Contractor well in advance. LSTK Contractor shall participate and provide full support to the audit team and furnish all documents/reports/records as desired by the audit team. A copy of such audit report shall be furnished to the LSTK Contractor. The LSTK Contractor shall take all actions required to comply with the findings of the audit report and issue regular compliance reports for the same to Owner/PMC till all the findings of the audit report are fully complied.

Owner/PMC reserve the right to appoint an independent person/third party agency to conduct QA/QC systems audit for full/part of the facilities being executed by the LSTK Contractor. This audit shall be in addition to the audits described above and may be carried out intermittently/continuously for all or part of the facilities being executed by the LSTK Contractor.

#### 5.7. **Warehouse Management & Material Control**

LSTK Contractor shall be responsible for carrying out the warehouse management and material control in accordance with the approved warehousing procedure and material control procedure, which is to be submitted by the LSTK Contractor during kickoff meeting. The activities shall include but not limited to:

- Transport liaison, both for imported materials as well as materials procured in India, from the time of dispatch up to receipt at site.
- Transportation plan (i) from source to site (ii) site to erection location.
- Receipt, handling, identification, inspection (including confirmation by an alloy analyzer for alloy steel, stainless steel and other exotic materials) and acceptance, storage and preservation of materials, codification of all materials including free issue materials to be supplied by Owner.
- Filing of insurance claims and follows up.
- Documentation for control and accounting of materials.
- Generation and upkeep of traceability records for materials.
- Materials control & issue.
- Inventory checks.
- Field requisition and purchase.

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- Spares & tools including handing over of mandatory spares/tools to the Owner as per the terms of the contract.
- Material appropriation and handing over of all items to Owner as per the terms of contract.
- Security.
- Taking up with suppliers on short supplied items and placing replacement orders for lost/damaged items.
- Intimating to their HO regarding short/lost/damaged items received at site and further replacement action, as applicable.

**LSTK Contractor shall generate and issue following reports:**



- Vendor expediting report fortnightly
- Fortnightly statement of consignments in transit.
- Daily report of material received.
- Material receipt status and inventory status with respect to material delivery schedule
- Material inspection report with respect to materials received at site
- Report on excess, short, damage & reject (ESDR) against each consignment on receipt at warehouse.
- Weekly status of consignments, material receipt report (MRRs)
- Monthly status of field purchase.
- Monthly statuses of excess, short, damage & reject(ESDR) settlement.
- Monthly status of piping material MTO v/s. actual receipt.
- Log Register of rotating equipment's maintenance
- Daily stock position of cement
- Any other report as desired by Owner/PMC.

**5.8. Field Engineering**

LSTK Contractor shall be responsible for controlling and issue of technical drawings and documents, preparation of field sketches, field modifications, checking/preparation of as-built drawings, technical assistance for field purchase & field tendering etc. Specialist engineers from HO shall be deployed at site as per requirements. Site should have facilities to incorporate field changes, prepare as-built drawings at site itself, WAN facility (preferably) with H.O., printing machines and drawing control system.

**5.9. Field Tendering**

LSTK Contractor shall be responsible for carrying out field tendering activities, as required if any.

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**5.10. Field Purchase**

LSTK Contractor shall be responsible for carrying out field purchase activities, as required.

The bulk of procurement action shall be done from LSTK Contractor 's HO. Field purchase items are restricted to those required for running and maintenance of the field offices, items required to expedite construction work and items found short, missing or damaged against the main order when received at the site. Any material purchased from field for usage in the project site should have proper inspection certificate and should be purchased from Owner/PMC approved vendors.

**5.11. Health, Safety and Environment (HSE) Management**

LSTK Contractor shall submit "Site Specific HSE Plan" prepared with reference to **Construction HSE requirement Doc: GINT-8003-000-GEN-000003** applicable to this project to Owner/PMC for their approval. LSTK Contractor shall be responsible for health, safety and environment (HSE) Management at construction site for the construction activities to be carried out by the LSTK Contractor /their approved sub-contractor s in accordance with the requirements given in approved HSE plan.

It is the responsibility of the LSTK Contractor to maintain general cleanliness and proper housekeeping at work site. LSTK Contractor shall organize disposal of excavated earth/garbage/rubbish/scraps, etc. on day to day basis to identified disposal areas/safe areas and forward daily report for the same indicating the details of men and machinery deployed for the purpose.

**5.12. Industrial Labour Relations**



LSTK Contractor shall be responsible for industrial relation functions and implementation of labour laws at site. LSTK Contractor 's staff shall be suitably trained and experienced in labour relation functions so as to ensure a good relationship with labour and to prevent the occurrence of industrial disputes resulting in subsequent delays or work stoppages. In particular, LSTK Contractor shall maintain close liaison with Owner/PMC and with official Union representatives (if any) of LSTK Contractor 's work force.

LSTK Contractor shall maintain proper liaison with statutory authorities and local bodies and shall be responsible to implement and observe all statutory laws at site.

LSTK Contractor must have on his staff; a well experienced labour relation officer, preferably from local area.

LSTK Contractor shall report immediately to Owner/PMC any problems including labour disputes, fight, and work stoppages. A written report shall be submitted to Owner/PMC within 24 hours after the incident.

LSTK Contractor must submit a "Labour Relations Plan" prior to the start of the work/within one month of award of the contract, whichever is earlier.

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LSTK Contractor 's plan shall include:

- A detailed estimate of the number of foreign labour/local labour/labour from other states of India, both indirect and direct, sorted by craft. This estimate shall specifically include the months and durations that potential foreign labour shall be required.
- Outline of training plan for local semi-skilled labour and respective crafts.
- Outline how the respective government agencies shall be educated on maximization of local workers.
- Outline recruiting plans for all manpower requirements.
- Identify personnel involved with labour relations and outline procedures to mitigate disputes, problems should they occur with the labour force.
- Labour welfare plan
- LSTK Contractor shall hold labour relations meeting twice a month with their workforce as well as a separate meeting with Owner.

#### 5.13. Construction Equipment

LSTK Contractor is required to organize and mobilize the construction equipment and other tools/tackles in a sequential manner to ensure that site installation is carried out in a mechanized manner and its mechanical completion is achieved within targeted time schedule.



LSTK Contractor shall, without prejudice to his responsibility to execute and complete the work strictly as per the specifications and other laid down procedures, execute all the work by mechanizing the construction activities to the maximum extent by deploying all necessary construction equipment / machinery of adequate capacities and numbers.

LSTK Contractor shall ensure deployment of all the construction equipment as per the requirement to the maximum extent but not limited to

- Batching plants
- Concrete pumps
- Transit mixers
- Automatic welding machines
- Cranes of different capacities
- X-ray and Radiography sources
- Stress relieving equipment's with recording facility
- All weather fabrication sheds
- Blast cleaning and painting shop

LSTK Contractor shall deploy portable alloy analyzer with printout facility and carry out 'Positive Material Identification (PMI)' of materials and welds after erection/installation but prior to hydro static testing. Any non-conformance detected shall be removed and replaced prior to final hydro static testing.



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LSTK Contractor shall be responsible for arranging all facilities for torque tightening/tensioning of bolts/fasteners as specified LSTK Contractor shall ensure that stud bolts are ordered extra-long by one diameter to facilitate tensioning.

In order to minimize fabrication at site, major fabricated equipment like reactors, columns/towers, vessels shall be transported in single piece/minimum no. of pieces. LSTK Contractor shall carry out the route survey for transportation of 'Over Dimensioned Consignments'(ODC) including waterways from source of manufacture/supply to site well in advance of placement of order to ensure unhindered transportation of the same to construction site. LSTK Contractor shall arrange cranes of suitable capacities to match with the erection requirements and inform the source and ownership of the same. LSTK Contractor shall ensure cranes are generally not more than **10 years** old fitted with all the safety devices and in good working condition. Use of hydra crane is prohibited at site. LSTK Contractor shall engage new generation pick and carry cranes for construction material handling.



Crane movement roads are to be clearly identified and marked on the plot plan before planning of such movement. Construction of hard stands for positioning of crane in the fabrication yard and at erection site/locations including approach roads to the hard stands from the project site roads shall be LSTK Contractor's responsibility. The hard stands shall be suitable for the crane loads provided by the crane manufacturer.

For the purpose of equipment erection, the LSTK Contractor shall deploy a rigging team headed by a rigging foreman/engineer reporting to concerned area engineer. Area engineer should be well conversant with various erection techniques and shall be responsible for preparing erection schemes in accordance with the approved procedures and based on crane manuals and suiting to project site layout. Area engineer shall have to foresee various other construction activities in the surrounding areas while planning erection schemes including safety aspects of man and machinery also.

LSTK Contractor shall prepare erection schedule in line with the overall project schedule of the LSTK-B package works in phased manner with erection schemes of various equipment's, vessels and submit to Owner/PMC for approval. Monitoring and control of erection schedule and erection activities shall be carried out by the LSTK Contractor as per the approved construction procedures.

For efficient working and maintenance of construction aids, LSTK Contractor shall establish and maintain crane yard/workshop equipped with regular maintenance facilities for various construction aids for carrying out routine field maintenance during performance of the contract. Temporary approach road and hard stands, wherever required for the movement of the cranes and other vehicles for equipment erection and transportation of material shall be properly planned and made by the



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LSTK Contractor. Weekly/fortnightly maintenance shall be planned in such a way that the same does not hamper the erection schedule.

LSTK Contractor shall ensure the timely augmentation of the men, equipment and machinery depending upon the exigencies of the work to meet the overall project schedule and as per instructions of Engineer-in-Charge.

During performances of the work, LSTK Contractor must ensure that structures, materials and equipment are adequately braced with guys, struts or any other means as deemed fit & approved by Engineer-in-Charge. Such means shall be supplied and installed by the LSTK Contractor s as required till the erection works is satisfactorily completed. Such guys, shoring, bracing, strutting, planking supports etc. shall not interfere with the work of other agencies and shall not damage or cause distortion to works executed by other agencies. All lifting tools, tackles and cranes shall be tested periodically by statutory/competent authorities for their load carrying capacity. Such relevant valid/test certificates shall be submitted to Owner/PMC for review before actual use of the tools, tackles and cranes.

LSTK Contractor shall submit the construction equipment deployment schedule. Daily construction equipment deployment report shall be part of “Daily Progress Report” and be submitted by the LSTK Contractor to Owner/PMC.



**5.14. Construction Manpower**

LSTK Contractor is required to organize and mobilize construction staff/manpower in a sequential manner to ensure that project site installation is carried out in accordance with the construction schedule defined elsewhere in this bid package. Mobilization of construction staff should be such that the progress achieved in phased manner should match with the overall project schedule.

For this purpose, the LSTK Contractor shall clearly indicate in his construction methodology whether work shall be done departmentally or by engaging sub-contractor or the combination of both. LSTK Contractor shall prepare detailed methodology for the work to be carried out departmentally as well as through sub-contractors clearly, defining the scope and responsibility of LSTK Contractor and his sub-contractor.

The works of all sub-contractors shall be managed by the construction staff of the main LSTK Contractor who shall perform the duties of construction management and shall administer, co-ordinate, and inspect the works of the sub-contractors and be responsible for the Quality and timely completion of respective works. The LSTK Contractor shall establish the pre-requisites for successful completion of sub-contractor s work.

However, by deploying the sub-contractors, as approved by Owner/PMC for any discipline, does not absolve the LSTK Contractor for his total responsibility under the subject contract.

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The LSTK Contractor must note that in case of any sub-contractor's failure to execute the works as per standards/specifications/drawings and/or negligence & disobedience in carrying out any order or instruction of Owner/PMC, the same shall be viewed very seriously and any action as deemed fit in accordance with provision(s) of the contract, shall be taken by Owner/PMC.



LSTK Contractor must submit the construction manpower deployment schedule along with the bid. Construction manpower deployment schedule shall clearly indicate deployment of national and international (foreigner) manpower with specific man hours / man months in particular for foreign nationals who shall be deployed at site along with details of their qualification/experience and nationality. Daily construction manpower deployment report shall also be submitted by the LSTK Contractor to Owner/PMC on approved format. Any additional manpower of any category required to be deployed during the actual execution of the work to meet the Project time schedule and as instructed by Owner/PMC, shall be mobilized by the LSTK Contractor within a reasonable time. Mobilization of such additional manpower by the LSTK Contractor shall not entitle him for any additional compensation at all.

All construction supervision, coordination and management activities shall be carried out by the LSTK Contractor in accordance with the construction procedures approved by Owner/PMC. LSTK Contractor shall prepare construction schedules based on the overall project schedule of the LSTK-B project and submit the same to Owner/PMC for approval. Monitoring and control of the construction activities shall be carried out as per the approved construction schedule & procedures.

During the execution of works at site, if the LSTK Contractor engages sub-contractor for execution of works at site as per approval obtained from Owner/PMC in line with contract's provision and in the event sub-contractor complains in writing to the Owner with regard to the non-payment of their dues from the LSTK Contractor for the works executed by them (excluding final payments and payments due after termination of sub-contractor's services by the main LSTK Contractor), Owner/PMC reserves the right to make such payment to the sub-contractors directly based on approved measurements with due notice to the LSTK Contractor. Owner/PMC shall release such payments to sub-contractor at the cost and risk of the LSTK Contractor in order to ensure smooth execution of work at site. All such payments made by Owner/PMC to the sub-contractor's shall be deducted from the running account bills or any other payments due to the LSTK Contractor.

#### **5.15. Commissioning**

LSTK Contractor shall submit system/sub system wise dossiers containing all relevant documents/records on completion of mechanical completion to Owner/PMC. LSTK



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Contractor shall supply and fill all initial lubricants, chemicals, consumable, spares required for start-up. Pre-commissioning and commissioning assistance services are in the LSTK Contractor scope of work. The scope also includes providing technical experts / technician for critical equipment and equipment supplier's representatives for commissioning supervision.

#### **5.16. Closing of Contract**

LSTK Contractor on completion of the works in all respects as specified in the contract is required to complete the following activities but not limited to the same for closing of the contract. Payment against LSTK Contractor 's final bill shall be released upon the satisfactory completion of activities pertaining to closing of the contract and submission of following documents:

- Certificate for Successful Completion of Commissioning and Performance test as per SCC (Special Conditions of Contract).
- Copy of Owner's approval for final time extension.
- Completion certificate (overall).
- Submission of completion documents as per SCC.
- Reconciliation of Free Issue Material (if any) and surplus.
- Site clearance as per Contract.
- Supply of spares as per SCC clause reconciliation & handing over
- Submission of operating manuals, if any.
- Submission of Guarantees as specified in SCC.
- Approval from Statutory Authorities and Government bodies.
- Approval from Owner/PMC for extra claims, if any.
- No claims certificate.
- No dues certificate.
- No Demand Certificate.
- Indemnity bond
- LSTK Contractor Demobilization check list.
- Completion of contract close out checklist.
- Detailed contract close out report.
- Any other documents to be submitted as specified elsewhere in the contract.
- No liability certificate: - Self-certification from the LSTK Contractor that no payment is balance to their labourers sub-contractors and vendors on account of service rendered/materials supplied by them.
- Insurance Policies required as per GCC and SCC.
- Validity Extension of various Bank Guarantees required as per contract.



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The LSTK Contractor shall be required to submit the documents for those activities which are completed before mechanical completion including Q.A. documents, statutory authorities approvals, as built drawings etc. concurrent to mechanical completion. Balance documents such as completion certificate for performance guarantee test, excluding final completion certificate are to be submitted within seven working days of completion of P.G. Test.

The broad checklist is listed below. However, LSTK Contractor to prepare his own exhaustive check-list including detailed procedure for contract close-out and get it reviewed by Owner/PMC before implementation.



**LSTK Contractor Demobilization Check-list**

Description of activity	Signature with date		
	LSTK Contractor	PMC	Owner
Material reconciliation			
Return of surplus material			
Removal of temporary facilities – site office, temporary water/ power connection etc.			
Clearance of site viz. debris construction material, tool & tackles, equipment etc.			
Reconciliation of entry pass for men/material.			



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**Checklist for Contract Closing**

Item description	Signature with date			
	LSTK Contractor	PMC	Owner	Remarks
Handing over of all mandatory and commissioning spares to Owner.				
Handing over of all construction surplus materials to Owner.				
Reconciliation of gate pass (Labour) & clearance.				
Reconciliation of gate pass (Materials) & clearance.				
Certification of final construction measurement & Bill.				
Final documentation handing over, including as-built drawings /documents				
Detailed close out report submission to Owner/PMC				
Ensure proper housekeeping before handing over of LSTK-B package facilities to Owner.				
Labour statutory compliances				
Submission of certificate from Govt. authority (Weigh bridge & Lifts)				
Final statement of recoveries on account of electricity charges, penalties, etc.				
No claim certificate by the LSTK Contractor & sub-contractors.				
No dues certificate by the LSTK Contractor.				

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Item description	Signature with date			
	LSTK Contractor	PMC	Owner	Remarks
Labour liability certificate - Self certification from LSTK Contractor that no payment is balance to their labourer sub- contractors and vendors on account service rendered / materials supplied by them.				
Site clearance certificate endorsed by Owner/PMC.				
Indemnity certificate issued by LSTK Contractor				
Completion certificate issued by Owner/PMC (date of time extension should tally with date of completion certificate)				
Copy of Owner's approval for final time extension				
Certificate for successful completion of commissioning and performance guarantee test run				
Submission of Guarantees Certificate as specified in contract				
PF & ESI certification up to the date of completion of the job.				
Validity extension of various bank guarantees required as per contract.				
Settlement of all positive & negative change orders				
Any other documents to be submitted as specified elsewhere in the contract				

	<b>MRPL Marketing Terminal Project at Devangonhi, Bangalore</b> <b>Marketing Infrastructure Projects, MRPL</b>	
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**LIST OF THIRD PARTY INSPECTION AGENCIES (TPI)**

**[ANNEXURE- XII TO SPECIAL CONDITIONS OF CONTRACT]**

**Please find below list of THIRD PARTY INSPECTION (TPI) agencies for the inspection of supplies:**

1. M/s ABS Industrial Verification (India) Pvt. Ltd.
2. M/s Astron Certification India Private Limited
3. M/s Bureau Veritas (India) Pvt. Ltd.
4. M/s Certification Engineers International Ltd.
5. M/s International Certification Services Pvt. Ltd.
6. M/s IR Class Systems and Solutions Private Limited
7. M/s Projects and Development India Ltd. (PDIL).
8. M/s SGS India Pvt Ltd.
9. M/s Tata Projects Limited.
10. M/s TUV SUD South Asia Pvt ltd.
11. M/s VCS Quality Services Private Limited.



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**Circular issued by O/o Chief Engineer, CPWD, Bangalore for Base Price of  
Steel for January 2021 (for example/illustration purpose)**

**[ANNEXURE- XIII TO SPECIAL CONDITIONS OF CONTRACT]**






# MRPL Marketing Terminal Project at Devangonhi, Bangalore

## Marketing Infrastructure Projects, MRPL



### LSTK-B PACKAGE : CIVIL AND STRUCTURAL WORKS VOLUME I : COMMERCIAL

 भारत सरकार केन्द्रीय लोक निर्माण विभाग मुख्य अभियन्ता, बंगलोर का कार्यालय डी विंग, छह मंजिल, केन्द्रीय सदन, कोरमंगला, बंगलूर - 560 034 फोन-2552 2003, फैक्स-2552 4948	 GOVERNMENT OF INDIA Central Public Works Department O/o Chief Engineer Bangalore D-wing, 6th Floor, Kendriya Sadan, Koramangala, Bangalore-560 034 Phone : 2552 2003 Fax : 2552 4948 Email ID: sepnasz3@yahoo.co.in	
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सं. 23(S&S)/मु.अ-बंगलूर/2021/ 295-98 (H) दिनांक : 12.02.2021

विषय : निर्माण महानिदेशक के कार्यालय जापन संख्या DGW/CON/237A दिनांक 31.12.2008 के अनुसार निविदा फार्म 7 & 8 में खण्ड 10 ग क के अनुसार कार्यवाही हेतु सूचकांक

Sub: Base price of cement and steel for operation of Clause 10 CA in terms of DGW/CON/237A dated 31.12.2008 in contract form CPWD 7 & 8.

जनवरी 2021 / January 2021

क्रम संख्या Sl. No	सामग्री Items	प्रति टन आधारित दरे Base price per MT (In Rs) (excluding of GST) कर्नाटक / Karnataka
1	साधारण पोर्टलैंड सीमेंट Ordinary Portland cement - 43 grade	4,375/-
2	पोर्टलैंड पोझोलोना सीमेंट Portland Pozzolona Cement - 43 grade	4,375/-
3	लोहे की छडे (टीएमटी-एक ई-500) मुख्य निर्माता से Steel reinforcement bars (TMT-Fe-500 & Fe-500D) from primary producers	52,970-
4	इमारती लोहा / Structural steel	49,300/-

मुख्य अभियन्ता द्वारा प्रदत्त अधिकारो से जारी किया गया / Issued with the approval of Chief Engineer, CPWD, Bangalore (All the above rates are excluding GST).



प्रतिलिपि:

- 1) अपर महानिदेशक, बंगलूर क्षेत्र, के.लो.नि.वि, बंगलूर।  
The Additional Director General (RB), CPWD, Bangalore.
- 2) अधीक्षण अभियन्ता, बंगलूर परियोजना परिमण्डल, के.लो.नि.वि, बंगलूर।  
The Superintending Engineer, Bangalore Project Circle, CPWD, Bangalore.
- 3) दक्षिण अंचल के अधीनस्थ सभी कार्यपालक अभियन्ता  
All Executive Engineer's under Bangalore Zone.
- 4) सहायक अभियन्ता (एम.आई.एम), मुख्य अभियन्ता का कार्यालय, के.लो.नि.वि, बंगलूर।  
The Assistant Engineer (MIS), O/o CE, CPWD, Bangalore  
BCD-III, CPWD/Bangalore-34

का.अधि. E.E	उप.अधि. S.S	सहायक A.A.O	स.अ.(यो) A.E(P)
जायरी सं. Diary No. 325/15/2021			



कार्यपालक अभियन्ता (सि)

कार्यपालक अभियन्ता (सि)

	<b>MRPL Marketing Terminal Project at Devangonhi, Bangalore</b> <b>Marketing Infrastructure Projects, MRPL</b>	
	<b>LSTK-B PACKAGE : CIVIL AND STRUCTURAL WORKS</b> <b>VOLUME I : COMMERCIAL</b>	

**Snap Shot of All India Wholesale Monthly Price Index for MILD STEEL:  
LONG PRODUCTS released by Office of Economic Advisor to Government of  
India, Department of Industrial Policy and Promotion (DIPP), Ministry of  
Commerce and Industry for the Month of January 2021  
(for example/illustration purpose)**

**[ANNEXURE- XIV TO SPECIAL CONDITIONS OF CONTRACT]**

	<b>MRPL Marketing Terminal Project at Devangonhi, Bangalore</b> <b>Marketing Infrastructure Projects, MRPL</b>	
	<b>LSTK-B PACKAGE : CIVIL AND STRUCTURAL WORKS</b> <b>VOLUME I : COMMERCIAL</b>	

Office of Economic Adviser x +

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भारत सरकार  
GOVERNMENT OF INDIA

वाणिज्य एवं उद्योग मंत्रालय  
MINISTRY OF COMMERCE & INDUSTRY

HINDI VERSION

आर्थिक सलाहकार का कार्यालय  
**OFFICE OF THE ECONOMIC ADVISER**  
DEPARTMENT FOR PROMOTION OF INDUSTRY AND INTERNAL TRADE

150 YEARS OF CELEBRATING THE MAHATMA

MAKE IN INDIA

स्वच्छ भारत  
एक कदम स्वच्छता की ओर

Home About Us Wholesale Price Index (WPI) Eight Core Industries (ICI) Experimental Service Price Index District Development Plan Trade and Fiscal Policy **DPIIT**

### Wholesale Price Index (WPI)

#### Monthly Wholesale Price Index

Name of Commodity : d. Mild Steel -Long Products

Type : Group Item

Weight : 1.08063

Base Year : 2011-12 = 100

Month/Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2021	124.5											

1. Figure 0 may be treated as index for particular item not-available.
2. Figures for the latest two months are provisional. Latest two months are to be reckoned with reference to the latest monthly press release issued.
3. (NR : Not Released) : Please refer official Press Release for more information.

Website Content Managed by Office of the Economic Adviser, DPIIT, MoCI, GoI

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**MANGALORE REFINERY AND PETROCHEMICALS LTD.**  
**CONTRACT WORKER'S SAFETY POLICY - REV.**

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## MANGALORE REFINERY AND PETROCHEMICALS LTD.

### CONTRACT WORKER'S SAFETY POLICY

#### **1. SCOPE :**

This policy is applicable to all the contractors and their employees working in MRPL. This is also applicable to sub-contractors, suppliers, vendors and visitors. All the contractors are required to ensure that they and their employees comply with relevant safety requirements as mentioned in this Safety Policy depending on the nature of work. This policy is not a substitute to the statutory rules and regulations and also the prevailing MRPL Safety Requirements. This is to further reinforce the existing Safety Standards in Refinery.

**2. REFERENCE :** This document should be read in conjunction with following :

- General Conditions of contract (GCC)
- Special Conditions of Contract (SCC)
- Job specifications

#### **3. SAFETY REQUIREMENTS FOR CONTRACTORS:**

-Contractor shall furnish Safety policy and Safety Manual of their Company and his track record in safety for past three years to the Engineer Incharge.

Contractor shall furnish details of their safety department with CVs of safety officers in his bid document to Engineer Incharge.

-The contractor MUST employ Qualified Safety Officers as per the table below, having about 5 years of relevant experience in chemical units or Petrochemical Plants or refineries, as per The Factories Act 1948 / Building and other construction workers (Regulation of Employment and conditions of service) Act 1996 and Central Rules 1998 / The Karnataka Factories Rules 1969. Contractor shall ensure that all his workmen are aware about the nature of risk involved in their work and have adequate training for carrying out their work safely. Such Safety Officers appointed shall be dedicated and responsible only for safety. They should not be given any other responsibility. The contractor and his sub-contractor, if any, shall comply with the instructions given by MRPL Engineer In- Charge or his authorized nominee regarding safety precautions, protective measures, house-keeping requirements etc. Engineer-In-Charge from MRPL shall have the right to stop the work of the contractor, if in his opinion, proceeding with the work will lead to an unsafe and dangerous condition. Engineer-In-Charge shall get the unsafe condition removed or provide protective equipment at the contractors cost, which ever is applicable.



### Table

Max. no. of employees < 30	One discipline (Engr. / Supervisor) with safety experience can function as Safety Staff on part time basis.
No. of employees : 30 – 100	One Safety Supervisor on full time responsibility.
No. of employees : 101 – 250	For Manpower Supply – Oriented Maintenance contract – One Safety Supervisor on full time responsibility. For Service – Oriented Maintenance / Project contract One Safety Engineer on full time responsibility + One Safety Supervisor on full time responsibility
Upto 250 Persons deployed by him at site	Deploy one Safety Officer and additionally deploy Three Safety Supervisors
For 251 to 500 Persons	Two Safety Officers, Six Safety Supervisors and Ten Safety Stewards
For more than 500 persons	Three Safety Officers, Ten Safety Supervisors and Twenty Safety Stewards

#### Qualification criteria of safety officer:

BSc (Physics Chemistry only)/Diploma (Mech/Elect/Civil only) with post graduate Diploma in Industrial safety with min of 5 years experience in supervisory cadre.

OR

BE/BTech (Mechanical/Electrical/Civil only) with post graduate Diploma in Industrial safety with min of 2 years experience in supervisory cadre.

#### Qualification criteria of safety supervisor:

BSc (Physics Chemistry only)/Diploma (Mech/Elect/Civil only) with qualification in industrial safety with relevant experience.

#### 4. PERSONNEL :

- Personnel / workmen (age 18 years & above) deployed at site should be physically / medically fit. Labours/workers shall not bring children/babies inside the refinery.

SMOKING IS STRICTLY prohibited inside the refinery.

- Contractors and their workmen should restrict their activities to the site allocated to them.

- All contract men shall wear IS make PPEs like gloves, goggles, face shields, full body safety harness, safety belt, Safety Helmets, Safety Shoes etc during the work. They will not be permitted

- to enter the Refinery without wearing Safety Helmet, Safety Goggles & Safety Shoes. Damaged PPEs shall be taken out from use and disposed off properly.
- The contractor shall ensure that their men do not tamper with the facilities in operation. They shall not operate any Valves/ Switches etc.
  - The contractor shall ensure that his workmen do not move around freely inside refinery premises other than the assigned place of work & also do not sleep anywhere (Below piperacks / equipments / trucks / etc.) inside refinery premises.
  - The personnel engaged by the Contractor shall maintain good conduct and discipline commensurate with Industrial standard. If in the opinion of the Engineer-in-charge any of the personnel have not maintained good conduct and discipline, the Contractor shall remove such personnel immediately from MRPL premises and provide alternate personnel.
  - The contractor Supervisors and Engineers must get themselves conversant with MRPL's Standard Operating Procedures (SOP), safety norms, Rules and Regulations that are in force. They must also be conversant with the MRPL's Emergency Procedures and Emergency telephone numbers and should ensure display of same at prominent place.
  - Special safety precautions to be taken by the contractor or their personnel working in an operating refinery are given below. The safety procedure may undergo a change from time to time, which will be intimated to the contractor to follow and implement them.
  - In addition to the following minimum safety requirements, the contractor must comply with the safety requirements, norms, rules and regulations as per the Factories Act 1948 and Karnataka Factories Rules 1969, OISD Guidelines 207 and other OISD standards / guidelines and Indian Standards.
  - The contractor must prepare a detailed "Safety Programme" and submit it to Engineer In-charge of MRPL immediately after the finalization of contract / placing of LOI / order. This will include Safety Policy, Safety Responsibilities at various levels, Formations of Safety Committees and meetings, Method statements, Job Safety Analysis (JSA), Safety inspections, various pre-inspection checklists, Safety manuals, Safety Audits, Emergency Plans, Safety procedures to be implemented for all the activities, deputation of Safety Officers, enforcement of safety practices.
  - Contractor shall devise a procedure on Accident Reporting. All accidents including Near Misses and property damages to be reported as per the MRPL's Accident Reporting Procedure in force. All Accidents including Near Misses to be communicated immediately to Engineer Incharge over

telephone / verbally / and later submit the accident report. All accidents must be investigated, classified, analysed & comply with the recommendations to avoid its recurrence. Monthly Accident statistics must be developed and circulated. Contractor shall maintain a register of all such accidents.

- During the mobilization, equipments, machines, tools, tackles etc. to be inspected at the site from where it is being mobilized. Damaged ones should be discarded and ensured not mobilized at MRPL site. The statutory checks, inspections and certification is carried out before mobilizing at MRPL site. Necessary repairs and maintenance to be carried out and equipment, machine, tools, tackles etc. is mobilized at MRPL site in working condition. The previous records of maintenance and the competent person's certificates to be made available during mobilization and submitted to MRPL Engineer Incharge. The equipments, machines, tools, tackles, etc to be tagged and mobilized.

- A Safety Committee must be formed to discuss accidents, Unsafe Acts and Unsafe conditions. This should be chaired by the High ranking Official / Site-In-Charge with equal participation both from supervisory and non-supervisory cadres of employees. Engineer In-Charge of MRPL also should be involved in such meetings as an observer. The frequency of meetings shall be once in a month minimum and actions taken to avoid recurrence of Nearmiss, Minor injuries etc.

Circular of the meeting must also be issued to MRPL Engineer Incharge at least one week in advance. Minutes of the meetings to be prepared on the same day and submitted on next day of the meeting.

The contractor shall take all safety precautions during the execution of awarded work and shall maintain and leave the site safe at all times. At the end of each working day and at all times when the work is temporarily, suspended, he shall ensure that all materials, equipment and facilities will not cause damage to existing property, personal injury or interfere with other works of the Refinery. The contractor shall comply with all applicable provisions of the safety regulations, clean up programme and other measures that are in force at the site.

- Safety Inspections of the site to be conducted daily and Safety Audits to be conducted once in three months by a team of Senior Officials of the contractor. Report on findings of such Audit to be submitted to the Engineer Incharge and compliance report of the suggestions on findings to be submitted weekly to Engineer Incharge.

Daily Safety Inspection of jobs and safety audit to be conducted every month and the report and protocol signed by all parties, Contractor's safety officers with signatures of Site Incharges of contractor shall be part of subsequent RA bill.

- Method statement along with Job Safety Analysis to be submitted at least 15 days in advance before starting of any activity.

Prior information of high risk jobs as planned shall be informed with short details of the work, job safety analysis report to the Engineer Incharge at least 48 hours before starting of such jobs.

High risk jobs like fabrication at height, lifting and shifting, erection of equipments etc shall be video recorded by the contractor.

- The contractor shall provide and maintain all lights, guards, fencing, warning sign, caution boards, other safety measures and provide for vigilance as and where necessary or as required by the Engineer-In-Charge or by any duly constituted authority for the protection of workers or for the safety of others. The caution boards shall also have appropriate symbols visible during night also.

- Adequate lighting facilities, including emergency lighting, such as floodlights, hand lights and area lighting shall be provided along with ELCBs by the contractor at the site of work with isolation switch known to all at site with proper display, storage area of materials and equipment and temporary access roads within his working area. The contractor shall obtain written approval of the Engineer-In-Charge to the lighting scheme and place of tapping prior to its installation.

Use of devices like Distress alarm system for all personnel entering into confined space to be mandatory. Biometric attendance of personnel entering confined space should be maintained.

Necessary Biometric punch machine to be arranged by the contractor at his own cost for this purpose. Staircases shall have temporary hand rail and guard till permanent handrails are fabricated and installed.

The contractor shall plan his operations so as to avoid interference with the other departmental works, other contractors or sub-contractors at the site. In case of any interference, necessary coordination shall be sought by the contractor from the Department for safe and smooth working.

The contractor shall be held fully responsible for non-compliance of any of the safety measures, procedures and delays, implications, injuries, fatalities, property damage and environmental degradation and compensation arising out of such situations or incidents. The contractor should device a procedure to maintain head count of his personnel manually or with an installation of

punching machine at site and ensure evacuation of his personnel through defined emergency exit in case if situation demands and also during confined space entry.

- Smoking is prohibited in the Refinery / work site / offices.

Consumption of alcohol and any other intoxicating material shall be also treated as safety violation and heavy penalty shall be levied on the main contractor.

- Radiography source and also the Explosives used for controlled blasting will not be permitted to be stored at site. Detailed accident report with photographs to be submitted to factory manager and Engineer In-charge from MRPL immediately.

- Contractor's Vehicles/Engines and approved electrical / mechanical equipments & lifting tools / tackles, welding generator that are to be used inside refinery are to be certified by competent authority. Statutory checks are to be carried out and records are to be maintained by contractors to ensure healthiness. These certificates will be regularly checked by MRPL engineer in-charge.

- The Contractor shall ensure that all industrial consumables such as Oxygen, Acetylene, Argon, Nitrogen, welding electrodes etc. are approved by MRPL, tested and records maintained by the contractor as per Gas Cylinder Rules before they are used for the job. LPG for gas cutting purpose is not allowed.

- The Fire prevention / protection and safety equipments (including Personal Protective Equipments) should be certified by MRPL engineer in-charge.

#### **5. HEALTH AND HYGIENE :**

- Sufficient number of toilets shall be provided by the contractor for its workmen and hygiene standard should be maintained.

Contractor to ensure no water stagnation at site.

Potable water facility for all workers shall be provided and maintained by the contractor.

Inspection of drinking water, sanitation, shall be done by MRPL. Availability of dust masks shall be ensured by the contractor at site.

Contractor to maintain affordable hygienic canteen for the workers.

- The contractor must maintain record of medical examinations of its employees as per The Factories Act 1948 and The Karnataka Factories Rules, 1969 and The Building and other construction workers (Regulation of Employment and conditions of service) Act 1996 and Central Rules 1998. This will include eye test of crane operators, vehicle drivers and all others. Also

Fitness certificate by the Medical Officer for working at height to be produced for each employee requiring to work at height.

- Adequate means and personnel for rendering first aid should be readily available at site and during working hours at places where work is carried out.
- Medical aid for First-Aid should be available.
- First Aid kits or boxes, as appropriate, should be provided at the workplaces and on motor vehicles, cranes, etc. and be protected against contamination by dust, moisture, etc.
- When workers are employed underground or beneath structures or pits or other conditions in which they may need to be rescued, suitable rescue equipment like tripod with pulley and safety belt should be readily available at site at or near the work site along with trained rescue workers.

#### **6. VEHICLE MOVEMENT :**

- The contractor shall conduct his operation so as not to interfere with the use of existing roads at or near locations where the work is being performed.
- Speed limit inside the refinery is 16 KMPH which should be strictly followed. For heavy machinery like cranes / forklift / RMC trucks, etc. the speed limit is 5 KMPH maximum.
- Special precautionary measures should be taken during transportation of long sized cargo, route as defined should be followed and for safety of personnel (with proper escort) and damages to the facilities should be avoided. Procedure for vehicle entry and Speed limits in Refinery should be strictly followed. Vehicles and cargos passing through refinery should have PESO approved spark arrestor fitted.
- When interference to traffic is inevitable, notice of such shall be given to the Engineer- In-Charge of MRPL well in advance with the details of start of the work and time required, storage of materials, and details of the proposed methods of providing the required facilities for safe and continuous use of roads and obtain his clearance.
- The contractor shall exercise full care to ensure that no damage is caused by him or his workmen, during the operation, to the existing water supply, sewerage, power or telecommunication lines or any other services or works. The contractor shall be required to provide and erect before starting of the work, substantial barricades, guardrails and warning signs. He shall furnish, place and maintain adequate warning lights, signals etc, as required by the Engineer-In-Charge.
- Vehicles must have green red flags and whistles for the cleaner to guide driver. All vehicles entering MRPL premises shall have cleaner / helper.

- The vehicles must be maintained as per the preventive maintenance schedule of the manufacturer / supplier. Only Drivers that are trained in Defensive Driving shall be deployed inside Refinery.

- Vehicles to be inspected fortnightly by trained technicians as per the inspection checklist.

Pre-inspection checklist to be formed to that effect.

- All vehicles to bear a sticker. "If you notice this vehicle is over speeding then please inform on telephone no 08242882192 / 2191 / 2194 / 2771 / 2731".

- Tractors and trucks / cranes / forklift should not be used for transporting personnel.

- Every vehicle should have the contractor's name prominently displayed on Tractor Trolleys, trucks, jeeps, cranes, JCBs, Poclains, trailers. The display board should be put on front and rear side of each of the vehicle.

Tractor trolleys must have independent brake systems both on tractor as well as on trolleys.

- All vehicles must be fitted with PESO approved spark arrestors.

Tippers/trucks carrying debris and soil/mud/sand shall ensure that there is no spillage of material on road. If any such spillage observed the same need to be cleaned and cleared by the contractor immediately. Wheels of the trucks and vehicles shall be clean and free from mud.

- Contractor to maintain Inspection and maintenance logs for every vehicle.

- Any kind of repair work on contractor's vehicle is to be carried out only inside the work shop or designated place and not allowed inside the battery area or any where at on road or at site.

#### **7. SAFE MEANS OF ACCESS :**

- The contractor must possess adequate numbers of self retractable type fall arrestors (of different sizes viz. 6 m, 20m, 40m, and 60 m), Safety nets and Safety Belts (Full Body Safety Harness) (ISI approved).

- Adequate and safe means of access and exits shall be provided for all work places, at all elevations. Using of scaffolding members (avoiding a ladder) for approach to high elevation shall not be permitted.

- Suitable scaffolds shall be provided for workmen for all works that cannot be done safely from the ground, or from solid construction except such short duration work as can be done safely from ladders. Ladder shall be of rigid construction having sufficient strength for the intended loads and made of metal and all ladders shall be maintained well for safe working condition. If the ladder is used for carrying materials as well, suitable foot holds and handholds shall be provided on the ladder. Ladders shall not be used for climbing carrying materials in hands. While climbing both the

hands shall be free. Ensure positioning of person at base / grade level while it is in use. All ladders, platforms, full body safety harness and safety nets should be inspected regularly and records should be maintained. Damaged items shall immediately be taken out of service and disposed off.

- Scaffolding staging more than 1.5 m above the ground or floor, swung or suspended from an overhead support or erected with stationary support and ladder shall conform to relevant IS specification. Timber bamboo scaffolding is not allowed inside the Refinery.

- Working platforms of scaffolds shall have toe boards 15cms in height to prevent materials from falling down.

- A sketch of the scaffolding proposed to be used shall be prepared and approval of the contractor's Mechanical Engineer obtained prior to start of erection of scaffolding. All scaffolds shall be examined and certified with proper display of tags by contractor's Mechanical Engineer before use.

- Safe means of access shall be provided to all working platforms and other elevated working places. Every ladder shall be securely fixed. No single portable ladder shall be over 9m in length. For ladders upto 3m in length the width between side rails in the ladder shall in no case be less than 300mm. For longer ladders this width shall be increased by atleast 20mm for each additional metre of length. Step shall be uniform and shall not exceed 300mm.

- Working platform and gangway along the side of pipe racks shall be provided. Under no circumstance the contractor employees should step on pipes at pipe racks.

#### **8. EXCAVATION, TRENCHING AND EARTH REMOVAL :**

- A Work Permit must be taken for any excavation or earth removal inside the existing refinery premises from Engineer In-Charge MRPL, as the area of work has underground pipelines, cables etc.

- All trenches 1.2m or more in depth shall at times be supplied with at least one ladder for each spacing of 3.0m in length or fraction thereof. Ladder shall be extended from bottom of the trench to at least 1m above the surface of the ground.

- The sides of the trench which are 1.2m or more in depth shall be stepped back to give suitable slope (angle of repose) or securely held by timber bracing (i.e. shoring of the excavated trench or pit should be done), so as to avoid the danger of sides from collapsing. The excavated material shall not be placed within 2m of the edges of the trench or half of the depth of the trench, whichever is more. Cutting shall be done from top to bottom. Under no circumstances under-cutting shall be done.



- The contractor shall ensure the stability and safety of the excavation, adjacent structures, services and the works.
- Open excavations shall be fenced off by railing (ledger pipes) and warning signals installed at well-lit places so as to prevent persons falling into the excavations.
- All blasting operations shall be carried out on the basis of procedures approved by Inspector of explosives. All works in this connection shall be carried out as per IS code of practice. Barricades, Warning signs etc. shall be placed on the roads / open area, Prior approval of such operation shall be obtained from Engineer-In-Charge of works. The blasting procedure being followed by the contractor must be submitted with MRPL engineer in-charge.
- The contractor must submit the methodology, safety aspects, schedule, License and other relevant features of control blasting operations.
- Wherever manual removal of earth is involved, earth shall be removed from the top by maintaining the proper slope equal to the angle of re-pose of the earth. Manual removal of earth / lowering of person in a pit should be done with tripod and pulley besides use of Full body Safety Harness by person.
- Such work shall be constantly supervised by the contractor's responsible persons.

#### **9. DEMOLITION :**

Before any demolition work is commenced and also during the progress of the work :

- Proper approvals shall be taken from Engineer in-Charge MRPL before commencing demolition.
- Area around shall be barricaded with cautionary signs and posting of security guards or supervisors for preventing unauthorised entries of personnel.
- All roads and open area adjacent to the work site shall either be closed or suitably protected. Appropriate warning signs shall be displayed for cautioning approaching persons.
- No floor, roof or other part of the building shall be overloaded with debris or materials as to render it unsafe.
- Entries to the demolition area shall be restricted to authorized persons only.

Contractor to place separate collection facility of waste like metal, on metal non degradable and bio degradable wastes and shall dispose to designated place daily basis.

Contractor shall be responsible to clear dry grass and wooden items etc from and around his working site/storage/fabrication yard etc to prevent any fire accidents.

#### **10. PERSONAL PROTECTIVE EQUIPMENTS :**

- All proper "ISI" marked Personal Protective Equipments (PPEs) as considered necessary by the Engineer-In-Charge shall be kept available by contractor for the use of the persons employed on the site and maintained in a condition suitable for immediate use. Also the contractor shall take adequate steps to ensure proper use of equipment by those concerned. The PPEs are to be provided by the contractor.
- All persons employed at Refinery shall use safety helmets, safety shoes and safety goggles as minimum safety gears. For other types of works, persons working in that area shall also use the required PPEs, as advised by the Engineer-In-Charge of MRPL.
- Workers employed on mixing asphaltic materials, cement and lime mortars shall use Gumboots, safety goggles, hand gloves and proper respirator.
- Persons engaged in welding and gas-cutting works shall use suitable welding face shields with welder's helmet. The persons assisting the welders shall use suitable goggles. Protective goggles shall be worn while chipping and grinding.
- Stonebreakers shall use protective goggles. They shall be seated at sufficiently safe intervals or distance.
- Persons engaged in or assisting in shot blasting (Sand blasting is prohibited) operations and cleaning the equipment after shot blasting shall use suitable gauntlets, overalls, dust mask, dust proof goggles, safety shoes and protective hood supplied with fresh air.
- All persons working with 3M lifeline and hook at height above ground or floor and exposed to risk of falling down shall use safety belts (Full Body Safety Harness with double life line and scaffolding hooks, ISI marked) which should be properly secured to solid object unless otherwise protected by cages, guard railings, etc. In places where the use of full body safety harness is impractical, suitable safety net of adequate strength fastened to substantial supports shall be employed under proper valid permit.
- When workers are employed in sewers and inside manholes, which are in use, the contractor shall ensure that the manholes are opened and are adequately ventilated at least for an hour. The atmosphere inside the space shall be checked for the presence of any toxic gas or oxygen deficiency and recorded in the confined space entry permit, availability of standby person at manhole must be ensured before the personnel are allowed to get into the man-holes. The manholes opened shall be cordoned off with suitable railing and provided with warning signals or

caution boards or barricade tape to prevent accidents. There shall be proper illumination in the night.

#### **11. PAINTING :**

- Respirators shall be provided by the contractor for use when paint is applied, safety of personnel in vicinity also should be considered while painting.
- Overalls shall be supplied by the contractor to the workmen and adequate facilities shall be provided to enable the painters for decontamination at the cessation of work.
- All solvent-based paints, thinners shall be stored in separate well ventilated storage kept under proper surveillance.
- Smoking, open flames or sources of ignition / hot work shall not be allowed in places where paints and other flammable substances are stored, mixed or used. A caution board, with the instructions written in national / regional language, "SMOKING / HOT WORK – STRICTLY PROHIBITED" shall be displayed in the vicinity where painting is in progress or where paints are stored. Symbols shall also be used for caution boards.
- Suitable IS marked First Aid Fire Fighting equipments shall be kept available at a place where flammable paints are stored, handled or used.
- When painting work is done in a closed room or in a confined space, adequate ventilation shall be provided. Workers shall wear suitable supplied air type breathing apparatus. Work shall be carried out under a valid work permit.
- Epoxy resins and their formations used for painting shall not be allowed to come in contact with the skin. The workers shall use PVC gloves and / suitable barrier creams.
- Adequate ventilation shall be provided especially when working with hot resin mixes.
- Increased personal hygiene shall be practiced to control inadvertent contact with the resin and eliminate its effects.
- Workers shall thoroughly wash hands and feet before leaving the work. Work clothes shall be changed and laundered frequently.
- Care must be taken while carrying out painting inside confined space. There shall be safety devices to monitor the personnel working inside confined space like vessels during painting of internal surface. Suitable painting methods shall be adopted as specified elsewhere. It should not be clubbed with hot work and proper ventilation should be available to draw out the solvent vapours. Manual painting is to be adopted instead of spray painting.

## **12. LIFTING MACHINES TOOLS AND TACKLES :**

- Supplier's / Manufacturer's manual for operations / safety / periodical maintenance of all Cranes, winches, JCBs, Poclains, Excavators, Trucks, tractors, Vehicles, etc. MUST be made available at site from the moment it is brought at site and the same should be strictly adhere to.
  - Lifting machines, tools and tackles shall be of good mechanical construction, sound material, adequate strength, free from any defects and shall be kept in good working condition.
  - Lifting machines, tools, tackles, equipments etc. to have identification tags of steel plate of size 2"x 2" tied to it using steel wire of 4 mm size. The details like reference number, Safe Working Load (SWL), date of testing, next due date of testing, etc. to be punched on this plate.
  - Contractor must produce Competent Authority's (Authorised by The Directorate of Factories, Karnataka state) Certificate of testing in the prescribed form of Lifting Machines, Chains, ropes and lifting tackles well in advance. Only valid Lifting Machines, tools etc. to be used and to be re-certified before expiry of certificate. Also, these equipments will be inspected by Engineer In-Charge of MRPL as and when required. The same procedure is applicable for all other Electrical Equipments, tools, machines, D.G sets, compressors, etc.
- Lifting equipments for testing by competent authority to include JCB, Poclain, Excavators, etc.
- The ringer crane to be tested and certified every time by Competent Person it is dismantled and reassembled. This certification must also include stability of soil on which it is assembled.
- Use of Hydra is not permitted inside refinery/construction premises. Hydraulically jacked lifting machines to be used.
- Lifting machines, tools, tackles, equipments etc. to be inspected in addition to the Competent Authority's certification. This should be done fortnightly by experienced trained mechanical foreman and technicians and record of such inspection to be maintained.
  - Every rope and sling used in hoisting or lowering of materials or as a means of suspension shall be of good quality and adequate strength and free from any defect.
  - Every crane operator or lifting appliance operator shall have a driving License for Heavy Vehicle, proper physical fitness such as eye sight etc. and with adequate experience. No persons under the age of 21 years shall be in charge of any hoisting machine or give signal to operator of such machine.
  - In case of every lifting machine (and of every chain, ring, hook, shackle, swivel and pulley block used in hoisting or as means of suspensions) the safe working load shall be ascertained and clearly

marked. In case of a lifting machine having a variable safe working load, each safe working load and the conditions 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.

- The contractor shall notify the safe working load of the machine to the Engineer-In- Charge whenever he brings any machinery to site for work and get it verified by the Engineer-In-Charge, supported by a valid test certificate by the competent person.

- Motors, gearing transmission, couplings, belts, chain drives and other moving parts of hoisting appliances shall be provided with adequate safeguards. Hoisting appliances shall be provided with such means as to reduce to the minimum risk of any part on a suspended load becoming accidentally displaced or lowered.

- The contractor must have a team of Experienced Mechanical Personnel (having minimum of 5 yrs. experience in carrying out safety inspection and testing of Lifting machines, Tools and Tackles etc.), to conduct periodical (Daily, fortnightly, monthly and quarterly) inspection and testing of Lifting machines, Tools and Tackles and to maintain its records.

- Crane shall not be used as hoist. In case cranes are used as hoist then factory Inspector's permission to be taken in advance and to be subject to biannual testing by competent person as required for hoist under Factories Act 1948. Also, the design of cage to be got approved by the competent person well in advance. Two ropes or chains to be provided to the cage, separately connected with the cage, suspended independently and capable of carrying the whole weight of the cage.

- Contractor to maintain operation, inspection and maintenance logs for every lifting equipment, tool and tackle.

### **13. TEMPORARY SHEDS :**

- Before erecting temporary shelters like sheds or tents anywhere at site, written permission of the concerned Engineer In-charge must be obtained.

- Temporary sheds for site office should be avoided. Instead contractor shall arrange for portal cabins for site office / stores.

- Temporary shed should not be erected using scaffolding pipes. The shed should be made of safe construction material.

- The temporary shed should be erected after proper designing following engineering design practices in conformance with normal safety standards to ensure the stability and safety.

- Temporary shed should bear the contractor's name.
- Temporary piping, hose connections and electrical wiring to these temporary sheds must be laid in such manner that they do not cause tripping, hitting or electrocution hazards.

**14. ERECTION :**

- At the planning stage consideration should be given, by those responsible for the design, to the safety of the workers who will subsequently be employed in the erection of such structures. A detailed erection scheme / schedule shall be furnished well in advance for all the critical erections.
- Care should be exercised by design engineers and other professional persons, not to include anything in the design which would necessitate the use of unwarrantably dangerous structural procedures and undue hazards, which could be avoided by design modifications.
- Facilities should be included in the design for such work to be performed with the minimum risk.
- Detailed Safety Procedure should be submitted as a part of Heavy Equipment erection scheme. Heavy Equipment erection scheme must be submitted at least one month in advance.
- Erection engineer to conduct training on rigging before every heavy lift / erection for crane operator, foreman and riggers.
- Erection of structural platforms, gratings and hand rails to be done on priority. The procurement of gratings, structural members for hand rails to be done on priority.
- Prefabricated parts should be so designed and made that they can be safely transported and erected.
- As far as practicable the safety of prefabricated parts while erection should be ensured by appropriate means, such as provision and use of :
  - a) Ladders;
  - b) Gangways;
  - c) Fixed platforms;
  - d) Platforms, Buckets, boatswain's chairs, etc. suspended from lifting appliances;
  - e) Safety belts and lifelines; and
  - f) Safety nets or catch platforms.
- Ladders to be inspected fortnightly by experienced trained mechanical foreman and mechanical technicians and record of such inspection to be maintained.
- The boatswain's chairs/ platforms used in structural erection to be inspected and checked once in fortnight and record maintained.

- In addition to the conditions of stability of the part when erected, when necessary to prevent danger the design should explicitly take into account:
  - a) the conditions and methods of attachment in the operations of stripping, transport, storing and temporary support during erection; and
  - b) Methods for the provision of safeguards such as railings and working platforms, and, when necessary, for mounting them easily on prefabricated parts.
- The hooks and other devices incorporated in 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; and
  - b) not set up in the part stresses that could cause failures, or stresses in the building not provided for in the plans.
- Prefabricated parts made of concrete should not be stripped before the concrete has set and hardened sufficiently to ensure the safety of the operation.
- Store places should be so constructed that:
  - a) There is no risk of prefabricated parts falling or overturning; and
  - b) Storage conditions generally ensure stability having regard to the method of storage and atmospheric conditions.
- Prefabricated parts made of concrete should not be erected before the concrete has set and hardened to the extent provided for in the plans.
- While they are being stored, transported, raised or set down, prefabricated parts should not be subjected to stresses prejudicial to their stability.
- Trailers only to be used for transportation of pipes. Crane to be used for erection at site.
- Every lifting appliance should :
  - a) be suitable for the operation; and
  - b) be approved by a competent person, or tested under a roof load 20 percent heavier than the heaviest prefabricated part.
  - c) Ringer mode of a heavy crane **MUST** be inspected, checked and certified by competent person every time it is dismantled and erected. The report must bear the stability of the soil on which it is erected.
- Lifting hooks should have the maximum permissible load marked on them.
- Tongs, clamps and other appliances for lifting prefabricated parts should :

- a) be of such shape and dimensions as to ensure a secure grip without damaging the part ; and
- b) be marked with the maximum permissible load in the most unfavourable lifting conditions.
- Prefabricated parts should be lifted by methods or appliances that prevent them from spinning accidentally.
- The temporary basket cages / Platforms / Buckets / boatswain's chairs, etc. used for lifting / working at height suspended from lifting appliances or suspended from structures or beams MUST be certified by competent person and provisions or conditions as stipulated during certification to be adhere to.
- While prefabricated parts are being lifted measures should be taken to prevent workers from being struck by objects falling from a height and area around such site should be barricaded with cautionary signs.
- When necessary to prevent danger, before they are raised from the ground, prefabricated parts should be provided with safety devices such as railings and working platforms to prevent falls of persons.
- If workers are exposed to danger when releasing prefabricated parts from lifting appliances, adequate safety measures should be taken.
- At workplaces adequate instructions should be given to the workers on the methods, arrangements and means required for the construction, storage, transport, lifting and erection of prefabricated parts.
- When it is not practicable to install protective guardrails and toe boards the workers should be provided with and use safety belts and lifelines to limit the height of the fall.
- Overhead screens to be provided to prevent workers from being struck by falling objects.
- The safety devices (guard-rails, toe-boards, safety belts and lifelines) should not be removed so long as the risk remains.
- Precautions should be taken to prevent fires being caused by rivet-heating equipment.
- Rivet heaters should extinguish their fires before leaving work.
- Extra care should be taken to prevent fall of objects, tools, etc. from height.
- Before structural steel parts are lifted, care should be taken that any object that could fall is fastened or removed.
- Structural steel parts should not be dragged while being lifted if that could cause danger.



- Steel trusses that are being erected should be adequately shored, braced or guyed until they are permanently secured in position.
- While structural members are being moved into place the load should not be released from the hoisting rope until the members are securely fastened in place.
- 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.
- No load should be placed on open-web steel joists until they have been placed in position and secured.
- Erection of pipes to be done using web belts only. Web belts must be inspected and checked fortnightly internally by the contractor and records maintained. Damaged ones to be cut to pieces and record to be maintained.
- Nipples and other accessories used for hydrotest and subject to high pressures to be inspected, checked and tested by experienced trained mechanical foreman and mechanical technicians and records maintained. Damaged parts to be replaced immediately with the new ones.
- Discarding criteria of web belts to be procured from the supplier / manufacturer by the contractor and submitted to MRPL Engineer Incharge.

#### **15. WORK ON TALL CHIMNEYS** :

##### **SCAFFOLDS** :

- All workmen should be certified medically fit by medical practitioner before working at height. Mock up drills MUST be conducted by the contractor for all these workmen and issue Working at Height passes to only those who has experience of working at height, is declared medically fit and shows confidence during mock up drills.
- For the erection and repair / painting of tall chimneys and vertical structures scaffolding should be provided. Scaffolds after erection should be certified by competent mechanical engineer for its strength before use and be displayed with a tag "Certified for use".
- Scaffolds should confirm to relevant Indian Standards: Contractor MUST have a team of trained scaffolders including trained Scaffolding engineer.
- Fixed inside scaffolding should be securely anchored in the chimney wall.
- The scaffold floor should always be at least 65 cm (26 in) below the top of the chimney.
- Under the working floor of the scaffolding the next lower floor should be left in position as a catch platform.

- Suspended outside platform (inspection scaffolds) should be provided as per the relevant standards as stated above.
- Use of Catch platforms, stairs, ladders and Iron rung, lifting tools, tackles and work with hot asphalt, tar should be carried out as per the procedures outlined in relevant ILO manual.
- Full Body Safety Harness (Safety Belt) with lifelines (of various sizes 2', 5' and 9' double lanyards) and safety nets being used should conform to relevant standards and are to be inspected, tested, periodically and records be maintained. Damaged safety belts and nets should be discarded, taken out of service and disposed off.
- Safety belts must be used while working at height. The life lines (lanyard) MUST be tied to firm support. In case of absence of firm support provision of wire rope of adequate size tied with lifting tackles to be made to tie the safety belt life line (lanyard).
- All Safety belts to be inspected once in a month and damaged ones to be discarded. Suppliers / Manufacturers Discarding criteria of safety belts to be submitted to MRPL. The record of inspection and the results to be maintained. And a copy to be submitted to Engineer Incharge.
- The scaffolds to be inspected and certified by the competent mechanical Engineer before use and subsequently, at least once in a week.

#### **16. Safety of Electrical works:**

Before starting work in live electrical panels, proper electrical isolation shall be ensured. The same to be inspected by the electrical in charge and necessary isolation tag shall be attached. Proper electrical isolation permit system along with LOTO (Locking Out / Tagging Out) system shall be maintained by the contractor. Triplicate copy of such permits shall be submitted to MRPL.

#### **17. CATCH NETS :**

- Where workers cannot be protected against falls from heights by other means they should be protected by catch nets.
- Catch nets should be made of good quality fiber cordage, wire or woven fabric or material of equivalent strength and durability.
- The perimeter of catch nets should be reinforced with cloth-covered wire rope, manila rope or equivalent material.
- Catch nets should be provided with adequate means of attachment to anchorage.
- Catch nets to be inspected fortnightly, tested and records maintained. Damaged safety nets should be discarded and record maintained.

### **18. PROTECTION AGAINST MOVING VEHICLES :**

Workers who are regularly exposed to danger from moving vehicles should wear;

- a) distinguishing clothing, preferably bright yellow or orange in colour; or
- b) devices of reflecting or otherwise conspicuously visible material.

Light Vehicle shall have reverse horn and Heavy Vehicles shall have trained helpers with whistle and red and green flags for directing the driver.

### **19. HANDLING MATERIALS :**

- Mechanical means should be provided and used for lifting and carrying loads.
- Personnel should have knowledge of safe ways of material handling.

### **20. STACKING AND PILING :**

- Materials and objects should be so stacked and unstacked that no person can be injured by materials or objects falling, rolling, overturning, falling apart or breaking.
- Area earmarked for stacking and piling should be barricaded and only authorised personnel be allowed to carry out stacking and piling jobs.
- Proper stacking and piling should be done as per the guidelines of ILO.

### **21. WELDING AND GAS CUTTING :**

- Welding and gas cutting operations shall be done only by qualified and authorised persons and as per IS specification and code of practice.
- All the hoses used on compressed gas cylinders (Acetylene, Oxygen etc.) to be as per IS.
- Welding and gas cutting shall not be carried out in places where flammable or combustible materials are kept and where there is danger of explosion due to presence of flammable / gaseous mixtures. Contractor shall continuously monitor the area with Explosimeter / H<sub>2</sub>S meters.
- Welding and gas cutting equipments including hoses and cables shall be maintained in good condition. It should be checked daily by the user and fortnightly by the supervisor and recorded.
- Barriers shall be erected to protect other persons from harmful rays from the work. When welding or gas cutting is done in elevated positions / on trenches / inside refinery units, precautions shall be taken to prevent sparks or hot metals falling on persons or flammable materials (Welding booths shall be constructed).
- Use of proper PPEs by personnel involved in Gas cutting / Electric Arc welding should be ensured. Use of Welders Helmet with face shield by the welders is a MUST.

- Fire extinguisher shall be available near the location of welding operations. Valid permit shall be obtained before flame cutting / welding is taken up & comply with all the permit requirements.
- Contact of personnel with the electrode or other live parts of electric welding equipment shall be avoided.
- Extreme caution shall be exercised to prevent accidental contact of electrodes with ground.
- The welding cables shall not be allowed to get entangled with power cables. It shall be ensured that movement of materials does not damage the cables.
- Oxy-Acetylene cylinders must be mounted on trolley with chain holding the compressed gas cylinders. The compressed gas cylinders must have pressure gauges fitted over it and Oxy-Acetylene Gas cutting set should be fitted with flash back arrestor at both the torch and cylinder ends.
- Under no circumstance the compressed gas cylinder should be taken inside the confined space or excavated pits. Hydraulic test certificates of all compressed gas cylinders should be maintained and furnished as and when required.

## **22. GRINDING** :

- All portable grinders shall be used only with their wheel guards in position to reduce the danger from flying fragments should the wheel break during the use.
- Grinding wheels of specified diameter only shall be used on a grinder – portable or pedestal- in order not to exceed the prescribed peripheral speed.
- Helmet with face shield shall be used during grinding operation.

## **23. HOUSE KEEPING** :

- The contractor shall at times keep his work spot, site office and surroundings clean and tidy from rubbish, scrap, surplus materials and unwanted tools and equipment.
- Welding and other electrical cables shall be routed as to allow safe traffic by all concerned.
  - No materials on any of the sites of works shall be so stacked or placed as to cause danger or inconvenience to any person or the public. The Engineer-In-Charge may require the contractor to remove any materials which, are considered to be of danger or cause inconvenience to the public.
  - At the completion of the work, the contractor shall have removed from the work premises all scaffoldings, surplus materials, rubbish and all sheds and sanitary arrangements used / installed for his workmen on the site.

- House keeping of the workplace shall be done strictly by the Contractor on daily basis or as required by the Engineer-in-charge. Contractor to collect all debris/ scrap and dump at designated Scrap Yard as defined by MRPL authorities.

- A separate house keeping team to be formed and made available round the clock.

**24. FIRE SAFETY :**

- Adequate number of duly calibrated Explosimeters, Oxygen meters, Hydrogen Sulphide detectors (Portable / Fixed) or any other multiple gas detector should be made available at site by the contractor.

- Combustible materials like timber, bamboos, paints etc. shall not be used at MRPL site for scaffolding or for supports.

Containers of paints, thinners and allied materials shall be stored in a separate room, which shall be well ventilated, and free from excessive heat, sparks, flame or direct rays of the sun. The containers of paint shall be covered or properly fitted with lid shall not be kept open except while using.

- Fire extinguishers as approved by Engineer-In-Charge shall be located at the work site at appropriate places.

- Adequate number of contract workmen shall be given education and training in fire fighting and extinguishing methods.

**25. WORK PERMIT SYSTEM :**

- MRPL's Work Permit system (As per MRPL Safety Manual) to be strictly followed.

- All jobs within refinery should be executed with a safety work permit only. These will be issued by the concerned operating personnel of MRPL (Refinery Shift Manager or any authorised person). However, he can withdraw the permit when the stipulated conditions are not complied with at the work spot.

- Area is safe for performing the Work. Job is continuously supervised by qualified supervisor.

Responsibility of Performing Authority :

To obtain an approved Work Permit duly filled and signed by authorities as per the MRPL's Work Permit System before starting the work in the area.

- To visit job sites and ensure that it is prepared accordingly.

- The person performing the job shall be in possession of the permit till the completion of the job. The permit should be produced for inspection at any time. The Work Permit shall be displayed at job site in the plastic folder.
- To understand the scope of the work and implications involved.
- To restrict the work to the area / equipment specified in the work permit.
- To comply with the instructions given on the Work Permit.
- To follow Plant Safety Rules and Procedures.
- To be alert at all times for the development of unexpected situations.
- To stop the work immediately on detecting any unsafe condition and promptly inform the Issuing Authority. Follow MRPL's Onsite Disaster Management Plan (DMP).
- To return the Permit duly signed after completion of the job to the Issuing Authority. Contractor must adhere to work permit system and other safety regulations.

**26. WORK IN AND AROUND WATER BODIES:**

When the work is done near any place, where there is a risk of drowning, all necessary rescue equipment such as life buoys and life jackets shall be provided and kept ready for use and all necessary steps taken for prompt rescue of any person in danger and adequate provision shall be made for prompt first-aid treatment of all injuries likely to be sustained during the course of the work. Persons who do not know swimming shall not be engaged alone for any work where risk of drowning exists. Sufficient number of life buoys or life jackets shall be provided.

**27. PUBLIC PROTECTION :**

The contractor shall make all necessary provisions to protect the public. He shall be bound to bear the expenses for defense of every action or other proceedings of law that may be brought by any person for injury sustained owing to neglect of any precaution required to be taken to protect the public. He shall pay the damage and cost which may be awarded in any such suit, action or proceedings to any such person, or the amount which may be fixed as a compromise by any such person.

**28. OTHER STATUTORY PROVISIONS :**

Notwithstanding the above clauses there is nothing in these to exempt the contractor from the provisions of any other Act or Rules or Indian Standards or OISD standards or OISD guidelines in force in the Republic of India. In particular all operations involving the transport, handling, storage and use of explosives shall be as per the standing instructions and conform with Indian Explosives

Act, 1884 and the explosives Rules, 1983. The Factories Act 1948 and The Karnataka Factories Rules, 1969, Handling, transport, storage and use of Compressed gas cylinders and Pressure vessels shall conform with the Gas Cylinders rules 1981 and Static and Mobile pressure Vessels (Unfired) Rules 1981. In addition, The Building and other construction workers (Regulation of Employment and conditions of service) Act 1996, The Indian Electricity Act, 1910 and Indian Electricity Rules 1956, The Atomic Energy Act 1962, The Radiation Protection Rules 1971, Radiation Protection Manual of Nuclear Facilities and the Atomic Energy (Factories) Rules 1988 and various rules and Act relevant to the activities being performed shall also be strictly complied with.

- No Child labour should be brought in for work.

- MRPL holds the right to issue warnings / Heavy penalties (monetary fine) / suspend work at any time or terminate the contract for a loss / damage and a pattern of frequent failure to adhere to Safety Laws, regulations and Onsite Safety procedures. In general a heavy monetary fine will be deducted straight from the contractor's bill for each violation of Safety Rules / Unsafe Act / Unsafe Condition observed, for each First-Aid injury, for each Lost Time injury / Near Miss Accident and for each fatality.

**29. GUIDELINES AND GENERAL PROCEDURES FOR SUPPLY AND USE OF,  
ELECTRICITY AT SITE :**

Following safety requirements shall be complied with before the contractor uses the power supply.

- The contractor shall submit a list of licensed electrical staff to be posted at site.

- It shall be the responsibility of the contractor to provide and maintain complete installation on the load side of the supply point with regard to the safety requirements at site. All cabling and installation shall comply with the appropriate statutory requirements given below and shall be subject to approval of the Departmental Engineer-In-Charge / Electrical Engineer.

(a) Indian Electricity Act, 1910

(b) Indian Electricity Rules, 1956

(c) National Electric code, 1985

(d) Other relevant rules of Local bodies and Electricity Boards.

- Where distribution boards are located at different places the contractor shall submit schematic drawing indicating all details like size of wires, overhead of cable feeders, earthing etc. The position and location of all equipment and switches be given.

- The contractor shall make his own arrangements for main earth electrode and tapings thereof. The existing earth points available at site can be used at the discretion of the Departmental Electrical Engineer with prior permission. Method of earthing, installation and earth testing results shall conform to relevant I.S. Specifications.
- Overhead High Tension (HT) cable routes to be marked and physically barricaded to prevent crane coming in contact with it.
- All three-phase equipment shall be provided with double earthing. All light fixtures and portable equipment shall be effectively earthed to main earthing.
- All earth terminals shall be visible. No gas pipes and water pipes shall be used for earth connection. Neutral conductor shall not be treated as earth wire.
- Every electrically operated machine or equipment to be independently earthed.
- Earth pits to be provided near DG sets, electrically operated machines, equipments etc. DG sets used in Refinery shall be installed inside acoustic enclosure to minimise noise pollution. Exhaust of DG sets shall be routed to safe height.
- Continuity and resistance of all earth connections to be inspected and checked and tested fortnightly and records to be maintained.
- The contractor shall not connect any additional load without prior permission of Departmental Electrical Engineer.
- Joints in earthing conductors shall be avoided. Loop earthing of equipment shall not be allowed. However, tapings from an earth bus may be done.
- The entire installation shall be subjected to the following tests before energisation of installation including portable equipment :
  - a) Insulation resistance test
  - b) Polarity test of switches
  - c) Earth continuity test
  - d) Earth electrode resistance
- The test procedures and their results shall conform to relevant IS specifications. The contractor shall submit a test report for his complete installation every 2 months or after rectifying any faulty section in the specimen test report. One such test report for the complete installation shall be submitted before onset of monsoon.



- Only persons having valid wireman's license shall be employed for carrying out electrical work and repair of electrical equipment installation and maintenance at site. The job shall be supervised by a qualified licensed supervisor.
- Electricians to be provided with red helmet for easy identification.
- Electrical equipment and installations shall be installed and maintained as to prevent danger from contact with live conductors and to prevent fires originating from electrical causes like short circuits, overheating etc. Installation shall not cause any hindrance to movement of men and materials.
- Materials for all electrical equipment shall be selected with regard to working voltage, load and working environment. Such equipment shall conform to the relevant Indian Standards.
- The minimum clearance to be maintained for all overhead lines along roads and across roads shall be as per the statutory requirements.
- Grounding conductor of wiring system shall be of copper or other corrosion-resistant material. An extra grounding connection shall be made in appliances / equipment where chances of electric shock is high.
- Electric fuses and / or circuit breakers installed in equipment circuits for short circuit protection shall be of proper rating. It is also recommended that high rupturing capacity (HRC) fuses are used in all circuits. The Earth Leakage Circuit Breaker (ELCB) of 30mA max capacity shall be provided in the circuits. (ELCB) of 30mA max shall be provided on each Extension board.
- Wherever cables or wires are laid on poles, a guard wire of adequate size shall be run along the cables / wire and earthed effectively. Metallic poles as a general rule, shall be avoided and if used shall be earthed individually. Anticlimbing guards and danger notices shall be provided on poles. Each equipment shall have individual isolating switches.
- Wires and cables shall be properly supported and an approved method of fixing shall be adopted. Loose hanging of wires and cables shall be avoided. Lighting and power circuits shall be kept distinct and separate.
- Reinforcement rods or any metallic part of structure shall not be used for supporting wires and cables, fixtures, equipment, earthing etc.
- All cables and wires shall be adequately protected mechanically against damages. In case the cable is required to be laid underground, it shall be adequately protected by covering the same with

- bricks, Plain Cement Concrete (PCC) tile or any other approved means and provided with cable markers.
- All armored cables shall be properly terminated by using, suitable cable glands. Multistranded conductor cables shall be connected by using cable lugs/sockets. Cable lugs shall preferably be crimped. They shall be of proper size and shall correspond to the current rating and size of the cable. Twisted connections will not be allowed.
  - All cable glands, armoring and sheathing of electric cables, metal circuits and their fittings, metallic fittings and other non-current carrying parts of electrical equipment and apparatus shall be effectively grounded.
  - All the Distribution Boards, switches, fuse units, bus bar chambers, ducts, cubicles etc. shall have MS enclosures and shall be dust, vermin and water proof. The Distribution Boards, switches etc. shall be so fixed that they shall be easily accessible, change shall be done only after the approval of the Departmental Electrical Engineer. Distribution Boards used inside the process units shall be of Flame Proof type (Intrinsically safe type).
  - Each Distribution Board shall have ELCB of 30mA max capacity.
  - The contractor shall provide proper enclosures / covers of approved size and shape for protection of all the switchboards, equipment etc. against rain. Exposed live parts of all electrical circuits and equipment shall be enclosed permanently. Crane trolley wires and other conductors which cannot be completely insulated shall be placed such that they are inaccessible under normal working conditions.
  - Iron soclad industrial type plug outlets are preferred for additional safety.
  - Open type Distribution Boards shall be placed only in dry and ventilated rooms; they shall not be placed in the process units, vicinity of storage batteries or otherwise exposed to chemical fumes.
  - Isolating switches shall be provided close to equipment for easy disconnection of electrical equipment or conductors from the source of supply when repair or maintenance work has to be done on them.
  - In front of distribution boards a clear space of 90cm shall be maintained in order to have easy access during emergency.
  - Adequate working space shall be provided around electrical equipment, which require adjustment or examination during operation.

- As far as possible electrical switches shall be excluded from a place where there is danger of explosion. All electrical equipment such as motors, switches and lighting fittings installed in workroom where there is possibility of explosion hazard shall be explosion proof.
- All connections to lighting fixtures, starters or other power supplies shall be provided with PVC insulated, PVC sheathed twin/three/four core wires to have better mechanical protection for preventing possible damage to equipment or injury to personnel. Taped joints shall not be allowed. Electric starter of motors, switches shall not be mounted on wooden boards. Only sheet mounting or iron framework shall be used.
- All the lighting fixtures and lamp holders shall be of good quality and in good condition. Badly repaired or broken holders, etc. shall not be used.
- Only PVC insulated and PVC sheathed wires or armoured PVC insulated and sheathed cables shall be used for external power supply connections of temporary nature. Weatherproof rubber wires shall not be used for any temporary power supply connections.
- Taped joints in the wires shall not be used. In case joints are required on electrical cables then only heat shrinkable PVC sleeves will be allowed.
- The bulbs/lamps used for illumination and testing purpose shall have cover or guard to protect them from accidental breakages. Only 24V supply system shall be used for hand lamps etc. while working inside metallic tanks or conducting vessels(Confined spaces).
- After installation of new electric system and or other extensive extensions to existing installations, thorough inspection shall be made by Contractor's Electrical Engineer before the new system or new extension is put in use.
- All persons who work with electrical installation/equipment shall be aware of the electrical hazards, use of protective devices and safe operational procedures. They shall be given training in fire fighting, first aid and artificial resuscitation techniques, location of isolation switches, etc.
- The supervisor shall instruct the workers in the proper procedure, specify and enforce the use of necessary protective equipment such as adequately insulated pliers, screw drivers, fuse pullers, testing lamps and similar hand tools. Only wooden ladders shall be used to reach the heights in electrical work.
- No material or earthwork shall be allowed to be dumped below or in the vicinity of the bare overhead line conductors.

- Separate work permits shall be issued for individual group leaders working on the same system which shall be returned after the completion of the work to the Engineer-In-Charge.
- Before any maintenance work is commenced on electrical installations/equipment, the circuits shall be de-energised and ascertained to be dead by positive test with an approved voltage testing device. Switches shall be tagged or the fuse holders withdrawn before starting the work. Adequate precautions shall be taken in two important aspects viz. LOTO system to be followed.
- That there shall be no danger from any adjacent live parts and
- That there shall be no chances of re-energisation of the equipments on which the persons are working. (Tag out and lock out LOTO system to be strictly followed).
- While working on or near a circuit, whenever possible the use of one hand may be practiced even though the circuit is supposed to be dead. The other hand may preferably be kept in pocket.
- When it is necessary to touch electrical equipment (for example when checking for overload of motors) back of the hand may be used. Thus, if accidental shock were to cause muscular contractions, one would not "freeze" to the conductor.
- Operation of electrical equipment shall be avoided when standing on wet floor or when hands are wet. Rubber mats should be placed in front of Panels / Distribution Boards as per Indian Standards.
- Before blown fuses are replaced, the circuit shall be locked out and an investigation shall be made for the cause of the short circuit or overload.
- When two persons are working within reach of each other, they shall never work on different phases of the supply.
- When structural repairs, modification or painting work are to be undertaken, appropriate measures shall be taken for the protection of persons whose work may bring them into the proximity of live equipment / circuit.
- It shall be ensured that the insulation and wire size of extension cords is adequate for the voltage and current to be carried.
- While tapping electricity from the socket, plug top must be used. It shall be ensured that no extension boards are over loaded while tapping. Only standard three pin plugs (Naked Wire is prohibited ) shall be used for tapping electricity. Broken sockets/plugs shall be replaced immediately with good ones. Only joint free cables shall be used for connecting equipment/Use of apparatus.
- Floors shall be kept free from trailing electrical cables to avoid tripping hazard.

- Power supply to all the machines and lighting fixture shall be switched off when not in use.
- Temporary electrical connections shall be removed as soon as the stipulated work is over. After completion of the works, the contractor shall dismantle the distribution boards and the other facilities he may have erected.
- Unauthorised tapping of power by others from distribution boards under the control of the contractor shall be prohibited at all circumstances.
- No flammable materials shall be stored in any working area near the switchboards.
- Safety work permits shall be used for switching off the main feeder and equipment by the contractor.
- "MEN ON LINE" "DO NOT SWITCH ON" "DANGER" or "CAUTION" boards as applicable shall be used during maintenance works on the electrical equipment.

### **30. PORTABLE ELECTRICAL EQUIPMENT :**

- Portable electrical tools must be examined, maintained and tested daily, fortnightly and quarterly so that the equipment and its leads are in good order. Register shall be maintained for inspection recording the testing dates and results of the equipments. Inspection checklists to be formed to that effect. The recertification of lifting tools, tackles, equipments etc. must be carried out well before the expiry of its validity period.
- All portable appliances shall be provided with three core cable and three pin plugs. The third pin of the plug shall invariably be earthed. It shall be ensured that the metal part of the equipment shall be effectively earthed.
- All connections to portable equipment or machines from the panel/distribution board/extension board shall be taken using 3 core double insulated PVC flexible copper wire in one length. No joints shall be allowed in this flexible wire. In case length of wire is not sufficient for a particular location then the supply can be tapped by providing another extension board comprising of switch, socket and ELCB of 30mA max..
- Flexible cables for portable lamps, tools and apparatus shall be regularly examined, tested periodically and maintained to ensure safety.
- For excavations, one time clearance from electrical is required for a particular area.
- Contractor shall get their welding machine / Stress Relieving (SR) electrical equipment / all

- portable machine certified by MRPL / MRPL authorised contractor and seal will be fixed on machine to that effect. Certificate from third party mentioning the checks carried out, repairs carried out and safe to use to be submitted to Engineer Incharge.
- Revalidation to be done once in 4 months. In case contractor does not comply, it will be done by MRPL and four times the cost of repair will be back charged to contractor.
- In case of welding, separate return cable from job piece to welding machine to be connected. Wires not to be used. PVC insulated cables only to be used.
  - All lighting circuits/temporary connections for portable machine should have ELCB's of 30mA capacity max.
  - All ELCBs to be tested once in 15 days using ELCB testers (and not by the lamp with open wires) and record maintained. Also separate register for ELCB trips (TRIP REGISTER) shall be maintained. It shall be daily signed by the site Incharge of the contractor.
  - Earthing of Neutral, which will act as return path, is not allowed.
  - Electricians should have wireman license.
  - During monsoons, monsoon protection for electrical equipment to be done.
  - All feeders in contractor distribution panel to be clearly lettered with load details for isolation in case of emergency.
  - Insulated tools like screwdriver, cutting plier, tester to be used.
  - Each contractor should have one set of multimeter, ELCB tester and tong tester.
  - First aid kit to be available.
  - The contractor must have a team of Experienced Electricians (having minimum of 10 yrs. experience in carrying out safety inspection and testing of Electrical Equipments, tools, portable electrical machines and appliances etc.). to conduct periodical (Daily, fortnightly, monthly and quarterly) inspection and testing of Electrical Equipments, tools and portable electrical machines, tools and appliances and to maintain its records.
  - All power cable ends should have industrial plug on one side and other end directly into the machine. (No naked end pinning into will be permitted).
  - For any job within MCC / SRR a work permit will be issued by MRPL operation. Job should not be started without these permits.

**31. ROLE OF CONTRACTOR INCASE OF EMERGENCY AND SIREN :**

- Contractor shall instruct his workers to follow instructions strictly in case of fire siren / emergency or if advised or felt necessary by Engg. In-charge. If evacuation is ordered they must leave the work site and proceed towards the nearest designated assembly point. The contractor and its employees MUST follow specific instructions (Roles and Responsibilities incase of fire / onsite emergency) that will be given during training from time to time. All contractor employees MUST undergo such training, before their deployment at the work site. Contractor shall arrange & conduct such trainings for his employees and also employees of sub-contractors.
- Contractor shall instruct his workers to stop all jobs immediately incase release of liquid/gas/toxic/hazardous chemicals etc, and inform the concerned MRPL personnel available at site.

**32. TRAINING :**

- The contractor to conduct Induction training of all employees and record maintained.
- The contractor will have to depute all his employees (including Engineers, supervisors and workmen), before they commence work for the first time at MRPL site and subsequently once in a year, to undergo Safety training. They will get photo gate passes only after the completion of the training. Contractors MUST have and get conversant with Material Safety Data Sheets of all the Chemicals in MRPL. It is a MUST for them to carry the photo passes with them and produce it when demanded at site.
- Tool box talks to be conducted every day before starting of each shift and before commencing of work after lunch break by the concerned Engineer.

**33. LIST OF PERSONAL PROTECTIVE EQUIPMENTS**

The contractor must poses the following minimum safety Items cum Personal Protective Equipments. All Personal Protective Equipments used at site to be of approved make.

**34. MANDATORY FOR THE CONTRACTOR EMPLOYEES WHILE WORKING INSIDE REFINERY :**

\* Deployment of adequate nos. of safety officers as per table above and making available the mandatory items as per the minimum list below is a MUST as a part of mobilization activity.

1. Safety Helmet.
2. Safety shoes (Conforming to IS standards with ankle protection, steel toe and anti-skid / acid, alkali and water proof soles).

3. Hand gloves (Leather impregnated cotton hand gloves).
4. Spectacle type goggles with toughened glass lenses, plain face shields with and without chin guards.

The contractor must use the "ISI" marked Personal Protective Equipments specific to the job . It is mandatory to have minimum backup stock of all the PPEs in addition to what is already in use at site.

### **35. SPECIFICATIONS FOR SAFETY HELMETS-HDPE.**

- 1) Helmet Safety Industrial HDPE white colour.
- 2) Contractor's Logo at front side.
- 3) Conforming to IS 2925, ISI marked & DGMS approved.
- 4) Nape strap type adj. type 6 point adj. head band & sweat band with 3/4" Cotton Chin strap.

\* Green helmets for Safety Personnel and Red helmets for electricians to be provided and used by them.

### **36. SPECIFICATION FOR FULL BODY SAFETY HARNESS) SAFETY BELT**

Full Body Safety Harness (Safety belts) must be double lanyard type with scaffolding hook having self closing latch (spring type).

Different type of hooks to be available based on the nature of job / type of support. Safety belts should be ISI marked and should conform to IS 3521 and DGMS approved and stamped.

Safety belts, safety straps, lifelines, permanent anchors and connections should both separately and when assembled :

- a) be capable of supporting safely a suspended load of at least 450 kg (1,000 lb) ; and
- b) have a breaking strength of at least 1,150 kg (2,500 lb).

If hooks are used for attaching safety belts to fixed anchors, they should be self closing safety hooks of various types and sizes.

When a lifeline or safety strap is liable to be served, cut, abraded or burned, it should consist of a wire rope or a wire-cored fiber rope.

Safety straps should be so fastened to safety belts that they cannot pass through the belt fittings if either end comes loose from its anchorage.

Metal thimbles should be used for connecting ropes or straps to eyes, rings and snaps. Safety belts, safety straps and lifelines should be so fitted as to limit the free fall of the wearer to 1m (3ft 3in).



### **37. SPECIFICATION FOR FALL ARRESSTOR DEVICE**

Fall arresstor device with self-retracting cable integrating locking mechanism combined with an energy deception element fully automatic having cables of various lengths, ISI and DGMS and or any international approval. Only Poly Amide rope shall be used.

### **38. SPECIFICATION FOR DUST MASK**

Dust Mask made of superior quality non-aging chemical-resistant rubber half face piece with reflex sealing flaps for protection against nuisance dust, (<0.5 micron) toxic dusts, gases and vapours with replaceable filters.

### **39. SPECIFICATION FOR REPLACEABLE FILTERS**

For protection against nuisance dust, toxic dusts, gases and vapours upto a concentration of 500 ppm. To be fitted on aforesaid Dust Mask.

### **40. SPECIFICATION FOR SAFETY SHOES**

1. Safety Shoes, Jodhpury style- as per is 11226- 1985 with guarantee for 1 & 1/2 years (all weather).
2. Acid/ alkali/ waterproof heat resistant, antiskid green PVC Nitrile sole.
3. Steel toe cap as per relevant "IS".
4. Upper plain leather, high ankle, with metallic 4 eyelets.
5. ISI marked.
6. The supplier should give guarantee of use of safety shoes during rainy season.

### **41. STANDARD SPECIFICATION FOR PVC HAND GLOVES**

Hand contoured for greater comfort & feature an embossed nonslip grip for handling wet or greasy objects cotton flock lining absorbs perspiration maximises easy on/off black with straight cuff each pair pack.

### **42. SPECIFICATION FOR ELECTRICAL PPE (SHOCK PROOF)**

Hand gloves used for live electrical works shall be of proper electrical rating.

Electrical (shoek proof) Safety Shoes (Jodhpury type) with acid/ alkali/ water proof, heat resistant, antiskid sole with guarantee for 1 & 1/2 years (all weather).

1. Upper plain leather.
2. ISI marked & latest certificate of testing from any of the govt. recognised institution for electrical resistance.

GUMBOOTS with steel toe should be used by personnel during rainy season.  
The aforesaid guidelines are the minimum safety requirements and the contractor should exceed them so as to achieve "ZERO ACCIDENT" which is our MOTO.

**43. TYPE SAFETY VIOLATIONS AND PENALTY SYSTEM:**

All the contractors working for MRPL shall strictly follow the safety norms as per the rules and regulations of MRPL. Contractors who violate safety norms while executing the jobs will be penalized financially.

The details of penalty amount against each safety violations is enclosed as Annexure-B.

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**Annexure B**

SL no	Type of Safety Violations	Amended, New penalty
1	No Lost Time Incident (NLTi) - Reporting back to duty within 48 hrs	First occasion Rs2500/- Second occasion Rs 5000/- Third occasion Rs 10000/- In addition to other expenses borne by contractor towards treatment. Existing Policy : none
2	Reportable Lost Time Incident (RLTI)- No reporting to duty within 48 hrs	First occasion Rs10000/- Second occasion Rs 25000/- Third occasion Rs 50000/- In addition to other expenses borne by contractor towards treatment. Existing Policy : none
3	Disability	Rs. 1,50,000/- per person Existing Policy : none
4	Fatal	Rs. 5,00,000/- per person Existing Policy : none
5	Vehicle Accident -Vehicle damaging Property or Vehicle to Vehicle Accident.	Rs. 25000/- and Repairs/damage/restoration Existing Policy : none
6	For not using Personal Protective Equipment like (Safety Helmet, Safety Goggles, Safety Shoes, Hand gloves, Boiler suit, etc)	Rs. 500/- Per day / per item / per person for first violation. Rs. 1000/- for second onwards.
7	Working without permit / Clearance (Cold Work)	Rs.5,000/- per occasion After 3 violations, holiday listing for 6 months.
8	Hot work without proper permit / Clearance	Rs. 10,000/- per occasion. After 3 violations, holiday listing for 6 months.
9	Non-use of safe electricity at work site (non installation of ELCB, using poor joints of cables, using naked wire without top plug into socket, laying wire / cables on the roads, etc.	Rs. 3,000/ per item
10	Working at heights without safety belt (Full Body Safety Harness), using non-standard scaffolding and not arranging fall protection arrangement as required.	First occasion Rs2500/- Second occasion Rs 5000/- Third occasion Rs 10000/- After three occasions, holiday listing for 6 months.
11	Unsafe handling of compressed gas cylinders (No trolley, jubilee clips, double gauge regulator, Improper storage / handling).	Rs 500/- per occasion.
12	Non fencing / barricading of excavated	Rs. 1,000/- per occasion.



17/10/19

	areas,	
13	Use of domestic/commercial LPG cylinder for cutting purpose	Rs. 1,000/- per occasion.
14	Non-display of name board, permit, etc. at site.	Rs. 500/- per occasion.
15	Not providing shoring / strutting / proper slope and not keeping the excavated earth at least 1.5 m away from the excavated area.	Rs. 2000/- per occasion.
16	Wrong parking of vehicles or parking the vehicles at non-designated places inside refinery.	Rs. 1,000/- per occasion.
17	Absence of contractor representative in refinery safety meetings whenever called.	Rs. 3,000/- per meeting.
18	Non-deployment of safety supervisor / supervisor responsible for safety at work site required as per Special Safety Conditions.	Rs. 3,000/- per day.
19	Failure to maintain safety register and records by contract Safety Supervisor or the Supervisor responsible for safety.	Rs. 1,000/- per day
20	Failure to have daily safety site inspection / audits, monthly safety meetings and maintain records (by contractors themselves).	Rs. 1,000/- for each occasion
21	Failure to submit monthly safety report by the 5 <sup>th</sup> of the next month to the Engineer - in - Charge.	Rs. 1,000/- per occasion
22	Poor Housekeeping.	Rs. 1,000/- per site / per day.
23	Failure to follow injury reporting system.	Rs. 10,000/- per occasion.
24	Violation of safety condition as per Job Safety Analysis (JSA)	Rs. 10,000/- per Occasion
25	Over-speeding of vehicle i.e speed > 16 KMPH while driving inside refinery.	<ol style="list-style-type: none"> <li>1. The driver will be removed and gate pass will be withdrawn.</li> <li>2. Contract will be cancelled upon repeated three violations.</li> </ol>
26	Overtaking of vehicles while driving inside refinery.	<ol style="list-style-type: none"> <li>1. The driver will be removed and gate pass will be withdrawn.</li> <li>2. Contract will be cancelled upon repeated three violations.</li> </ol>

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27	Driving of vehicle without valid license.	First occasion Rs1000/- Second occasion Rs 2000/-  1. The driver will be removed and gate pass will be withdrawn. 2. Contract will be cancelled upon repeated three violations.
28	Driving vehicle without PPSO approved or PPSO approved but damaged spark arrester.	1. The driver will be removed and gate pass will be withdrawn. 2. Contract will be cancelled upon repeated three violations.
29	Driving vehicle on "NO ENTRY ROADS".	1. The driver will be removed and gate pass will be withdrawn. 2. Contract will be cancelled upon repeated three violations.
30	Denying to produce the photo Gate Pass on demand.	1. Rs.500/- per person per occasion
31	Contract worker found drunk/intoxicated state inside the refinery	1. Rs.15000 / - per person per occasion.

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17/10/19

	<b>MRPL Marketing Terminal Project at Devangonhi, Bangalore</b> <b>Marketing Infrastructure Projects, MRPL</b>			
	Part – I	<b>Project Execution Philosophy</b>		Tender No : 3200000490
	Section – 9			Document No: 20005-GEN-G-PEP-9108
Subsection – 9.1	Rev : 00			

<b>9.1</b>	<b>PROJECT EXECUTION PHILOSOPHY</b>
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**PROJECT: MARKETING TERMINAL PROJECT**

**OWNER : MANGALORE REFINERY AND PETROCHEMICALS LTD**

**PMC : NAUVATA ENGINEERING PVT LTD**

**JOB NO. : JBG20005**



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00	01-02-2021	ISSUED FOR BID	ASN	CD	CD
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Rev. No	Date	Purpose	Prepared by	Checked by	Approved by
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	<b>MRPL Marketing Terminal Project at Devangonhi, Bangalore</b> <b>Marketing Infrastructure Projects, MRPL</b>				
	Part – I	<b>Project Execution Philosophy</b>	Tender No :		3200000490
	Section – 9		Document No:		20005-GEN-G-PEP-9108
	Subsection – 9.1		Rev :		00

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10	PLANNING, SCHEDULING AND COSTING
11	TRAINING
12	DOCUMENTATION
13	DOCUMENTS TO BE SUBMITTED BY LSTK CONTRACTOR
Annexure 1 – Interface between Civil Contractors (Contractor: B) & Other Contractors	

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## 1 GENERAL

Mangalore Refinery & Petrochemicals Limited (MRPL), a subsidiary of Oil & Natural Gas Corporation Limited, is setting up Marketing terminal at Devangonithi, Bangalore, Karnataka (India).

The implementation of entire Project is divided in the following packages:

- LSTK-A: Tank Farm and Mechanical Contractor
- LSTK-B: Civil & Structural Contractor
- LSTK-C: Electrical and Instrumentation Contractor

### 1.1 DEFINITIONS OWNER:

OWNER shall mean Mangalore Refinery & Petrochemicals Limited (MRPL).

### PROJECT MANAGEMENT CONSULTANT:

Project Management Consultant (PMC) means Nauvata Engineering Pvt Ltd. (NEL)

### SITE:

SITE means Marketing terminal Devanagunthi, Bangalore, Karnataka (India).

### LSTK CONTRACTOR:

LSTK CONTRACTOR means any third party whose services are obtained for Engineering, Procurement, Construction and Commissioning of Unit / Facilities / System on Lump sum Turnkey basis covered under the specified scope of work respective TENDER PACKAGE.

### TENDER PACKAGE:

Complete Scope of work including the tentative drawings, project specification, design basis documents etc.



### WORKS:

Scope of Work as defined in TENDER PACKAGE.



## 2 SCOPE OF WORK OF LSTK CONTRACTOR

It is the intent of this TENDER PACKAGE to define the entire scope, specification and services. LSTK CONTRACTOR shall be responsible to include all such scope, specification and components for the facilities in order to meet the overall requirement tender document. LSTK CONTRACTOR has to necessarily validate the existing details/drawings as provided in the tender package. Any item not identified specifically in the tender package but may be required for successful completion of facilities in all respects shall be deemed to be included in LSTK CONTRACTOR's scope and LSTK CONTRACTOR shall perform the same without any commercial and time implications to OWNER. LSTK CONTRACTOR shall be responsible for all the data used for the design of the facilities.





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- 2.1 EPCC CONTRACTOR shall provide the design specifications and drawings, procure and ship the equipment and materials, construct, test, commission, provide guarantees and train staff, all as detailed in this TENDER PACKAGE and perform any other operations necessary to provide the complete facilities.
- 2.2 LSTK CONTRACTOR shall provide efficient and adequate Project Management from start of WORKS till completion of all facilities. LSTK CONTRACTOR shall appoint a competent Project Manager for the duration of the WORKS who will be responsible for all phases of the WORKS.
- 2.3 LSTK CONTRACTOR shall fully co-operate with, OWNER, PMC, Contractors for other packages and other third parties authorized by OWNER in all phases of the WORKS.
- 2.4 LSTK CONTRACTOR shall facilitate access for OWNER/PMC's designated personnel at his offices. LSTK CONTRACTOR shall provide office space, furniture, equipment, all office supplies inclusive of utilities, telecommunication services, courier services and secretarial and clerical services, in LSTK CONTRACTOR's Home Office and other offices outside India including at supplier's works/offices for the personnel of OWNER and PMC.
- 2.5 LSTK CONTRACTOR shall provide full assistance to OWNER and PMC's personnel at all places during the course of the WORKS for the following:
- 1) To enter into and go out from the countries.
  - 2) To stay in the countries for the required period.
- 2.6 LSTK CONTRACTOR shall provide engineering designs in accordance with TENDER PACKAGE, current worldwide best practices, the governing codes and in compliance with the Indian statutory regulations in force and specifications / design basis as per OWNER requirement.
- 2.7 LSTK CONTRACTOR shall submit all documents as per the agreed schedule. LSTK CONTRACTOR shall include drawings/documents listed elsewhere in TENDER PACKAGE as minimum requirements for submission to OWNER/PMC for approval or review or information. EPCC CONTRACTOR shall provide documentation keeping a review time by OWNER/PMC of ten (10) working days to enable them to review and make comments. LSTK CONTRACTOR shall take action in a timely fashion, with respect to all drawings, documents and other necessary information. LSTK CONTRACTOR shall respond to OWNER/PMC observations/comments within reasonable time not exceeding seven (7) working days.
- 2.8 LSTK CONTRACTOR shall provide proper clarification/explanation to OWNER/PMC personnel during all phases upon request by OWNER/PMC for monitoring the LSTK CONTRACTOR's Work.
- 2.9 LSTK CONTRACTOR shall procure and supply all equipment and materials required to construct the facilities. The procurement functions shall include the securing of proposals from approved suppliers, issuing of purchase orders, expediting deliveries, performing the necessary inspections including arranging third party inspections and tests to ensure quality and quantity, handling the shipping, receiving, unloading, customs clearance, transporting to the SITE and warehousing of equipment and materials. All equipment and materials shall

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be newly purchased.

- 2.10 LSTK CONTRACTOR shall supply special tools & tackles required for operation and maintenance, and initial charge of consumable such as packing, desiccant, catalyst and lubricant etc. **LSTK CONTRACTOR shall provide the requirements for all the consumables on daily/ weekly/ monthly/ yearly basis giving details of suppliers for the same.**
- 2.11 LSTK CONTRACTOR shall make all arrangements and shall be responsible for transportation from suppliers' works, shipment, transit insurance, custom clearance, port handling and transportation from sea or air ports / suppliers' works for all equipment and materials including handling of consignments at SITE. LSTK CONTRACTOR shall monitor and report to PMC / OWNER the movement of all consignments dispatched to SITE from various points of dispatch.
- 2.12 LSTK CONTRACTOR shall verify available information on topographic survey for the new facility included in the TENDER PACKAGE.
- 2.13 LSTK CONTRACTOR shall verify the soil investigation results included in the TENDER PACKAGE (preliminary) and perform the soil investigation again as per the borehole location approved by PMC / OWNER. Soil investigation is in the scope of LSTK – B and input for the borehole location from other LSTK CONTRACTOR (A & C) shall be obtained from PMC/ OWNER.
- 2.14 LSTK CONTRACTOR shall maintain all areas required for temporary storage, construction facilities, buildings, medical facilities, toilets with proper hygiene and other construction infrastructures for their use.
- 2.15 LSTK CONTRACTOR shall be responsible for the total disposal of construction waste materials and final site clearance including removal of temporary facilities in compliance with local regulations and as per directions of OWNER/ PMC. As regards to left over useable material including bulk material, LSTK CONTRACTOR shall duly codify the same as per the OWNER's guidelines and return to the OWNER without any extra cost to OWNER.
- 2.19 LSTK CONTRACTOR shall construct the facilities in accordance with the approved drawings and contract specifications and in compliance with safety rules and local regulations in force.
- 2.20 LSTK CONTRACTOR shall be responsible for commissioning the facilities until GUARANTEE TEST RUN and shall demonstrate the operability of the facilities.
- 2.21 LSTK CONTRACTOR shall be responsible for insurance of the facilities until the MECHANICAL COMPLETION as required in the TENDER PACKAGE. LSTK CONTRACTOR shall also be responsible for insurance of his personnel working at the Site.
- 2.22 LSTK CONTRACTOR shall carry out all testing and certification activities in conjunction with approved procedures, up to the date of the FINAL ACCEPTANCE.
- 2.23 LSTK CONTRACTOR shall undertake all obligations under this contract to meet the guarantees as specified in this TENDER PACKAGE.

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- 2.24 LSTK CONTRACTOR shall provide and arrange for training of OWNER's personnel for the correct and safe operation and maintenance of the facilities.
- 2.25 **LSTK CONTRACTOR shall support for all necessary Regulatory and Statutory Approvals for the WORKS.**
- 2.26 **LSTK CONTRACTOR shall consider the life span of all equipment and materials from the date of first commissioning as minimum 15 years or as specified in Technical Specifications; whichever is more.**
- 2.27 LSTK CONTRACTOR shall interface with other contractors for the supply, installation, testing, commissioning of those systems which have been defined in the TENDER PACKAGE, refer **Annexure -1** for Interface document.
- 2.28 LSTK CONTRACTOR shall carry out internal technical audit at various stages of engineering and construction to verify and ensure that quality requirements of the facilities are adhered to. Reports for the same shall be submitted for OWNER/PMC's review.

### 3 PROJECT IMPLEMENTATION

#### 3.1 Kick off Meeting

Meeting shall be held with fifteen (15) calendar days after the CONTRACT AWARD. LSTK CONTRACTOR shall submit first issue of the procedures, which shall include:

- 1) Project Procedures
- 2) Project Organization Chart and Project Schedule
- 3) Engineering, Procurement, Construction and Commissioning Execution Plan.

Refer to details under section "Project Planning, Scheduling and Monitoring procedure "in the TENDER PACKAGE.

#### 3.2 Office Facilities



##### 3.2.1 LSTK CONTRACTOR's Design and Procurement office

LSTK CONTRACTOR shall provide office accommodation for OWNER / PMC personnel and shall provide them with access to his office and documentation at all the times.

The LSTK CONTRACTOR shall also be responsible in providing OWNER/PMC personnel all supporting services deemed necessary for the smooth completion of the WORKS during this period.

LSTK CONTRACTOR shall provide necessary access to below facilities which are required to be include the as a minimum in Site office location:

- 1) Telecommunication services like international Telephone lines and facsimiles (including international communication charges), computers e-

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mail and web connectivity, courier services and secretarial and clerical services for the personnel of OWNER and PMC.

- 2) High Speed/Auto feed Photocopy machines and Drawings Printing & Binding Facilities
- 3) All necessary utilities supply, and services.
- 4) Meeting room for 15 persons with conference table, chairs and white board and electronic projector.
- 5) Pantry facilities with hot water, drinking water, refrigerator and coffee/tea maker and supplies.
- 6) Transfer of OWNER/PMC documents from LSTK CONTRACTOR office to SITE.

LSTK CONTRACTOR shall provide maintenance services and consumables for the above facilities throughout the period of stay of OWNER / PMC personnel.

### 3.2.2 SITE Office

LSTK CONTRACTOR shall responsible to develop the SITE office for the planned mobilization of personal. The location of deployment of SITE office shall be proposed by LSTK CONTRACTOR within the designated area in the plot plan (tentative TT parking area). The Leveling of the land shall be in LSTK- B Contractor scope.

LSTK CONTRACTOR shall be responsible for demobilize of the site office and provide the space in good condition for development of TT parking area as per plot plan to LSTK- B.

### 3.2.3 Visa



Prior and subsequent to the commencement of the WORKS, LSTK CONTRACTOR shall obtain and maintain necessary visas and documentation with respect to entry into, stay in, work in and departure from India, from the relevant authorities, for his expatriate employees.

LSTK CONTRACTOR shall assist OWNER/ PMC in arranging visa for their personnel to visit LSTK CONTRACTOR'S Home Office/ suppliers' works outside India to attend meetings and for undertaking inspection & expediting related activities.

## 4 **ENGINEERING DESIGN**

### 4.1 **Design Philosophy**

- LSTK CONTRACTOR shall adopt the design philosophy of various equipment and materials as outlined in this TENDER PACKAGE.
- LSTK CONTRACTOR shall provide for the safe design, inspection, testing operation, and maintenance of the facilities for the protection of the public and OWNER's operating personnel.

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## 4.2 Engineering

LSTK CONTRACTOR shall be responsible for providing all engineering specifications, drawings and documents necessary to complete the scope of work. The engineering design shall be performed in accordance with all requirements stipulated in this TENDER PACKAGE.

LSTK CONTRACTOR shall endeavor to maintain consistency amongst the various equipment and instrumentation for ease of interchangeability, maintenance and availability of spare parts.

It is expected that LSTK CONTRACTOR shall be carrying out all engineering work in house. However, incase LSTK CONTRACTOR does not have in house resources for any specialized activity, the same may be carried out through third party agency. LSTK CONTRACTOR shall ensure that the agency is reputed and has adequate relevant experience. LSTK CONTRACTOR shall obtain prior approval from OWNER/PMC before engaging such agency. LSTK CONTRACTOR shall take full responsibility for the work carried out by the agency. LSTK CONTRACTOR shall submit the Document Control Index (DCI) for PMC review and annotation.

## 5 PROCUREMENT

LSTK CONTRACTOR shall perform all necessary procurement work in accordance with requirements in the TENDER PACKAGE. LSTK CONTRACTOR shall submit the Material control index for PMC review and annotation.

LSTK CONTRACTOR shall ensure availability of spares and services from the suppliers for a period of minimum 15 years from the date of first commissioning of the system/unit/facility or as specified in Technical Specifications; whichever is more.

## 6 CONSTRUCTION

### 6.1 General



LSTK CONTRACTOR shall perform all necessary construction work in accordance with the requirements outlined in the TENDER PACKAGE.

LSTK CONTRACTOR shall be responsible for the construction of the facilities on schedule, according to the approved codes and standards, contract specifications and drawings, and also responsible for the workmanship of high quality and use of the equipment and materials in accordance with good construction practice.

LSTK CONTRACTOR shall provide all labour, construction equipment, tools and tackles, materials, consumables, temporary facilities, construction utilities and so on, and support services for the construction work.

LSTK CONTRACTOR is deemed to have full knowledge of applicable codes and standards, laws and regulations, conditions of labour, local conditions and environmental aspects and shall comply with the requirements thereof. OWNER shall be kept indemnified by LSTK CONTRACTOR for any violation.



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## 6.2 Temporary Facilities

LSTK CONTRACTOR shall design, supply, construct and maintain the temporary facilities such as Site office, fabrication yard, storage, ware house etc as described in this TENDER PACKAGE.

LSTK CONTRACTOR shall make his own arrangements for the supply and maintenance of construction power until MECHANICAL COMPLETION unless otherwise specified.

LSTK CONTRACTOR shall make his own arrangements for the supply of construction and potable water.

LSTK CONTRACTOR shall dismantle, remove and relocate the temporary facilities when instructed by OWNER without any extra cost to OWNER.

## 7 PRE-COMMISSIONING AND COMMISSIONING

LSTK CONTRACTOR shall perform pre-commissioning and commissioning work for the facilities in accordance with requirements of the TENDER PACKAGE.

## 8 INSPECTION

### 8.1 Procurement Inspection

LSTK CONTRACTOR shall be responsible for providing an inspection and quality management program, which shall ensure that OWNER is provided with equipment and materials that meet the requirements of the CONTRACT.

LSTK CONTRACTOR shall perform the Procurement Inspection through one of the following approved Inspection Agencies in accordance with the requirements of the TENDER PACKAGE and agreed Inspection & Test Plans (ITPs):



- Certification Engineers International Limited (CEIL)
- Lloyds Register of Industrial Services (LRIS)
- Det Norske Veritas (DNV)
- Bureau Veritas (BV)
- TUV
- Germanisher Lloyd

Only one Inspection Agency shall be deployed for the complete PACKAGE.

### 8.2 Construction Inspection

LSTK CONTRACTOR shall apply the required field inspections and tests as required by LSTK CONTRACTOR'S quality management program and agreed ITPs. This program shall additionally ensure that all inspection and test required by Government regulatory bodies are completed.

LSTK CONTRACTOR shall have in effect an inspection control program which shall be approved by OWNER prior to start of work in order that construction activities are performed

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in accordance with approved drawings and specifications, applicable codes and standards, and contractual requirements as described in the TENDER PACKAGE.

### 8.3 Pre-commissioning Inspection

LSTK CONTRACTOR shall provide inspection of the facilities to ensure that erected facilities conform to flow diagrams, construction drawings, suppliers' documents, and specifications as per the requirements of the TENDER PACKAGE.

## 9 SAFETY

The design of the FACILITIES shall comply with all applicable safety regulations specified by governmental agencies having jurisdiction over the facilities and requirements specified in TENDER PACKAGE.

LSTK CONTRACTOR shall comply with all applicable safety regulations during the transportation of equipment and materials, construction and commissioning of the facilities. In the absence of local governmental regulations, the guidelines of Occupational Safety and Health Administration (OSHA) shall be adhered to.

LSTK CONTRACTOR to note that no mobile phones shall be allowed within the SITE.

## 10 PLANNING, SCHEDULING AND MONITORING

LSTK CONTRACTOR shall plan and schedule all activities and report to OWNER / PMC in accordance with the requirements of the TENDER PACKAGE.

LSTK CONTRACTOR shall provide a computer interface to OWNER/ PMC, which shall be linked to the LSTK CONTRACTOR's Planning and Scheduling System.

## 11 TRAINING

LSTK CONTRACTOR shall provide training for OWNER's personnel both at SITE and outside India, including training at supplier's shops, and LSTK CONTRACTOR's offices.

Training facilities and duration of specified training programs to be provided by LSTK CONTRACTOR should be as detailed in the TENDER PACKAGE.



The training plan of the LSTK CONTRACTOR shall be submitted for OWNER's approval.

## 12 DOCUMENTATION

### 12.1 General

The intent of this section is to outline general requirements for correspondence, design documents, drawings, calculations, manuals, procedures, reports, and copies thereof which shall be prepared and issued during the course of the WORKS. Further description and details for documentation shall be as per the requirements of TENDER PACKAGE.

The LSTK CONTRACTOR will be required to submit a detailed "Correspondence and

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Document Management Procedure”. This procedure is required to be submitted within 15 days of CONTRACT AWARD.

## 12.2 Correspondence

All communication, written, verbal or electronic will be between the LSTK CONTRACTOR, OWNER and PMC.

There will be three types of written correspondence between OWNER, PMC and LSTK CONTRACTOR. These are:

1. Letters (including facsimiles)
2. Email communications
3. Transmittals (for reports, drawings, etc.)

All documentation must be transmitted via cover transmittal or letter. This is required for all documentation transfer between OWNER, PMC and LSTK CONTRACTOR.

## 12.3 Documentation Management

It is the overall intent of this TENDER PACKAGE that the LSTK CONTRACTOR's control of documents and overall document management conforms to ISO 9001 quality standard.

All documents that require OWNER/PMC approval/review must be submitted in an orderly and timely manner to ensure progress of sub-ordering and construction of WORKS as per contractual schedule. OWNER /PMC approval/ review shall not absolve LSTK CONTRACTOR for full contractual responsibility and liabilities for all contents of such documents.

The LSTK CONTRACTOR will be required to utilize a full time Document Controller from time of award until completion of CONTRACT. The Document Controller be responsible for physical transferring of documents, co-ordinating and updating all document logs and responsibility for all files.



The LSTK CONTRACTOR will be required to maintain a computerized up-to-date log (software to be approved by OWNER / PMC as part of procedure) of all outgoing and incoming letters and transmittals.

LSTK CONTRACTOR will be required to submit every week their document logs for both incoming and outgoing correspondence. Communication by OWNER/PMC to LSTK CONTRACTOR, which require a response/action, LSTK CONTRACTOR will ensure through the document logs that a response has been submitted and the subject is closed. This may be in the form of a transmittal, letter or referenced minutes of meeting.

## 12.4 Photographs

It is a requirement for the LSTK CONTRACTOR to keep photographic records of the facilities through all phases of the work. The photographer needs to have proper accreditation from the OWNER.



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## 12.5 Distribution of Documents

LSTK CONTRACTOR shall submit, to OWNER / PMC quantities and types of documentation copies as defined below. Standard document distribution is as follows:

Document Matrix for Transmittals and Letters	LSTK CONTRACTOR Design Office		Site office	
	PMC	OWNER	PMC	OWNER
<b>Engineering and Procurement Phase:</b>				
<ul style="list-style-type: none"> <li>When OWNER and PMC team at LSTK CONTRACTOR's office</li> </ul>	2 (for first review) 6 (for code stamping)	2		
<ul style="list-style-type: none"> <li>When OWNER and PMC Team in India</li> </ul>			6	2
<b>Construction and Commissioning Phase:</b>			6	2
<b>Defect Liability Period</b>				3

Notes:

- LSTK contractor will correspond with PMC on all the issues with a copy to OWNER
- LSTK CONTRACTOR's Site office shall liaison for transfer of documents to/from OWNER/PMC to their Home Office(s).

## 12.6 Document Approval



Document Schedule/index shall be submitted by LSTK CONTRACTOR, which shall summarize the documents required to be reviewed/approved by OWNER/PMC.

Review/approval by OWNER/PMC in no way shall relieve LSTK CONTRACTOR of its obligations and responsibilities under the CONTRACT.

OWNER/PMC will not review/approve any incomplete submission.

LSTK CONTRACTOR shall refer to the appropriate section of the TENDER PACKAGE for the specific requirements and transmittal medium, i.e. prints, diskettes, CDs, etc. for documents originating from various computer programs.

All such documents that require OWNER/PMC's approval or review must be submitted in a timely and in logical sequence in order not to disrupt the progress of the facilities. OWNER/PMC approval shall not absolve LSTK CONTRACTOR for full contractual responsibility and liabilities for all contents of such document. The time allotted OWNER/PMC for such reviews and approvals shall be that as defined in TENDER PACKAGE.

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### 13.0 DOCUMENTS TO BE SUBMITTED BY BIDDER

BIDDER shall submit in the proposal the Project Execution Plan entailing the following sections. Later the LSTK CONTRACTOR, shall submit this document after further updating, at the time of Kick Off Meeting:

- 1.1 Project Management
- 1.2 Project Planning, Scheduling, Monitoring.
- 1.3 Residual Basic Engineering
- 1.4 Detailed Engineering for Procurement
- 1.5 Detailed Engineering for Construction
- 1.6 Ordering of all project material
- 1.7 Expediting of ordered material
- 1.8 Inspection of ordered material
- 1.9 Shipping / Transportation of ordered material
- 1.10 Sub – Contracting of Field Activities
- 1.11 Construction Work
- 1.12 Commissioning of Installed Facilities
- 1.13 Project Financing

The minimum information expected from bidder for each of the above functions, as a part of the Project Execution Methodology, is narrated below.

#### 1.1 Project Management

- Details of Project Co-ordination and Project Management Procedures.
- Details of Project Organization covering both design office and field.
- Modality of Project Communication and Contact persons.

#### 1.2 Project Planning, Scheduling and Monitoring

- Proposed Project Planning, Scheduling and Monitoring of the bidder, in line with OWNER/PMC requirement elaborated in attached subsection A-3.9 on Project Planning, Scheduling and Monitoring procedure for LSTK Contract.

#### 1.3 Residual Engineering



- Details of location of performance.
- Projection of man-power requirement.

#### 1.4 Detailed Engineering for Procurement

- Details of location of performance.
- Projection of man-power requirement.
- Material control Index – For PMC review and annotation
- Procedure for review of Supplier drawings.

#### 1.5 Detailed Engineering for Construction

- Projection of man-power requirement.
- Details of soft wares proposed to be used.
- Interface with Supplier data for finalizing drawings.

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- Incorporation of OWNER/PMC comments before issuing drawings for construction (Approved for Construction).
- Document control Index – For PMC review and annotation.

#### 1.6 Ordering of all project material

- Details of location of performance.
- Proposed list of Suppliers for the items not provided in approved vendor list, along with supporting documents
- Projection of man-power requirement.

#### 1.7 Expediting of ordered material

- Modality and stages proposed for expediting ordered materials.

#### 1.8 Inspection of ordered material

- Details of agency including third party inspection agency responsible and nodal location of performance.
- Modality of inspection of items including proposal on stages of inspection by OWNER/PMC.

#### 1.9 Shipping / Transportation / Storage of ordered material



- Modality of Packaging and Material Handling.
- Modality of shipment.
- Modality of inland transport including road survey.
- Modality of Customs clearance.
- Modality of ware housing at SITE.
- Modality of handling Short Supply, Damaged and Lost items.
- Modality of handling spares and surplus materials.

#### 1.10 Sub – Contracting of Field Activities

- Proposed areas to be sub contracted and list of proposed sub-contractors
- Modality of technical acceptance of sub-contractors.



#### 1.11 Construction Work

- Proposed Health, Safety and Environment procedures and modality of their implementation.
- Modality of handling accidents and rehabilitation of affected personnel.
- Modality of obtaining statutory clearances.
- Projection of man-power requirement and identification of source.
- Modality of Lodging, Boarding and Transportation of construction personnel.
- Mobilization of Construction equipment, Tools and Tackles and their source.
- Modality of as-built documentation and transfer of such documents to OWNER/PMC.
- Modality of handing over operating manuals to OWNER/PMC.

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### 1.12 Commissioning of Installed Facilities

- Proposed formalities and documentation at various stages, leading to
- MECHANICAL COMPLETION
- Modality of mobilizing and engaging vendor representatives.
- Projection of skilled man-power requirement and identification of source.



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### Annexure – 1

Interface between Civil Contractors (Contractor: B) & Other Contractors

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- 1) All storm water drains along with PCC Covers are by Civil Contractors.
- 2) All rain water drained from the building roof (rain water harvesting) shall be led to nearest ground water recharge pit by civil contractor at suitable location to be approved by consultant.
- 3) Fire Protection (except the pumps) including portable fire extinguishers as per local regulation and TAC (Tariff Advisor committed) of all buildings shall be designed, supplied, erected & installed/commissioned by Civil Contractor. The Contractor shall be provided with one piping terminal point near each building (within 2 m from building of suitable size; the details of piping terminal point such as pressure, water flow rate etc. shall be provided by Consultant during the contract stage).
- 4) All the pipe sleeves of the underground sumps shall be designed, supplies, erected by the Civil contractor. For number / sizes of such pipe sleeves the relevant P&IDs shall be referred.
- 5) All Plumbing and Sewer drains within the building shall be designed, supplied, erected & commissioned by the Civil Contractor and connected suitably to the nearest storm water drain / sewer line of the plant and such interconnection locations shall be approved by the Consultant.
- 6) E3D Model
  - a) The civil contractor shall provide complete walk through E3D Model. Also there will be review of E3D model at 30%, 60% & 90% progress stage. The details of each stage model review shall be submitted by contractor for PMC review before actual review.
  - b) The model shall contain interior of each building, roads, outdoor lighting and drain details as minimum.
  - c) The details of panels etc inside the building shall be provided to the successful Bidder to carry out / build the E3D model.
  - d) The Contractor shall participate in E3D model review at each stage and implement the comments observed in each stage. Also Contractor shall hand over the native files of the model along with complete data base at each stage for overall integration (by others) of the E3D model of complete plant / project.
- 7) There will one terminal point for construction water for entire scope of work (location will be proposed by the Contractor & approved by the Consultant). Further distribution to any other area shall be in scope of the contractor.
- 8) The scope of work also includes to carry out the soil investigation (the no. and locations shall be decided during the contract stage) and same shall be basis of all design / engineering. The soil investigation as provided in the bid is for information and bidding purpose only.
- 9) The design, procurement, supply, installation, testing and commissioning of instruments like Detectors ( Heat, gas smoke type), CCTV, Plant communication system such as telephone, intercom, manual call point, access control etc. with suitable wiring/cabling and cable trays with supports to be installed inside Buildings such as control room, Admin building, Planning and invoice room, etc. shall be by other contractor. However LSTK-B contractor shall make space provision and access for mounting and installation of all these instruments and their accessories , Also the design , procurement, supply, installation, testing and commissioning of Detectors (heat & smoke type) related to clean agent fire extinguishing system located in various buildings is in LSTK-B contractor scope.
- 10) All electrical work on each RCC building such as Normal, emergency & DC lighting, small power, receptacles, cabling, ceiling fans, exhaust fans, concealed pipes/ducts etc. are to be designed, supplied, erected & installed/commissioned by Civil Contractor/LSTK-B contractor. The no. & type of such lights, small power, receptacles, and cabling, ceiling fans, exhaust fans, concealed pipes/ducts etc., will be



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decided during the contract stage by LSTK-B contractor

Other will provide suitable rated 415V, 3-phase; 4 wire AC or 230VAC, 1-Phase (as required) supply up to the SLDB / SPDB supplied by LSTK-B CONTRACTOR in the Substation/MCC room. Further distribution from SLDB to lighting, Sockets & receptacles, fans etc. by Civil Contractor / LSTK-B CONTRACTOR. The exact location of SLDB/SPDB shall be finalized by LSTK-B CONTRACTOR during detail engineering. The supply of cable up to SLDB/SPDB by other CONTRACTOR's.

- 11) LSTK-B CONTRACTOR shall provide with suitable number of Cutout / openings in floor/slab/wall of Substation/ MCC room & other RCC buildings for incoming and outgoing cable entry to all electrical panels install & supplied by Other CONTRACTOR in Substation/MCC room & other RCC buildings. The no. of Cutouts /openings, size, location shall be provided by other Contractor during the Contract stage.
- 12) LSTK-B CONTRACTOR shall provide wall opening / cutout for bus duct opening in substation room based on the input received from other contractor's through PMC. Such details will be provided during the contract stage.
- 13) The Earthing & Lightning Protection of all buildings shall be designed, supplied, erected & installed/commissioned by Civil Contractor/ LSTK-B CONTRACTOR.
- 14) Required number of earth pit for all the RCC building shall be provided by LSTK-B CONTRACTOR. Earthing strip shall be connected to the earth pits shall be provided by LSTK-B Contractor near the buildings. Further this earth pit are interconnected with main earth pit / grid by other CONTRACTOR's. The required number earth pit shall be decided during the contract stage.
- 15) Required no. of Vertical air termination rod, horizontal & vertical conductors of Lightning Protection with suitable supporting arrangement for all the RCC building shall be provided by LSTK-B CONTRACTOR and this Vertical conductors shall be connected to separate earth pit supplied by LSTK-B CONTRACTOR. Further this earth pit are interconnected with main earth pit / grid by other CONTRACTOR's. The required number earth pit shall be decided during the contract stage by LSTK-B CONTRACTOR.
- 16) There is no construction power facility at site. Construction power shall be arranged by LSTK-B CONTRACTOR by way of temporary DG sets along with required no. of DBs, Cables etc.
- 17) HVAC system of the building shall be part of LSTK-B CONTRACTOR scope. The scope includes design, supply, installed/ erected, tested and commissioning as per the relevant codes, standards and as well as per the local regulations. For type of HVAC system, please refer the relevant sections of the Bid. For HVAC system, other CONTRACTOR's will provide one power feeder of 415V AC supply in the Substation room. From this point LSTK-B CONTRACTOR shall design the further LV distribution based on the HVAC loads envisaged and distribute the supply for HVAC system. If any other supply other than 415V AC, LSTK-B CONTRACTOR shall derived internally by providing Step-up/down transformer, DB etc. The supply of cable up to LSTK-B CONTRACTOR supplied DB/panel in substation room by other CONTRACTOR's
- 18) LSTK-B CONTRACTOR shall provide all electrical load details, equipment list, schedules, heat dissipation details to PMC soon after the award of contract.
- 19) For all package units such as OWS, STP, Raw Water, clean agent system etc., other CONTRACTOR's will provide one power feeder of 415V AC, 50Hz, 3Ph or 230VAC, 50Hz,1Ph supply (as required) up to respective package unit panel.. From this point LSTK-B CONTRACTOR shall design the further LV distribution based on the loads envisaged and distribute the supply for respective package units. If any other supply other than 415V AC or 230V AC, LSTK-B CONTRACTOR shall derived internally by providing Step-up/down transformer, DB etc. The supply & laying of cable up to respective package unit's panel (at



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one point) by other CONTRACTOR's and termination by LSTK-B CONTRACTOR.

Respective LSTK CONTRACTOR shall be responsible for cable termination for their supplied equipment including suitable cable glands, cable lugs etc. If cable to be terminated for the equipment supplied by two other CONTRACTORS, each Contractor's ensure that their equipment termination box/ gland plate etc. suitable for exact cable size and shouldn't mismatch. The supply of cable shall be as defined in the scope of work.

- 20) LSTK-B CONTRACTOR shall co-ordinate / seek approval from PMC for finalizing the location of light fixtures (such as type / no. etc.) inside the Substation room / Admin & Control room to avoid light fixtures mounting directly above the Switchgear / other panels.
- 21) PMC shall provide the foundation drawing of Transformers, Diesel Generators and High mast light to LSTK-B Contractor to Complete the Civil foundation work for the same. Interface with All package units (HVAC, OWS, STP, Raw Water etc.)
- 22) Earthing and lightning protection within the package units including panel boards/DB by LSTK-B CONTRACTOR. LSTK-B CONTRACTOR shall provide two separate earth strip (diagonally opposite) up to 2m away from the outside battery limit of package unit. Further this earth strip shall be connected to main earth pit / grid by other CONTRACTOR



MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
<b>SECTION-A : EQUIPMENTS</b>				
<b>1</b>	<b>STATIC EQUIPMENT</b>			
1.1	PRESSURE VESSEL -CS (UP TO 25MM)	77	0	77
1.2	POLYMERISER REACTOR SYSTEM	1	0	1
1.3	PRESSURE VESSEL -CS (26-50MM)	50	0	50
1.4	PRESSURE VESSEL-CS (51-100MM)	22	0	22
1.5	PRESSURE VESSEL CS (>100MM)	9	0	9
1.6	PRESSURE VESSEL-SS (UP TO 25MM)	59	0	59
1.7	PRESSURE VESSEL-SS (FROM 26MM to 50 MM)	33	0	33
1.8	PRESSURE VESSEL SS (> 50 MM)	11	0	11
1.9	PRESSURE VESSEL -LOW ALLOY STEEL	26	0	26
1.10	PRESSURE VESSEL – LTCS	36	0	36
1.11	PRESSURE VESSEL-CS/LAS+SS CLAD	25	0	25
1.12	PRESSURE VESSEL MONEL CLADDED	13	0	13
1.13	PRESSURE VESSEL MONEL	4	0	4
1.14	CYCLONES (REACTOR & REGENERATOR)	0	0	0
1.15	DEMISTER-WIRE MESH TYPE	8	0	8
1.16	COLUMN/TOWER CARBON STEEL	31	0	31
1.17	COLUMN/TOWER STAINLESS STEEL	25	0	25
1.18	COLUMN/TOWER - LOW ALLOY STEEL	12	0	12
1.19	COLUMN/TOWER - LTCS	17	0	17
1.20	COLUMN/TOWER-CS/LAS+SS CLADDED	18	0	18
1.21	COLUMN - MONEL CLAD	11	0	11
1.22	CCR PLATFORMING REACTOR	3	0	3
1.23	REACTOR/SEPARATOR-SS CLAD 1.25 Cr 0.5 Mo	6	0	6
1.24	REACTOR/SEPARATOR-SS CLAD-2.25 Cr-1 Mo	4	0	4
1.25	REACTOR/SEPARATOR- CLAD 2.25Cr 1Mo 0.25V	2	0	2
1.26	COLUMN/TOWER-CS (51-100MM THK)	12	0	12
1.27	HEAT EXCHANGER CARBON STEEL	42	0	42
1.28	HEAT EXCHANGER-ROD AND PLATE TYPE BAFFLE	0	0	0
1.29	HEAT EXCHANGER STAINLESS STEEL	36	0	36
1.30	HEAT EXCHANGER LOW ALLOY STEEL	21	0	21
1.31	HEAT EXCHANGER LTCS	21	0	21
1.32	HEAT EXCHANGER 3.5 % NI STEEL	7	0	7
1.33	HEAT EXCHANGER-CS/LAS+SS CLAD	20	0	20
1.34	HEAT EXCHANGER( PLATES-WELDED)	9	0	9
1.35	HEAT EXCHANGERS (PLATE -GASKETTED)	8	0	8
1.36	HEAT EXCHANGER NF. (BRASS, CU-Ni)	19	0	19
1.37	AIR FIN COOLER (CS & SS)	13	0	13
1.38	AIR FIN COOLERS (DUPLEX SS)	4	0	4
1.39	SAMPLE COOLER	11	0	11
1.40	CRYOGENIC VAPORIZER-DIRECT STEAM HEATED	0	0	0
1.41	HEAT EXCHANGER (AL BRAZED FIN TYPE)	1	0	1
1.42	HEAT EXCH. MONEL / MONEL CLAD	6	0	6
1.43	HEAT EXCH. NICKEL / NICKEL CLAD	3	0	3
1.44	HEAT EXCH. HASTALLOY / HASTALLOY CLAD	4	0	4
1.45	ELECTRIC HEATER	3	0	3
1.46	HEAT EXCHANGER SS-DUPLEX	15	0	15
1.47	HEAT EXCHNAGER - ALLOY 625	7	0	7
1.48	LOUVERS FOR AIR FIN COOLERS	1	0	1
1.49	EJECTOR (ENGINEERED)	7	0	7
1.50	EJECTOR (UNENGINEERED)	3	0	3
1.51	SILENCER	8	0	8
1.52	VACUUM EJECTOR CONDENSER SYS(ENGINEERED)	2	0	2
1.53	VACUUM EJECTOR CONDNR SYS (UNENGINEERED)	3	0	3
1.54	DEMISTER-VANE TYPE	5	0	5
1.55	EXPANSION JOINT-METALLIC	6	0	6
1.56	AIR PRE-HEATER (CAST)	1	0	1
1.57	AIR PRE-HEATER (GLASS TUBE)	1	0	1
1.58	BURNER-CONVENTIONAL	2	0	2
1.59	BURNER-LOW NOx (PROCESS FIRED HEATER)	1	0	1
1.60	BURNER-SRU	1	0	1
1.61	AIR HEATER (DIRECT FIRED)	1	0	1
1.62	LNG VAPORIZER	0	0	0
1.63	TOWER PACKING: METALLIC (NON-PROPRIETARY)	6	0	6
1.64	TOWER PCKG & ASSTD INTL: METALLIC (PROPRTRY)	4	0	4
1.65	TOWER PKG:NON METALLIC(PROPRIETARY)	4	0	4
1.66	TOWER PACKING: CERAMIC	8	0	8
1.67	COLUMN TRAYS-HIGH CAPACITY	5	0	5

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
1.68	NON-PROP. PACKGS WITH CONVENL. INTERNALS	7	0	7
1.69	NON-PROP. PKG. HIGH QUAL. DISR & INL-UN. ENGIN	6	0	6
1.70	INLET FEED DEVICE (VANE TYPE)	3	0	3
1.71	SEPARATOR INTERNALS	5	0	5
1.72	REACTOR INTERNAL	11	0	11
1.73	SPRAY NOZZLE-PROCESS	9	0	9
1.74	SPRAY NOZZLE-TORCH OIL	2	0	2
1.75	TOWER PACKING: CARBON	3	0	3
1.76	TOWER PACKINGS: PVC & PP (NON-PROPRIETARY)	3	0	3
1.77	WASTE HEAT BOILERS	9	0	9
1.78	REFRACTORY FIRE BRICKS	23	0	23
1.79	INSULATING REFRACTORY CASTABLE	15	0	15
1.80	SULPHUR TRAPS	0	0	0
1.81	STORAGE TANKS, BULLETS & MOUNDED BULLETS	5	0	5
1.82	DEAERATOR	6	0	6
1.83	FILTER - BASKET	13	0	13
1.84	FILTER - CARTRIDGE/CANDLE	24	0	24
1.85	FILTER - PRESSURE	0	0	0
1.86	FURNACE	1	0	1
1.87	FLARE STACK COMPONENTS	4	0	4
1.88	MAIN COMBUSTN. CHAMBR PKG(SRU)-ENGINEERED	6	0	6
1.89	INCINERATOR PACKAGE FOR SRU	3	0	3
1.90	FIRE HEATERS	11	0	11
1.91	COLUMN / DRUM (SITE FABRICATED)	2	0	2
1.92	HAIRPIN EXCHANGER	6	0	6
1.93	SILOS	0	0	0
1.94	LOW FIN HEAT EXCHANGER	5	0	5
<b>2</b>	<b>ROTARY EQUIPMENT</b>		<b>0</b>	
2.1	PUMP-CENT.HOR(GPP)	22	0	22
2.2	PUMP-CENT.HOR(SPP)	13	0	13
2.3	PUMP-CENT.HOR(GWS)	20	0	20
2.4	PUMP-CENT.HOR(LCWS)	22	0	22
2.5	PUMP-CENT.HOR.(MOLTEN SULPHUR)	2	0	2
2.6	PUMP-CENT.VERT(GPP)	18	0	18
2.7	PUMP-CENT.VERT. BARREL TYPE(SPP)	12	0	12
2.8	PUMP-CENT.VERT.(GWS)	19	0	19
2.9	PUMP-CENT.VERT(LCWS)	18	0	18
2.10	PUMP-CENT.VERT.(MOLTEN SULPHUR)	2	0	2
2.11	PUMP-CENT. (BFW)	17	0	17
2.12	PUMP-CENT.SU.M(CRYO)	0	0	0
2.13	PUMP-CENT.H/V(FW)	7	0	7
2.14	PUMP-CENT.HOR.MULTI STAGE(SPP)	9	0	9
2.15	PUMP-CENT. (LOW CAPACITY HIGH HEAD)	1	0	1
2.16	PUMP-ROTARY.SCREW	12	0	12
2.17	PUMP-ROTARY.GEAR	9	0	9
2.18	PUMP-ROTARY.SL.VANE	3	0	3
2.19	PUMP-ROT.SCR.ARC(ES)	3	0	3
2.20	PUMP-ROTARY(LOBE)	4	0	4
2.21	PUMP-SLURRY.RECIPRO	0	0	0
2.22	PUMP-SLURRY.CENT.H/V	9	0	9
2.23	PUMP-RECIPRO (API 674)	10	0	10
2.24	PUMP-A.F.PROPELLER	4	0	4
2.25	PUMP - AIR OPERATED DIAPHRAGM	5	0	5
2.26	EDUCTOR	3	0	3
2.27	COMP-RECIPRO(SPP)	9	0	9
2.28	COMP-RECIPRO(PIANS)	11	0	11
2.29	COMP-RECIPRO(DIAPHRAGM)	2	0	2
2.30	COMP-RECIPRO(LABYRINTH)	1	0	1
2.31	COMP. HIGH PRESSURE(PIANS)	1	0	1
2.32	COMP-CENT.(SPP)	7	0	7
2.33	COMP-ROT.LIQUID RING/VP(PS)	10	0	10
2.34	COMP-ROT.LIQUID RING / VP(AS)	9	0	9
2.35	MECH.SEAL FOR PUMPS/AGITATORS	6	0	6
2.36	MECHANICAL SEALS (API 682 TYPE & DRY GAS SEAL)	6	0	6
2.37	COMP-ROT.SCREW(PS)	8	0	8
2.38	COMP-ROT.SCREW(PIAS)	6	0	6
2.39	COMP-EXPANDER(PRO)	1	0	1
2.40	COMP-EXPANDER(AIR)	1	0	1
2.41	TURBINE-STEAM(GP)	8	0	8
2.42	TURBINE-STEAM(SP)	10	0	10
2.43	TURBINE-GAS	6	0	6
2.44	FAN-ID/FD	16	0	16
2.45	FAN-AXIAL FLOW	2	0	2
2.46	BLOWER-TURBO CENTRIFUGAL	16	0	16
2.47	POSITIVE DISPLACEMENT PUMPS RECIPROCATING - (CONTROLLED)	10	0	10
2.48	AGITATOR	13	0	13
2.49	Centrifugal Pumps - Sealless General Service	1	0	1
2.50	Special Purpose Gear Unit	1	0	1
2.51	ONE WAY CLUTCH	0	0	0
2.52	FLEXIBLE METALLIC COUPLING	4	0	4
2.53	Centrifugal Pumps - Non Metallic / Lined	6	0	6
2.54	VACUUM PUMPS	5	0	5
2.55	PUMP-CRITICAL TEMPERATURE COLD SERVICE	0	0	0
<b>3</b>	<b>FIRE FIGHTING EQUIPMENT</b>		<b>0</b>	
3.1	FIRE EXTINGUISHERS (PORTABLE)	17	0	17
3.2	SAFETY SHOWER & EYE WASHER	6	0	6
3.3	CLEAN AGENT SYSTEM	12	0	12
3.4	DELUGE VALVE AND HEAT DETECTORS	7	0	7
3.5	HOSE DELIVERY	9	0	9

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
3.6	FIRE HOSE ACCESSORIES	11	0	11
3.7	FOAM MAKER	4	0	4
3.8	VAPOUR SEAL CHAMBER	3	0	3
3.9	BRANCH PIPES	11	0	11
3.10	INLINE INDUCTORS	4	0	4
3.11	WATER SPRINKLER	5	0	5
3.12	FIXED FOAM SYSTEM (FOAM PACKAGE)	3	0	3
3.13	HYDRANT/LANDING VALVE	12	0	12
3.14	SPRAY NOZZLE- FIRE FIGHTING	4	0	4
3.15	AUTO DCP EXTINGUISHING SYSTEM	2	0	2
3.16	HV/MV SPRAY SYSTEMS	12	0	12
3.17	RIM SEAL FIRE PROTECTION SYSTEM	2	0	2
3.18	WATER MONITOR	14	0	14
3.19	WATER CUM FOAM MONITOR	9	0	9
3.20	LONG RANGE MONITOR	6	0	6
3.21	REMOTE CONTROLLED MONITORS	6	0	6
<b>4</b>	<b>HVAC &amp; MISCELLANEOUS</b>			
4.1	DESALTER PACKAGE (COALESCER - ELECTROSTATIC)	0	0	0
4.2	VACUUM EJECTOR CONDENSER SYS(ENGINEERED)	2	0	2
4.3	VACUUM EJECTOR CONDENSER SYS(UNENGINEERED)	1	0	1
4.4	DOSING PACKAGE(SKID MOUNTED)	7	0	7
4.5	PRU (Propylene Recovery Unit) DRYER	0	0	0
4.6	PNEUMATIC CONVEYING PACKAGE	1	0	1
4.7	EXTRUDER / PELLETIZER PACKAGE	0	0	0
4.8	CATALYST, ADDITIVES UNLOADING PACKAGE	0	0	0
4.9	LOSS-IN WEIGHT FEEDER PACKAGE / SCREW CONVEYOR	0	0	0
4.10	ROTARY FEEDER	0	0	0
4.11	BAGGING PLANT	0	0	0
4.12	VACUUM CLEANING SYSTEMS	0	0	0
4.13	DRIER-AIR/G	16	0	16
4.14	FILTER BAG TYPE	5	0	5
4.15	PLANT & INSTRUMENT AIR COMPRESSOR PACKAGE	2	0	2
4.16	COOLING TOWER	5	0	5
4.17	NITROGEN PLANT (CRYOGENIC)	9	0	9
4.18	DM WATER & CONDENSATE POLISHING UNIT	4	0	4
4.19	EFFLUENT TREATMENT PACKAGE	11	0	11
4.20	EMERGENCY DIESEL GENERATOR	6	0	6
4.21	CRANE-H.O.T / E.O.T /ELECTRIC HOISTS	30	0	30
4.22	REFRIGERATION SYSTEM- VAPOUR ABSORPTION	5	0	5
4.23	VENTILATION & PRESSURISATION SYSTEM	12	0	12
4.24	AIR CONDITIONING SYSTEM - PACKAGE UNIT	7	0	7
4.25	AIR CONDITIONING SYSTEM - CENTRAL	8	0	8
4.26	CHILLER PACKAGE /CONDENSING UNIT	9	0	9
4.27	AIR HANDLING UNIT	11	0	11
4.28	CHEMICAL FILTER (HVAC)	4	0	4
4.29	CENTRIFUGAL FAN (HVAC)	7	0	7
4.30	EXHAUST AXIAL FAN (HVAC)	3	0	3
4.31	SPLIT / WINDOW AC	11	0	11
4.32	AIR FILTERS (HVAC)	5	0	5
4.33	3 WAY MODULATING VALVE FOR HVAC APPLICATION	5	0	5
4.34	FIRE DAMPER	6	0	6
4.35	VOLUME CONTROL DAMPERS / LOUVERS	6	0	6
4.36	GRILL / DIFFUSER FOR AIR CONDITIONING SYSTEM	8	0	8
4.37	DAMPER ACTUATOR	4	0	4
4.38	MODULATING DAMPER ACTUATOR	5	0	5
4.39	G.I. SHEETS (HVAC DUCTING)	3	0	3
4.40	REFRIGERATION SYSTEM - PROCESS	6	0	6
4.41	ELECTRONIC WEIGH SCALE	5	0	5
4.42	PSA HYDROGEN PLANT	2	0	2
4.43	STATIC MIXER	7	0	7
4.44	COALESCER	6	0	6
4.45	FEED FLTR AUTO BACK WASH HYD.CRAKR DHDT	2	0	2
4.46	FILTER- ROTARY	1	0	1
4.47	FILTER-VACUUM	0	0	0
4.48	QUICK OPENING CLOSURE(FILTER/SEPARATOR)	3	0	3
4.49	LIFTS (PASSENGER & GOODS)	5	0	5
4.50	LOADING/UNLOADING ARM	5	0	5
4.51	TOWER PACKING CARBON	3	0	3
4.52	TOWER PACKINGS;PVC&PP(NON-PROPRIETRY)	3	0	3
4.53	SPIRAL HEAT EXCHANGER	2	0	2
4.54	HASTOLLOY SOLID REACTORS	3	0	3
4.55	DUPLEX SOLID REACTORS	3	0	3
<b>SECTION-B : BULK PIPING ITEMS</b>				
<b>1</b>	<b>PIPING &amp; FITTINGS</b>			
1.1	NON STANDARD FORGINGS-CARBON STEEL	24	0	24
1.2	NON STANDARD FORGINGS-ALLOY STEEL	15	0	15
1.3	NON STANDARD FORGINGS- STAINLESS STEEL	18	0	18
1.4	LINING (RUBBER)	10	0	10
1.5	LINING-FRP(TANKS & VESSELS)	11	0	11
1.6	PVDF/FRP EQUIPMENTS	8	0	8
1.7	ROCK WOOL INSULATION PRODUCTS	14	0	14
1.8	GLASS WOOL INSULATION PRODUCTS	1	0	1
1.9	CALCIUM SILICATE PRODUCTS	2	0	2
1.10	PU FOAM & POLYISOCYANURATE FOAM	3	0	3
1.11	LINE PIPES (HELICAL SAW)	7	0	7
1.12	LINE PIPES ERW	13	0	13
1.13	LINE PIPES SEAMLESS	5	0	5
1.14	LONG RADIUS BENDS	2	0	2
1.15	FLANGE- CARBON STEEL	32	0	32

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
1.16	FLANGE-ALLOY STEEL	20	0	20
1.17	FLANGE-STAINLESS STEEL	26	0	26
1.18	FLANGES-EXOTIC	1	0	1
1.19	COMPACT FLANGE	0	0	0
1.20	CLAMP CONNECTOR	0	0	0
1.21	SIGHT FLOW INDICATORS (SIGHT GLASSES)	8	0	8
1.22	PIPE-CARBON STEEL TO INDIAN STANDARDS	35	0	35
1.23	PIPES & TUBULARS TO A.P.I.STANDARDS	17	0	17
1.24	PIPE/TUBE-C S (SEAMLESS)TO ASTM STDS	23	0	23
1.25	PIPE-CARBON STEEL(WELDED)TO ASTM STDS	7	0	7
1.26	PIPE/TUBE- A S (SEAMLESS)TO ASTM STDS	14	0	14
1.27	PIPE/TUBE-SS(S.LESS & WELDED)TO ASTM STD	36	0	36
1.28	PIPE/TUBE-S.LESS(DUPLEX/SUPER DUPLEX SS)	5	0	5
1.29	PIPE / FITTINGS -PTFE LINED	6	0	6
1.30	PIPES -SS WELDED TO A 358	6	0	6
1.31	DUPLEX/SUPER DUPLEX SS WELDED PIPES	0	0	0
1.32	PIPES- INDIAN STOCKIST	17	0	17
1.33	PIPE-CLADDED	0	0	0
1.34	PIPE-WELDED ALLOY STEEL	2	0	2
1.35	PIPE-PVDF/FRP	3	0	3
1.36	PIPE-FRP	12	0	12
1.37	PIPE-GRE	0	0	0
1.38	PIPE-TITANIUM	0	0	0
1.39	PIPING SYSTEM-CLAD(SHOP FABRICATED)	7	0	7
1.40	PRE-FABRICATED PIPING SPOOL	2	0	2
1.41	PIPING SYSTEM-GRE/GRP	1	0	1
1.42	TUBE-WELDED CARBON STEEL	1	0	1
1.43	TUBE-WELDED ALLOY STEEL	1	0	1
1.44	TUBE-TITANIUM	1	0	1
1.45	TUBE COPPER AND ALLOYS	6	0	6
1.46	FITTINGS-FOREIGN AGENTS/STOCKIST/TRADERS	1	0	1
1.47	FITTING BLOCK FORGED-CARBON STEEL	16	0	16
1.48	FITTING BLOCK FORGED-ALLOY STEEL	11	0	11
1.49	FITTING BLOCK FORGED-STAINLESS STEEL	13	0	13
1.50	WELDOLETS/SOCKOLETS/ELBOWLET	11	0	11
1.51	FITTINGS BLOCK FORGED-EXOTIC MATLS.	2	0	2
1.52	FITTINGS FROM SEAMLESS PIPE-CARBON STEEL	24	0	24
1.53	FITTINGS FROM SEAMLESS PIPE- ALLOY STEEL	18	0	18
1.54	FITTINGS FROM SEAMLESS PIPE- S.S.	21	0	21
1.55	FITTINGS FROM S/LESS PIPES-EXOTIC MATLS	4	0	4
1.56	FIITINGS CROSS-FROM SEAMLESS PIPES	2	0	2
1.57	FITTING-GRE	0	0	0
1.58	FITTINGS TO IS-1239	8	0	8
1.59	FITTINGS FABRICATED FROM PLATE - C.S.	16	0	16
1.60	FITTINGS FABRICATED FROM PLATE - A.S.	13	0	13
1.61	FITTINGS FABRICATED FROM PLATE - S.S.	13	0	13
1.62	FITTINGS FAB. FROM PLATES-EXOTIC MATLS.	2	0	2
1.63	FITTINGS PIPE CAP (C S)	19	0	19
1.64	FITTINGS PIPE CAP (A S)	14	0	14
1.65	FITTINGS PIPE CAP (S S)	16	0	16
1.66	FITTINGS PIPE CAP (EXOTIC)	0	0	0
1.67	GASKET (IMPORTED)	0	0	0
1.68	GASKET NON-ASBESTOS	10	0	10
1.69	GASKET METALLIC & SOFT IRON	6	0	6
1.70	GASKET METAL JACKETED	7	0	7
1.71	GASKET SPIRAL WOUND	12	0	12
1.72	HOSE- RUBBER (STEAM/GAS/AIR/WATER/CHEM.)	9	0	9
1.73	HOSE METALLIC FLEXIBLE SS	10	0	10
1.74	FASTENERS	23	0	23
1.75	FASTENERS: HIGH TEMPERATURE TO A 453	3	0	3
1.76	EXPANSION JOINTS (RUBBER)	6	0	6
1.77	SPRING SUPPORTS	10	0	10
1.78	STRAINERS	0	0	0
1.79	STRAINERS (FAB/CAST/FORGED)	9	0	9
1.80	STEAM TRAPS-BUCKET/TH.DYN/TH.STAT/FLOAT	7	0	7
1.81	COMPACT STEAM TRAPING ASSY+SS/CR MANFOLD	3	0	3
1.82	STEAM TRAPS	6	0	6
1.83	STEAM SUPPLY / COND. RECOVERY MANIFOLD	3	0	3
1.84	VALVE GATE (THRU CONDUIT) (AP16D)	1	0	1
1.85	VALVE GATE- (FOREIGN SUPPLIERS)	5	0	5
1.86	VALVE GATE CAST	37	0	37
1.87	VALVE GATE CRYOGENIC CAST	11	0	11
1.88	VALVE GATE FORGED	28	0	28
1.89	VALVE GATE CRYOGENIC FORGED	10	0	10
1.90	VALVE GATE GUNMETAL/BRASS/BRONZE	5	0	5
1.91	VALVE GATE (MOTOR OPERATED)	19	0	19
1.92	VALVE KNIFE GATE	5	0	5
1.93	VALVE GLOBE- (FOREIGN SUPPLIERS)	4	0	4
1.94	VALVE GLOBE CAST	31	0	31
1.95	VALVE GLOBE CRYOGENIC CAST	11	0	11
1.96	VALVE GLOBE FORGED	27	0	27
1.97	VALVE GLOBE CRYOGENIC FORGED	8	0	8
1.98	VALVE GLOBE GUNMETAL/BRASS/BRONZE	4	0	4
1.99	Y TYPE GLOBE & STOP CHECK VALVES	11	0	11
1.100	VALVE- BLOWDOWN (Straight/Anale Pattern)	8	0	8
1.101	VALVE CHECK- (FOREIGN SUPPLIERS)	5	0	5
1.102	VALVE CHECK CAST	35	0	35
1.103	VALVE CHECK CRYOGENIC CAST	10	0	10
1.104	VALVE CHECK FORGED	28	0	28
1.105	VALVE CHECK CRYOGENIC FORGED	5	0	5
1.106	VALVE CHECK GUNMETAL/BRASS/BRONZE	6	0	6

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
1.107	VALVE CHECK (DUAL PLATE TYPE)	9	0	9
1.108	VALVE CHECK EXCESS FLOW	1	0	1
1.109	VALVE-NON SLAM CHECK (NOZZLE)	2	0	2
1.110	VALVE BALL- (FOREIGN SUPPLIERS)	6	0	6
1.111	VALVE BALL CRYOGENIC	4	0	4
1.112	VALVE BALL NON FIRE SAFE-CAST CARBON STEEL	34	0	34
1.113	VALVE BALL NON FIRE SAFE-CAST STAINLESS STEEL	26	0	26
1.114	VALVE BALL FIRE SAFE-CSS	27	0	27
1.115	VALVE BALL FIRE SAFE-CSS	21	0	21
1.116	VALVE BALL - FIRE SAFE (FORGED)	10	0	10
1.117	VALVE BALL NON FIRE SAFE-FORGED CARBON STEEL	13	0	13
1.118	VALVE BALL NON FIRE SAFE-FORGED STAINLESS STEEL	13	0	13
1.119	VALVE BALL JACKETED - NON FIRE SAFE	2	0	2
1.120	VALVE BALL MULTIPORT NON FIRE SAFE	2	0	2
1.121	VALVE BUTTERFLY- (FOREIGN SUPPLIERS)	1	0	1
1.122	VALVE BUTTERFLY - CAST CARBON STEEL	22	0	22
1.123	VALVE BUTTERFLY -CAST STAINLESS STEEL	17	0	17
1.124	VALVE BUTTERFLY -CAST ALLOY STEEL	5	0	5
1.125	VALVE BUTTERFLY (PTFE SEATED)	9	0	9
1.126	VALVE BELLOW SEALED	8	0	8
1.127	VALVE-BUTTERFLY (TRIPLE OFFSET)	9	0	9
1.128	VALVE DIAPHRAGM-(FOREIGN SUPPLIERS)	1	0	1
1.129	VALVE DIAPHRAGM CAST CARBON STEEL	3	0	3
1.130	VALVE DIAPHRAGM CAST STAINLESS STEEL	3	0	3
1.131	VALVE PLUG- (FOREIGN SUPPLIERS)	0	0	0
1.132	VALVE PLUG CONCENTRIC- CAST CARBON STEEL (F.S & N.F.S)	8	0	8
1.133	VALVE PLUG CONCENTRIC -CAST STAINLESS STEEL (F.S & N.F.S)	6	0	6
1.134	VALVE PLUG CONCENTRIC-CAST ALLOY STEEL (F.S. & N.F.S.)	2	0	2
1.135	VALVE PISTON (GLANDLESS)	4	0	4
1.136	VALVE PLUG DBB EXPANDING TYPE	1	0	1
1.137	VALVE PLUG MULTIPORT - NON FIRE SAFE	2	0	2
1.138	VALVE NEEDLE	7	0	7
1.139	VALVE DOUBLE DISC GATE	1	0	1
1.140	VALVE SLIDE	0	0	0
1.141	VALVE SHUT DOWN	2	0	2
1.142	VALVE CRYOGENIC SS /LTCS	3	0	3
1.143	VALVE SPECIAL CATEGORY	7	0	7
1.144	VALVE TANK BOTTOM/FLUSH BOTTOM	2	0	2
1.145	HASTELLOY PIPING COMPONENTS	11	0	11
1.146	TITANIUM PIPING COMPONENTS	11	0	11
1.147	LOW PRESSURE DROP BALL CHECK VALVE	0	0	0
1.148	EXPANSION JOINT (METAL)	4	0	4
1.149	EXPANSION JOINT (PRESSURE BALANCE)	1	0	1
1.150	BIRD SCREEN	3	0	3
1.151	EYE WASHER & SAFETY SHOWER	6	0	6
1.152	INSULATING GASKET	2	0	2
1.153	POST INDICATOR VALVES	3	0	3
1.154	COPPER TUBING	8	0	8
1.155	3-WAY VALVE	5	0	5
1.156	LTCS (LOW TEMPERATURE CARBAN STEEL) FLANGE			
SECTION-C : ELECTRICAL				
5	STATIC EQUIPMENT			
5.1	SWITCHBOARD-HV (Indoor) WITH VCB BREAKER (complete)	8	0	8
5.2	SWITCHBOARD-MV: MCC/ASB/LDB-FIXED TYP	7	0	7
5.3	SWITCHBOARD-M.V. : MCC/PCC/PMCC-DRAWOUT	6	0	6
5.4	SWITCHBOARD FIXED TYPE FOR PACKAGE EQUIPTS	12	0	12
5.5	OUTDOOR SWITCHYARD PACKAGE	11	0	11
5.6	GIS upto 245kV (Indoor)	6	0	6
5.7	RELAY & CONTROL PANEL	8	0	8
5.8	PROTECTION RELAY (NUMERICAL TYPE)	8	0	8
5.9	AUX. RELAYS	9	0	9
5.10	BIMETAL RELAYS	6	0	6
5.11	(BASE+ADVANCE) ELECTRIC CONTROL SYSTEM (ECS)	8	0	8
5.12	INSTRUMENT TRANSFORMERS - CT & PT (HV)	8	0	8
5.13	INSTRUMENT TRANSFORMERS - CT & PT (MV)	9	0	9
5.14	CIRCUIT BREAKER SF-6 /OUT DOOR EHV	6	0	6
5.15	VACCUUM CIRCUIT BREAKERS	8	0	8
5.16	AIR CIRCUIT BREAKER	6	0	6
5.17	ISOLATORS / LOAD BREAK SWITCHES (HV INDOOR)	3	0	3
5.18	CONTACTOR	7	0	7
5.19	MCCB	6	0	6
5.20	TIMERS	7	0	7
5.21	PUSH BUTTON & INDICATING LAMPS (Independent supply / Retrofitting / Alteration / Modification work)	9	0	9
5.22	MCB (Independent supply / Retrofitting / Alteration / Modification work)	9	0	9
5.23	HEAVY DUTY SWITCHES (Independent supply / Retrofitting / Alteration / Modification work)	4	0	4
5.24	CONTROL SWITCHES FOR BREAKER (Independent supply / Retrofitting / Alteration / Modification work)	3	0	3
5.25	CONTROL SWITCHES / SELECTOR SWITCHES (Independent supply / Retrofitting / Alteration / Modification work)	7	0	7
5.26	EARTH LEAKAGE CIRCUIT BREAKER (Independent supply / Retrofitting / Alteration / Modification work)	7	0	7
5.27	FUSES (Independent supply / Retrofitting / Alteration / Modification work)	6	0	6
5.28	TRANSFORMERS-POWER-ABOVE 5MVA	9	0	9
5.29	TRANSFORMERS-DISTRIBUTION-UPTO 5MVA	12	0	12
5.30	TRANSFORMER-DISTRIBUTION (DRY TYPE)	14	0	14
5.31	DRY TYPE LIGHTING TRANSFORMER (LV)	13	0	13
5.32	Neutral Grounding Resistors/Transformers (NGR / NGT)	5	0	5
5.33	BUS DUCT (HV)	10	0	10

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
5.34	BUS DUCT (MV)	12	0	12
5.35	CAPACITOR BANK (MV/HV)	10	0	10
5.36	BATTERIES-LEAD ACID (FLOODED)	3	0	3
5.37	BATTERY CHARGERS	8	0	8
5.38	BATTERIES-LEAD ACID (VRLA)	5	0	5
5.39	BATTERIES-NICKLE CADMIUM	2	0	2
5.40	UPS SYSTEM	8	0	8
5.41	A.C. VARIABLE SPEED DRIVE	18	0	18
5.42	LIGHTNING ARRESTORS	6	0	6
5.43	EARTHING & LIGHTNING PROTECTION	4	0	4
5.44	MOTOR-INDUCTION-HV (INDUSTRIAL. TYPE SAFE AREA, EXD/EXE)	12	0	12
5.45	MOTOR-INDUCTION (HV INCREASED SAFETY ZN2, FLP/PRESSURIZED)	8	0	8
5.46	MOTOR INDUCTION-MV (INDL.TYPE SAFE AREA, EXD/EXE)	9	0	9
5.47	MOTOR-INDUCTION- MV (ZONE 2-TYPE E & N, FLP/PRESSURIZED)	8	0	8
5.48	MOTOR-INDUCTION-MV (FLAME PROOF)	9	0	9
5.49	SYNCHRONOUS MOTOR	7	0	7
5.50	MOTORS - IMPORTED	0	0	0
5.51	SYNCHRONOUS GENERATORS (HV)	5	0	5
5.52	DG SET / EMERGENCY GENERATORS (MV)	18	0	18
5.53	ACTUATORS-MOV	9	0	9
5.54	CONTROL STATIONS- WEATHERPROOF	11	0	11
5.55	CONTROL STATIONS / PANEL-FLAME PROOF	14	0	14
5.56	JUNCTION BOXES (FLAME PROOF)	12	0	12
5.57	LIGHTING FIXTURE & ACCESSORIES-HAZARDOUS	15	0	15
5.58	LIGHTING & POWER PANELS (FLP)	7	0	7
5.59	PLUGS/SOCKETS/HANDLAMPS (FLAME PROOF)	9	0	9
5.60	HIGH MAST LIGHTING SYSTEM	3	0	3
5.61	LIGHTING FIXTURES (SAFE AREA)	7	0	7
5.62	LIGHTING & POWER PANELS (SAFE AREA)	14	0	14
5.63	EXTRA HIGH VOLTAGE -XLPE CABLES	8	0	8
5.64	CABLES-HIGH VOLTAGE-XLPE (FRLS)	14	0	14
5.65	MV POWER CABLE - FIRE SURVIVAL (FRLS)	9	0	9
5.66	CABLES-MEDIUM VOLTAGE-POWER-XLPE & PVC	21	0	21
5.67	CABLES- CONTROL-XLPE & PVC	29	0	29
5.68	CABLES-FIRE ALARM AND COMMN.	7	0	7
5.69	CONTROL CABLE - FIRE SURVIVAL (FRLS)	9	0	9
5.70	CABLES COMMUNICATION (JELLY FIELD)	10	0	10
5.71	PLANT COMMUNICATION (PA / PAGING) SYSTEM	2	0	2
5.72	TELEPHONE (Instrument / EPABX)	10	0	10
5.73	TETRA SYSTEM	5	0	5
5.74	FIRE ALARM SYSTEM	8	0	8
5.75	ELECTRICAL HEAT TRACING SYSTEM	8	0	8
5.76	CATHODIC PROTECTION SYSTEM	10	0	10
5.77	CABLE TRAYS GI /SS (Perforated /Ladder) & CABLE DUCTS	14	0	14
5.78	CABLE TRAYS FRP	4	0	4
5.79	CABLE JOINTS & TERMINATION KITS	7	0	7
5.80	CABLE GLANDS (FOR HAZARDOUS AREA)	10	0	10
5.81	LIGHTING POLES (GALVANISED)	3	0	3
5.82	NIFPS (NITROGEN INJECTED FIRE PROTECTION SYSTEM)	1	0	1
5.83	DC MOTORS	0	0	0
<b>SECTION-D : INSTRUMENTATION ITEMS</b>				
6.1	TUBE FITTINGS	18	0	18
6.2	INSTRUMENT TUBING	6	0	6
6.3	MACHINE MONITORING SYSTEMS	3	0	3
6.4	THERMO COUPLE EXTN.CABLES	8	0	8
6.5	SIGNAL CABLES	16	0	16
6.6	OPTICAL FIBRE CABLE & ASSOC.ITEM	14	0	14
6.7	FIELD BUS SIGNAL CABLES	4	0	4
6.8	SIGNAL CABLE - FIRE RESISTANT	12	0	12
6.9	SPECIAL LEVEL INSTRUMENTS (TUNNING FORK)	7	0	7
6.1	COPPER TUBES (COATED, BARE)	8	0	8
6.11	CORROSION MONITORS	4	0	4
6.12	CONTROL VALVE POSITIONER / SMART POSITIONER	5	0	5
6.13	SOLENOID VALVES	7	0	7
6.14	CONTROL VALVES	19	0	19
6.15	PRESSURE RELIEF VALVE	13	0	13
6.16	INSTRUMENT VALVES & MANIFOLDS	21	0	21
6.17	TANK PR. PROTECT. DEVICES / FLAME ARRESSTER	6	0	6
6.18	ON-OFF VALVES	19	0	19
6.19	SELF ACTUATED PR. CONTROL VALVES	10	0	10
6.20	SPECIAL CONTROL VALVES (BUTTERFLY)	16	0	16
6.21	DESUPERHEATERS & PRDS	16	0	16
6.22	PR. REGULATOR & SLAM SHUT VALVES	3	0	3
6.23	PILOT OPERATED SAFETY VALVES	10	0	10
6.24	PROCESS STREAM ANALYSERS (O2-ZIRCONIA)	6	0	6
6.25	GAS CHROMATOGRAPH (PROCESS)	6	0	6
6.26	STACK GAS ANALYSER SYSTEMS (EXTRACTIVE)	8	0	8
6.27	AMBIENT AIR ANALYSER SYSTEMS	3	0	3
6.28	PROCESS STREAM ANALYSER (IR/UV)	7	0	7
6.29	PROCESS STREAM ANALYSER (H.C.-TCD/FID)	5	0	5
6.30	ANALYSER SYSTEMS	8	0	8
6.31	STACK GAS ANALYSER SYSTEMS (INSITU)	7	0	7
6.32	STACK GAS ANALYSERS (SPM)	7	0	7
6.33	ORIFICE PLATES & FLANGES	12	0	12
6.34	FLOW ELEMENTS : (VENTURI, FLOW NOZZLES)	9	0	9
6.35	TEMP. ELEMENTS, THERMOWELLS	13	0	13
6.36	SKIN THERMOCOUPLES	8	0	8
6.37	SPECIAL TEMPERATURE ELEMENTS	5	0	5
6.38	SURGE RELIEF VALVE	1	0	1
6.39	SPECIAL CONTROL VALVES (PLUG)	1	0	1

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
6.40	SPECIAL CONTROL VALVE ( FLUSH BOTTOM)	2	0	2
6.41	WATER QUALITY ANALYSERS (SILICA)	5	0	5
6.42	WATER QUALITY ANALYSER-DISSOLVED OXYGEN	9	0	9
6.43	WATER QUALITY ANALYSER SYSTEMS	7	0	7
6.44	PROCESS STREAM ANALYSER-MOISTURE/ DEW PT	2	0	2
6.45	PROCESS STREAM ANALYSER(PARAMAGNETIC-O2)	7	0	7
6.46	WATER QUALITY ANALYSERS (PH)	9	0	9
6.47	PROCESS STREAM ANALYSER(HYDROGEN-TCD)	4	0	4
6.48	PRODUCT QUALITY ANALYSER SYSTEMS	6	0	6
6.49	WATER QUALITY ANALYSERS (TURBIDITY)	7	0	7
6.50	WATER QUALITY ANALYSERS (CONDUCTIVITY)	9	0	9
6.51	PROCESS STREAM ANALYSER(IR/UV)	6	0	6
6.52	SO2 ANALYSER	2	0	2
6.53	WATER QUALITY ANALYSER-OIL IN H2O TOC/TC	4	0	4
6.54	WATER QUALITY ANALYSER-OIL IN H2O DISLVD	1	0	1
6.55	WATER QUALITY ANALYSERS(CHLORINE)	5	0	5
6.56	FLOW ELEMENTS-WEDGE TYPE	2	0	2
6.57	GAS DETECTION SYSTEMS	11	0	11
6.58	FIRE & GAS DETECTION SYSTEMS	6	0	6
6.59	PRODUCT QUALITY ANALYSERS (NIR)	4	0	4
6.60	PRODUCT QUALITY ANALYSERS (VISCOSITY)	2	0	2
6.61	PRODUCT QUALITY ANALYSERS (DENSITY)	2	0	2
6.62	PRODUCT QUALITY ANALYSERS (FLASH POINT)	3	0	3
6.63	PRODUCT QUALITY ANALYSERS (DISTILLATION)	1	0	1
6.64	PRODUCT QUALITY ANALYSER (SULPHUR)	2	0	2
6.65	STACK GAS ANALYSERS (O2-ZIRCONIA) + CO + CO2	5	0	5
6.66	ANALYSER-DENSITY/SP. GRAVITY (NUCLEONIC)	4	0	4
6.67	ANALYSER-DENSITY/SP GRAVITY (VIB CYLINDR)	3	0	3
6.68	ANALYSER-DENSITY/SP GRAVITY (CORIOLIS)	5	0	5
6.69	VEGA INDIA LEVEL & PRESSURE MEASUREMENT PVT LTD	2	0	2
6.70	WOBBE METERS	0	0	0
6.71	PROGRAMMABLE LOGIC CONTROLLERS (DMR)	9	0	9
6.72	PROGRAMMABLE LOGIC CONTROLLERS (TMR/QMR, SIL3 CERTIFIED)	7	0	7
6.73	PRESSURE GAUGES	13	0	13
6.74	DRAFT GAUGES	4	0	4
6.75	DIFFERENTIAL PRESSURE GAUGES	8	0	8
6.76	TEMP.GAUGES(BI METALLIC FILLED SYSTEM)	11	0	11
6.77	VARIABLE AREA FLOW METERS(I,T)	12	0	12
6.78	MAGNETIC FLOW METERS	7	0	7
6.79	TERMINAL AUTOMATION SYSTEM	6	0	6
6.80	POSITIVE DISPLACEMENT METERS	4	0	4
6.81	ULTRASONIC FLOW METER	10	0	10
6.82	VORTEX FLOW METER	7	0	7
6.83	TURBINE FLOW METERS	6	0	6
6.84	MASS FLOW METERS	11	0	11
6.85	GAUGE GLASSES & COCKS	11	0	11
6.86	DRUM LEVEL INSTRUMENTS (ELECTRONIC)	4	0	4
6.87	DRUM LEVEL INSTRUMENTS (BI-COLOUR GAUGE)	2	0	2
6.88	TANK LEVEL INSTRUMENTS (FLOAT OPERATED)	6	0	6
6.89	MAGNETIC LEVEL INSTRUMENTS	16	0	16
6.90	SPL LEVEL INSTRUMENTS-GUIDED WAVE RADAR	6	0	6
6.91	TANK FARM MANAGEMENT SYSTEM	6	0	6
6.92	TANK LEVEL INSTRUMENT (SERVO TYPE)	4	0	4
6.93	SPECIAL LEVEL INSTRUMENTS (RF TYPE)	5	0	5
6.94	SPECIAL LEVEL INSTRUMENTS (CAP.& COND.)	8	0	8
6.95	NUCLEONIC LEVEL INSTRUMENTS	3	0	3
6.96	CLOSED CIRCUIT TV	9	0	9
6.97	FIELD INSTRUMENTS/TRANSMITTERS (P.DP.F.L.I.TD)	10	0	10
6.98	TANK LEVEL INSTRUMENT (RADAR,ULTRASONIC)	11	0	11
6.99	SPEED TANSMITTERS	3	0	3
6.100	CONTROL PANEL & ACCESSORIES	11	0	11
6.101	PREFABRICATED INSTRUMENT HOOKUPS	5	0	5
6.102	SP. CONTROL VALVE ( KNIFE GATE)	5	0	5
6.103	FIRE PROTECTION SYSTEM (VALVES & ACC.)	2	0	2
6.104	ANALYSER-DENSITY/SP.GRAVITY(V.CYLNDR.CORLIS)	6	0	6
6.105	ANALYSER (AIR DEMAND/TOTAL SULPHUR)	0	0	0
6.106	AVERAGING PITOT TUBES	6	0	6
6.107	ANALYSERS (HYDROGEN SULPHIDE)	3	0	3
6.108	VISCOSITY METER	5	0	5
6.109	RUPTURE DISCS	2	0	2
6.110	METER PROVERS	2	0	2
6.111	GAS PRESSURE REDUCING SKIDS	8	0	8
6.112	GAS METERING SYSTEM (ULTRASONIC)	5	0	5
6.113	GAS METERING SYSTEM (TURBINE)	7	0	7
6.114	GAS METERING SYSTEM -DUAL CHAMBR ORIFICE	3	0	3
6.115	LIQUID METERING SYSTEM (ULTRASONIC)	2	0	2
6.116	LIQUID METERING SYSTEM (TURBINE)	4	0	4
6.117	LIQUID METERING SYSTEM (P.D METERS)	1	0	1
6.118	LIQUID METERING SYSTEM (MASS FLOW METER)	6	0	6
6.119	DISPLACER LEVEL INSTRUMENTS	7	0	7
6.120	DISTRIBUTED CONTROL SYSTEMS	8	0	8
6.121	TELEPHONE AND PAGING SYSTEMS	10	0	10
6.122	FOUNDATION FIELD BUS (FF JB'S)	3	0	3
6.123	JUNCTION BOXES (Flame Proof)	8	0	8
6.124	FLAME SCANNERS	2	0	2
6.125	PLC CABINETS / LOCAL CONTROL PANEL	7	0	7
6.126	OPACITY ANALYSERS	1	0	1
6.127	THERMAL MASS FLOWMETERS	4	0	4
6.128	MCT BLOCKS	4	0	4
6.129	BARRIERS (IS) / BARRIERS (FF)	2	0	2
6.130	BEACONS / HOOTERS/ MCP	5	0	5



MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
6.131	AIR FILTER REGULATORS	13	0	13
6.132	ACCESS CONTROL SYSTEM	4	0	4
6.133	ANALYSER SHELTER	8	0	8
6.134	LOOP POWERED INDICATORS	7	0	7
6.135	FIRE PROOFING FOR INSTRUMENT ITEMS (FOR CABLE TRAYS/DUCTS)	3	0	3
6.136	SUNSHADE FOR FIELD INSTRUMENTS	2	0	2
6.137	METER RUN ASSEMBLY (INTEGRAL ORIFICE)	2	0	2
6.138	PROXIMITY TYPE LIMIT SWITCH	2	0	2
6.139	POSITION INDICATION SWITCHBOXES	2	0	2
6.140	TERMINAL BLOCKS	4	0	4
6.141	CABLE TRAY	14	0	14
6.142	INSTRUMENT DB&B BALL VALVES	6	0	6
6.143	MOTOR OPERATED VALVES	8	0	8
6.144	CORROSION COUPONS	0	0	0
6.145	OPTICAL PYROMETERS	0	0	0
6.146	SPECIAL CONTROL VALVES (AXIAL)	0	0	0
6.147	SPECIAL CONTROL VALVES (PISTON)	0	0	0
6.148	AUTOMATIC GAS SAMPLER	1	0	1
6.149	PRODUCT QUALITY ANALYSERS (RVP)	2	0	2
6.150	TARGET FLOWMETERS	0	0	0
6.151	RECEIVER INSTRUMENTS	1	0	1
6.152	INFRARED TEMP MEASUREMENT SYSTEM	0	0	0
6.153	ANTI SURGE CONTROL	0	0	0
6.154	SPEED GOVERNOR FOR TURBINE	0	0	0
6.155	PRESSURE SWITCHES	8	0	8
6.156	SPECIAL CONTROL VALVES ( ECC ROTARY PLUG)	6	0	6
6.157	BLENDING AUTOMATION SYSTEMS	5	0	5
6.158	GAUGE GLASSES & COCKS (HIGH PRESSURE SERVICES 900# & ABOVE)	4	0	4
6.159	MAGNETIC LEVEL GAUGES (HIGH PRESSURE SERVICES 900# & ABOVE)	2	0	2
6.160	PORTABLE NUCLEONIC SURVEY METER (BETA-GAMMA-NEUTRON)	0	0	0
6.161	SP CONTROL VALVES (ECCENTRIC DISC HI PERFORMANCE TYPE)	6	0	6
6.162	SPECIAL CONTROL VALVES (SEGMENTAL)	6	0	6
6.163	SPECIAL CONTROL VALVES (BALL CONTROL)	4	0	4
6.164	SPECIAL CONTROL VALVES (VARIABLE CV)	3	0	3
6.165	SPECIAL CONTROL VALVES (LOW CV)	5	0	5
6.166	SAFETY VALVE BOILER SERVICE	3	0	3
6.167	INTERFACE DEVICES	2	0	2
6.168	ACTUATORS-MOV	6	0	6
6.169	PROCESS STREAM ANALYSERS(ELECTROCHEM-02)	4	0	4
6.170	ALARM PANEL / ALARM ANNUNCIATOR	7	0	7
6.171	PUSH BUTTON AND INDICATING LAMPS	12	0	12
6.172	TUBE FITTINGS (SEAL OIL, LUBE OIL, HYDROCARBON	16	0	16
6.173	DIGITAL INDICATOR / DIGITAL MULTIPOINT INDICATOR	2	0	2
6.174	CONTROL VALVE - ANGLE TYPE	1	0	1
6.175	I/P CONVERTER	2	0	2
6.176	FLOW METER ULTRASONIC TYPE - For Flare Gas Application	2	0	2
6.177	CLAMP-ON ULTRASONIC FLOW TRANSMITTER	1	0	1
6.178	INSTRUMENT VALVES & MANIFOLDS FOR ANALYSERS / SAMPLING SYSTEMS	3	0	3
6.179	PRESSURE REGULATOR FOR ANALYSERS / SAMPLING SYSTEMS	4	0	4
6.180	GAS CYLINDER PRESSURE REGULATOR DUAL STAGE WITH PRESSURE GAUGE & SAFETY VALVE FOR ANALYSERS / SAMPLING SYSTEMS	5	0	5
6.181	PELTIER / COMPRESSOR COOLER FOR GAS SAMPLE FOR ANALYSERS / SAMPLING SYSTEMS	3	0	3
6.182	DIAPHRAGM PUMP SINGLE / DOUBLE STAGE / HEAD PUMP FOR GAS SAMPLE FOR ANALYSERS / SAMPLING SYSTEMS	3	0	3
6.183	PURGE CONTROLLER FOR PANEL FOR ANALYSERS / SAMPLING SYSTEMS	2	0	2
6.184	COOLER FOR ANALYSERS FOR ANALYSERS / SAMPLING SYSTEMS	1	0	1
6.185	FILTERS FOR ANALYSERS / SAMPLING SYSTEMS	4	0	4
6.186	HOT EXTRACTION SAMPLE PROBE FOR ANALYSERS / SAMPLING SYSTEMS	2	0	2
6.187	BULK POWER SUPPLY WITH SMPS (24 V DC) FOR ANALYSERS / SAMPLING SYSTEMS	3	0	3
6.188	ETHERNET SWITCHES	0	0	0
6.189	HMI SOFTWARE	0	0	0
6.190	ELECTROMECHANICAL RELAY	9	0	9
6.191	CONDITION MONITORING SYSTEM	0	0	0
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
<b>1</b>	<b>STATIC EQUIPMENT</b>			
<b>1.1</b>	<b>PRESSURE VESSEL -CS (UP TO 25MM)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.1.1	ABF ENGINEERING INTERNATIONAL PVT. LTD.	INDIA		
1.1.2	ACOUSTICS INDIA PVT LTD	INDIA		
1.1.3	ADOR WELDING LTD.	INDIA		
1.1.4	AERO ENGINEERS	INDIA		
1.1.5	ALFA LAVAL INDIA LTD	INDIA		
1.1.6	ALSTOM PROJECTS INDIA LIMITED (ABB – ABL LTD.)	INDIA		
1.1.7	ANUP ENGINEERING LIMITED (THE)	INDIA		
1.1.8	BARODA EQUIPMENT AND VESSELS PVT LTD	INDIA		
1.1.9	BEEKAY ENGINEERING CORPORATION	INDIA		
1.1.10	BHEL	INDIA		
1.1.11	BILFINGER PLANT EQUIPMENTS PVT LTD (FML)	INDIA		
1.1.12	BTL EPC LIMITED	INDIA		
1.1.13	BUILDWORTH LIMITED	INDIA		
1.1.14	CHANDERPUR INDUSTRIES PVT LTD	INDIA		
1.1.15	CICB-CHEMICON PVT.LTD.	INDIA		
1.1.16	ESSAR HEAVY ENGG SERVICES (UNIT OF EPL)	INDIA		
1.1.17	EXPO GAS CONTAINERS LTD.	INDIA		
1.1.18	FABTECH PROJECTS & ENGINEERS LTD.	INDIA		



MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
1.1.19	FAB-TECH WORKS & CONSTN. PVT LTD.	INDIA		
1.1.20	FACT ENGINEERING WORKS	INDIA		
1.1.21	FURNACE FABRICA (INDIA) LIMITED	INDIA		
1.1.22	GEECY ENGINEERING PVT LTD	INDIA		
1.1.23	GMM PFAUDLER LTD	INDIA		
1.1.24	GODREJ & BOYCE MFG. CO. LTD.	INDIA		
1.1.25	GR ENGINEERNG PRIVATE LTD (TARAPORE)	INDIA		
1.1.26	GRAND PRIX ENGINEERING PVT LTD.	INDIA		
1.1.27	GRASIM INDUSTRIES	INDIA		
1.1.28	HDO TECHNOLOGIES LTD. INDIA	INDIA		
1.1.29	INDCON PROJECTS & EQUIPMENTS LTD	INDIA		
1.1.30	INDIA TUBE MILLS & METAL IND LTD	INDIA		
1.1.31	INDUS PROJECTS LIMITED	INDIA		
1.1.32	INDUSTRIAL MANUFACTURERS	INDIA		
1.1.33	ISGEC HEAVY ENGINEERING LTD	INDIA		
1.1.34	ISGEC HITACHI ZOSEN LTD	INDIA		
1.1.35	JINDAL STEEL & POWER LTD	INDIA		
1.1.36	LLOYDS STEELS INDUSTRIES LTD.	INDIA		
1.1.37	LOYAL EQUIPMENT PVT. LTD.	INDIA		
1.1.38	MCNALLY SAYAJI ENGINEERING LTD	INDIA		
1.1.39	MEENAKSHI ASSOCIATES PVT LTD	INDIA		
1.1.40	MULTIMAX ENGINEERING WORKS PVT LTD	INDIA		
1.1.41	MULTITEX FILTRATION ENGINEERS LTD.	INDIA		
1.1.42	NEW FIELD INDUSTRIAL EQUIPMENT PVT LTD	INDIA		
1.1.43	NEWTON ENGG & CHEMICALS LTD	INDIA		
1.1.44	NILE LIMITED	INDIA		
1.1.45	NOVATECH PROCESS EQUIPMENT	INDIA		
1.1.46	NOVATECH PROJECTS INDIA PVT LTD	INDIA		
1.1.47	ORIENTAL ENTERPRISE PVT. LTD	INDIA		
1.1.48	OSWAL INFRASTRUCTURE LIMITED	INDIA		
1.1.49	PATELS AIRTEMP (INDIA) LTD	INDIA		
1.1.50	PHILS HEAVY ENGINEERING PVT LIMITED	INDIA		
1.1.51	PRABHA STEEL INDUSTRIES	INDIA		
1.1.52	PRAJ INDUSTRIES LIMITED	INDIA		
1.1.53	PRECISION EQUIPMENTS (CHENNAI) PVT LTD	INDIA		
1.1.54	PROGEN SYSTEMS & TECHNOLOGIES LTD	INDIA		
1.1.55	R. D. ENGINEERS (INDIA) PVT. LTD	INDIA		
1.1.56	RADIANT HEAT EXCHANGER PVT.LTD.	INDIA		
1.1.57	RAJ ENGINEERING COMPANY	INDIA		
1.1.58	RAVI INDUSTRIES	INDIA		
1.1.59	RELIANCE FABRICATIONS PVT LTD	INDIA		
1.1.60	SAURASHTRA ENGINEERING CORPN. PVT LTD	INDIA		
1.1.61	SHARP TANKS & STRUCTURALS (P) LTD	INDIA		
1.1.62	SHREE SATYANARAYAN IND. SUPP. PVT. LTD	INDIA		
1.1.63	SHRI LAKSHMI PRABHA ENGG INDUSTRIES P LTD	INDIA		
1.1.64	SREE RAMAKRISHNA ENGINEERING ENTERPRISES	INDIA		
1.1.65	SUDHIR BROTHERS	INDIA		
1.1.66	TECHNIP INDIA LTD.	INDIA		
1.1.67	TECHNO PROCESS EQUIPMENTS (INDIA) PV LTD	INDIA		
1.1.68	TEMASME VESELEX INDIA PVT. LTD.	INDIA		
1.1.69	TITANIUM EQUIPMENT AND ANODE MFG.CO.LTD	INDIA		
1.1.70	UNIQUE CHEMOPLANT EQUIPMENTS	INDIA		
1.1.71	UNITED HEAT TRANSFER PVT LTD	INDIA		
1.1.72	VIJAY TANKS & VESSELS PVT LTD	INDIA		
1.1.73	WALCHANDNAGAR INDUSTRIES LTD.	INDIA		
1.1.74	ISHAN EQUIPMENT PVT LTD	INDIA		
1.1.75	NUBERG ENGINEERING LTD	INDIA		
1.1.76	REYNOLDS CHEM EQUIPMENT PVT LTD	INDIA		
1.1.77	UNIVERSAL HEAT EXCHANGERS LTD.	INDIA		
1.2	<b>POLYMERISER REACTOR SYSTEM</b>			
A	<b>INDIAN BIDDERS</b>			
1.2.1	ZEPPELIN SYSTEMS GMBH India	INDIA		
1.3	<b>PRESSURE VESSEL -CS (26-50MM)</b>			
A	<b>INDIAN BIDDERS</b>			
1.3.1	ALSTOM PROJECTS INDIA LIMITED (ABB – ABL LTD.)	INDIA		
1.3.2	ANUP ENGINEERING LIMITED (THE)	INDIA		
1.3.3	BEEKAY ENGINEERING CORPORATION	INDIA		
1.3.4	BHEL	INDIA		
1.3.5	BILFINGER PLANT EQUIPMENTS PVT LTD (FML)	INDIA		
1.3.6	BUILDWORTH LIMITED	INDIA		
1.3.7	CHANDERPUR INDUSTRIES PVT LTD	INDIA		
1.3.8	ESSAR HEAVY ENGG SERVICES (UNIT OF EPIL)	INDIA		
1.3.9	EXPO GAS CONTAINERS LTD.	INDIA		
1.3.10	FABTECH PROJECTS & ENGINEERS LTD.	INDIA		
1.3.11	FAB-TECH WORKS & CONSTN. PVT LTD.	INDIA		
1.3.12	GEECY ENGINEERING PVT LTD	INDIA		
1.3.13	GMM PFAUDLER LTD	INDIA		
1.3.14	GODREJ & BOYCE MFG. CO. LTD.	INDIA		
1.3.15	GR ENGINEERNG PRIVATE LTD (TARAPORE)	INDIA		
1.3.16	GRAND PRIX ENGINEERING PVT LTD.	INDIA		
1.3.17	GRASIM INDUSTRIES	INDIA		
1.3.18	INDCON PROJECTS & EQUIPMENTS LTD	INDIA		
1.3.19	INDIAN TUBE MILLS & METAL IND. LTD	INDIA		
1.3.20	INDUS PROJECTS LIMITED	INDIA		
1.3.21	INDUSTRIAL MANUFACTURERS	INDIA		
1.3.22	ISGEC HEAVY ENGINEERING LTD	INDIA		
1.3.23	ISGEC HITACHI ZOSEN LTD	INDIA		
1.3.24	JINDAL STEEL & POWER LTD	INDIA		
1.3.25	THE KCP LIMITED	INDIA		
1.3.26	LARSEN & TOUBRO LTD	INDIA		
1.3.27	LLOYDS STEELS INDUSTRIES LTD.	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
1.3.28	MEENAKSHI ASSOCIATES PVT. LTD.	INDIA		
1.3.29	MULTITEX FILTRATION ENGINEERS LTD.	INDIA		
1.3.30	NEW FIELD INDUSTRIAL EQUIPMENT PVT LTD	INDIA		
1.3.31	NILE LIMITED	INDIA		
1.3.32	ORIENTAL ENTERPRISE PVT. LTD	INDIA		
1.3.33	PATELS AIRTEMP (INDIA) LTD	INDIA		
1.3.34	PHILS HEAVY ENGINEERING PVT LIMITED	INDIA		
1.3.35	PRABHA STEEL INDUSTRIES	INDIA		
1.3.36	PRAJ INDUSTRIES LIMITED	INDIA		
1.3.37	PRECISION EQUIPMENTS (CHENNAI) PVT LTD	INDIA		
1.3.38	R. D. ENGINEERS (INDIA) PVT. LTD	INDIA		
1.3.39	RAJ ENGINEERING COMPANY	INDIA		
1.3.40	RAVI INDUSTRIES	INDIA		
1.3.41	SAURASHTRA ENGINEERING CORPN. PVT LTD	INDIA		
1.3.42	SHARP TANKS & STRUCTURALS (P) LTD	INDIA		
1.3.43	TECHNO PROCESS EQUIPMENTS (INDIA) PV LTD	INDIA		
1.3.44	UNIQUE CHEMOPLANT EQUIPMENTS	INDIA		
1.3.45	VIJAY TANKS & VESSELS PVT LTD	INDIA		
1.3.46	WALCHANDNAGAR INDUSTRIES LTD.	INDIA		
1.3.47	HINDUSTAN DORR OLIVER	INDIA		
1.3.48	ISHAN EQUIPMENTS PVT LTD	INDIA		
1.3.49	NEWTON ENGINEERING AND CHEMICAL	INDIA		
1.3.50	UNIVERSAL HEAT EXCHANGERS	INDIA		
<b>1.4</b>	<b>PRESSURE VESSEL-CS (51-100MM)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.4.1	ALSTOM PROJECTS INDIA LIMITED (ABB – ABL LTD.)	INDIA		
1.4.2	ANUP ENGINEERING LIMITED (THE)	INDIA		
1.4.3	BHEL	INDIA		
1.4.4	BILFINGER PLANT EQUIPMENTS PVT LTD (FML)	INDIA		
1.4.5	ESSAR HEAVY ENGG SERVICES (UNIT OF EPIL)	INDIA		
1.4.6	FAB-TECH WORKS & CONSTN. PVT LTD.	INDIA		
1.4.7	GODREJ & BOYCE MFG. CO. LTD.	INDIA		
1.4.8	GR ENGINEERNG PRIVATE LTD (TARAPORE)	INDIA		
1.4.9	INDUS PROJECTS LIMITED	INDIA		
1.4.10	ISGEC HEAVY ENGINEERING LTD	INDIA		
1.4.11	ISGEC HITACHI ZOSEN LTD	INDIA		
1.4.12	THE KCP LIMITED	INDIA		
1.4.13	LARSEN & TOUBRO LTD	INDIA		
1.4.14	LLOYDS STEELS INDUSTRIES LTD.	INDIA		
1.4.15	PATELS AIRTEMP (INDIA) LTD	INDIA		
1.4.16	PHILS HEAVY ENGINEERING PVT LIMITED	INDIA		
1.4.17	PRAJ INDUSTRIES LIMITED	INDIA		
1.4.18	PRECISION EQUIPMENTS (CHENNAI) PVT LTD	INDIA		
1.4.19	TECHNO PROCESS EQUIPMENTS (INDIA) PV LTD	INDIA		
1.4.20	VIJAY TANKS & VESSELS PVT LTD	INDIA		
1.4.21	WALCHANDNAGAR INDUSTRIES LTD.	INDIA		
1.4.22	INDIA TUBE MILLS AND METALS INDIA LTD	INDIA		
<b>1.5</b>	<b>PRESSURE VESSEL-CS (&gt;100MM)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.5.1	BHEL	INDIA		
1.5.2	ESSAR HEAVY ENGG SERVICES (UNIT OF EPIL)	INDIA		
1.5.3	GODREJ & BOYCE MFG. CO. LTD.	INDIA		
1.5.4	GR ENGINEERNG PRIVATE LTD	INDIA		
1.5.5	ISGEC HEAVY ENGINEERING LTD	INDIA		
1.5.6	ISGEC HITACHI ZOSEN LTD	INDIA		
1.5.7	LARSEN & TOUBRO LTD	INDIA		
1.5.8	LLOYDS STEELS INDUSTRIES LTD	INDIA		
1.5.9	PRAJ INDUSTRIES LIMITED	INDIA		
<b>1.6</b>	<b>PRESSURE VESSEL-SS (UP TO 25MM)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.6.1	ABF ENGINEERING INTERNATIONAL PVT. LTD.	INDIA		
1.6.2	ACOUSTICS INDIA PVT LTD	INDIA		
1.6.3	ADOR WELDING LTD.	INDIA		
1.6.4	AERO ENGINEERS	INDIA		
1.6.5	ALFA LAVAL INDIA LTD	INDIA		
1.6.6	ALSTOM PROJECTS INDIA LIMITED (ABB – ABL LTD.)	INDIA		
1.6.7	BHEL	INDIA		
1.6.8	BTL EPC LIMITED	INDIA		
1.6.9	ESSAR HEAVY ENGG SERVICES (UNIT OF EPIL)	INDIA		
1.6.10	EXPO GAS CONTAINERS LTD.	INDIA		
1.6.11	FABTECH PROJECTS & ENGINEERS LTD.	INDIA		
1.6.12	FAB-TECH WORKS & CONSTN. PVT LTD.	INDIA		
1.6.13	GEECY ENGINEERING PVT LTD	INDIA		
1.6.14	GEMINI ENGI-FAB LIMITED	INDIA		
1.6.15	GMM PFAUDLER LTD	INDIA		
1.6.16	GODREJ & BOYCE MFG. CO. LTD.	INDIA		
1.6.17	GR ENGINEERNG PRIVATE LTD (TARAPORE)	INDIA		
1.6.18	GRAND PRIX ENGINEERING PVT LTD.	INDIA		
1.6.19	INDCON PROJECTS & EQUIPMENTS LTD	INDIA		
1.6.20	INDUS PROJECTS LIMITED	INDIA		
1.6.21	INDUSTRIAL MANUFACTURERS	INDIA		
1.6.22	ISGEC HEAVY ENGINEERING LTD	INDIA		
1.6.23	ISGEC HITACHI ZOSEN LTD	INDIA		
1.6.24	JINDAL STEEL & POWER LTD	INDIA		
1.6.25	LARSEN & TOUBRO LTD	INDIA		
1.6.26	LLOYDS STEELS INDUSTRIES LTD.	INDIA		
1.6.27	MULTITEX FILTRATION ENGINEERS LTD.	INDIA		
1.6.28	NEW FIELD INDUSTRIAL EQUIPMENT PVT LTD	INDIA		
1.6.29	NILE LIMITED	INDIA		
1.6.30	NOVATECH PROJECTS INDIA PVT LTD	INDIA		
1.6.31	ORIENTAL ENTERPRISE PVT. LTD	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
1.6.32	PATELS AIRTEMP (INDIA) LTD	INDIA		
1.6.33	PHILS HEAVY ENGINEERING PVT LIMITED	INDIA		
1.6.34	PRABHA STEEL INDUSTRIES	INDIA		
1.6.35	PRAJ INDUSTRIES LIMITED	INDIA		
1.6.36	PRECISION EQUIPMENTS (CHENNAI) PVT LTD	INDIA		
1.6.37	R. D. ENGINEERS (INDIA) PVT. LTD	INDIA		
1.6.38	RADIANT HEAT EXCHANGER PVT.LTD.	INDIA		
1.6.39	RAJ ENGINEERING COMPANY	INDIA		
1.6.40	RELIANCE FABRICATIONS PVT LTD	INDIA		
1.6.41	SHARP TANKS & STRUCTURALS (P) LTD	INDIA		
1.6.42	SHREE SATYANARAYAN IND. SUPP. PVT. LTD	INDIA		
1.6.43	SPARKON ENGINEERS	INDIA		
1.6.44	TECHNIP INDIA LTD.	INDIA		
1.6.45	TECHNO PROCESS EQUIPMENTS (INDIA) PV LTD	INDIA		
1.6.46	THE KCP LIMITED	INDIA		
1.6.47	TITANIUM EQUIPMENT AND ANODE MFG.CO.LTD	INDIA		
1.6.48	VIJAY TANKS & VESSELS PVT LTD	INDIA		
1.6.49	WALCHANDNAGAR INDUSTRIES LTD.	INDIA		
1.6.50	ARJUN TECHNOLOGIES (INDIA) LTD	INDIA		
1.6.51	HDO TECHNOLOGIES LTD	INDIA		
1.6.52	INDIA TUBE MILLS & METALS INDIA LTD	INDIA		
1.6.53	ISHAN EQUIPMENTS PVT LTD	INDIA		
1.6.54	LOYAL EQUIPMENTS PVT LTD	INDIA		
1.6.55	MEENAKSHI ASSOCIATES PVT LTD	INDIA		
1.6.56	NUBERG ENGINEERING LTD	INDIA		
1.6.57	REYNOLD CHEM EQUIPMENTS PVT LTD	INDIA		
1.6.58	SUNGJIN GEOTECH CO.LTD	INDIA		
1.6.59	UNIVERSAL HEAT EXCHANGERS LTD	INDIA		
<b>1.7</b>	<b>PRESSURE VESSEL-SS (FROM 26MM to 50 MM)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.7.1	ANUP ENGINEERING LIMITED	INDIA		
1.7.2	ALSTOM PROJECTS INDIA LIMITED (ABB – ABL LTD.)	INDIA		
1.7.3	BHEL	INDIA		
1.7.4	CHANDERPUR INDUSTRIES PVT.LTD.	INDIA		
1.7.5	ESSAR HEAVY ENGG SERVICES (UNIT OF EPIL)	INDIA		
1.7.6	EXPO GAS CONTAINERS LTD.	INDIA		
1.7.7	FABTECH PROJECTS & ENGINEERS LTD	INDIA		
1.7.8	GEECY ENGINEERING PVT LTD	INDIA		
1.7.9	GMM PFAUDLER LTD	INDIA		
1.7.10	GODREJ & BOYCE MFG. CO. LTD.	INDIA		
1.7.11	GR ENGINEERNG PRIVATE LTD	INDIA		
1.7.12	INDUS PROJECTS LIMITED	INDIA		
1.7.13	INDUSTRIAL MANUFACTURERS	INDIA		
1.7.14	ISGEC HEAVY ENGINEERING LTD	INDIA		
1.7.15	ISGEC HITACHI ZOSEN LTD	INDIA		
1.7.16	THE KCP LIMITED	INDIA		
1.7.17	LARSEN & TOUBRO LTD	INDIA		
1.7.18	LLOYDS STEELS INDUSTRIES LTD	INDIA		
1.7.19	NEW FIELD INDUSTRIAL EQUIPMENT PVT LTD	INDIA		
1.7.20	NILE LIMITED	INDIA		
1.7.21	ORIENTAL ENTERPRISE PVT. LTD	INDIA		
1.7.22	PATELS AIRTEMP (INDIA) LTD	INDIA		
1.7.23	PHILS HEAVY ENGINEERING PVT LIMITED	INDIA		
1.7.24	PRAJ INDUSTRIES LIMITED	INDIA		
1.7.25	PRECISION EQUIPMENTS (CHENNAI) PVT LTD	INDIA		
1.7.26	R. D. ENGINEERS (INDIA) PVT. LTD	INDIA		
1.7.27	RADIANT HEAT EXCHANGER PVT.LTD.	INDIA		
1.7.28	SHARP TANKS & STRUCTURALS (P) LTD	INDIA		
1.7.29	VIJAY TANKS & VESSELS PVT LTD	INDIA		
1.7.30	CHANDERPUR INDUSTRIES PVT.LTD.	INDIA		
1.7.31	WALCHANDNAGAR INDUSTRIES LTD.	INDIA		
1.7.32	INDIA TUBE MILLS & METALS INDIA LTD	INDIA		
1.7.33	SUNGJIN GEOTECH CO.LTD	INDIA		
<b>1.8</b>	<b>PRESSURE VESSEL-SS (&gt; 50 MM)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.8.1	BHEL	INDIA		
1.8.2	GODREJ & BOYCE MFG. CO. LTD.	INDIA		
1.8.3	GR ENGINEERNG PRIVATE LTD	INDIA		
1.8.4	ISGEC HEAVY ENGINEERING LTD	INDIA		
1.8.5	ISGEC HITACHI ZOSEN LTD	INDIA		
1.8.6	LARSEN & TOUBRO LTD	INDIA		
1.8.7	LLOYDS STEELS INDUSTRIES LTD	INDIA		
1.8.8	PATELS AIRTEMP (INDIA) LTD	INDIA		
1.8.9	PHILS HEAVY ENGINEERING PVT LIMITED	INDIA		
1.8.10	PRECISION EQUIPMENTS (CHENNAI) PVT LTD	INDIA		
1.8.11	TITANIUM EQUIPMENT AND ANODE MFG.CO.LTD.	INDIA		
<b>1.9</b>	<b>PRESSURE VESSEL -LOW ALLOY STEEL</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.9.1	ANUP ENGINEERING LIMITED (THE)	INDIA		
1.9.2	BHEL	INDIA		
1.9.3	ESSAR HEAVY ENGG SERVICES (UNIT OF EPIL)	INDIA		
1.9.4	FABTECH PROJECTS & ENGINEERS LTD.	INDIA		
1.9.5	GMM PFAUDLER LTD	INDIA		
1.9.6	GODREJ & BOYCE MFG. CO. LTD.	INDIA		
1.9.7	GR ENGINEERNG PRIVATE LTD (TARAPORE)	INDIA		
1.9.8	INDCON PROJECTS & EQUIPMENTS LTD	INDIA		
1.9.9	INDUS PROJECTS LIMITED	INDIA		
1.9.10	ISGEC HEAVY ENGINEERING LTD	INDIA		
1.9.11	ISGEC HITACHI ZOSEN LTD	INDIA		
1.9.12	LARSEN & TOUBRO LTD	INDIA		
1.9.13	LLOYDS STEELS INDUSTRIES LTD.	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
1.9.14	PATELS AIRTEMP (INDIA) LTD	INDIA		
1.9.15	PHILS HEAVY ENGINEERING PVT LIMITED	INDIA		
1.9.16	PRECISION EQUIPMENTS (CHENNAI) PVT LTD	INDIA		
1.9.17	RAJ ENGINEERING COMPANY	INDIA		
1.9.18	TECHNIP INDIA LTD.	INDIA		
1.9.19	TECHNO PROCESS EQUIPMENTS (INDIA) PV LTD	INDIA		
1.9.20	VIJAY TANKS & VESSELS PVT LTD	INDIA		
1.9.21	WALCHANDNAGAR INDUSTRIES LTD.	INDIA		
1.9.22	HDO TECHNOLOGIES LTD	INDIA		
1.9.23	HYUNDAI HEAVY INDUSTRIES CO.LTD	INDIA		
1.9.24	IL SUNG ENGINEERING & COST CO.LTD	INDIA		
1.9.25	SUNGJIN GEOTECH CO.LTD	INDIA		
1.9.26	UNIVERSAL HEAT EXCHANGERS LTD	INDIA		
<b>1.10</b>	<b>PRESSURE VESSEL – LTCS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.10.1	AERO ENGINEERS	INDIA		
1.10.2	ANUP ENGINEERING LIMITED (THE)	INDIA		
1.10.3	BHEL	INDIA		
1.10.4	ESSAR HEAVY ENGG SERVICES (UNIT OF EPIL)	INDIA		
1.10.5	EXPO GAS CONTAINERS LTD.	INDIA		
1.10.6	FABTECH PROJECTS & ENGINEERS LTD.	INDIA		
1.10.7	FAB-TECH WORKS & CONSTN. PVT LTD.	INDIA		
1.10.8	GMM PFAUDLER LTD	INDIA		
1.10.9	GODREJ & BOYCE MFG. CO. LTD.	INDIA		
1.10.10	GR ENGINEERNG PRIVATE LTD (TARAPORE)	INDIA		
1.10.11	GRAND PRIX ENGINEERING PVT LTD.	INDIA		
1.10.12	INDCON PROJECTS & EQUIPMENTS LTD	INDIA		
1.10.13	INDIA TUBE MILLS AND METAL INDIA LTD.	INDIA		
1.10.14	INDUS PROJECTS LIMITED	INDIA		
1.10.15	ISGEC HEAVY ENGINEERING LTD	INDIA		
1.10.16	ISGEC HITACHI ZOSEN LTD	INDIA		
1.10.17	JINDAL STEEL & POWER LTD	INDIA		
1.10.18	LARSEN & TOUBRO LTD	INDIA		
1.10.19	LLOYDS STEELS INDUSTRIES LTD.	INDIA		
1.10.20	MEENAKSHI ASSOCIATES PVT. LTD.	INDIA		
1.10.21	NILE LIMITED	INDIA		
1.10.22	ORIENTAL ENTERPRISE PVT. LTD	INDIA		
1.10.23	PATELS AIRTEMP (INDIA) LTD	INDIA		
1.10.24	PHILS HEAVY ENGINEERING PVT LIMITED	INDIA		
1.10.25	PRECISION EQUIPMENTS (CHENNAI) PVT LTD	INDIA		
1.10.26	R. D. ENGINEERS (INDIA) PVT. LTD	INDIA		
1.10.27	RAJ ENGINEERING COMPANY	INDIA		
1.10.28	SUNGJIN GEOTECH CO. LTD	INDIA		
1.10.29	TECHNO PROCESS EQUIPMENTS (INDIA) PV LTD	INDIA		
1.10.30	TEMASME VESELEX INDIA PVT. LTD.	INDIA		
1.10.31	VIJAY TANKS & VESSELS PVT LTD	INDIA		
1.10.32	WALCHANDNAGAR INDUSTRIES LTD.	INDIA		
1.10.33	HDO TECHNOLOGIES LTD	INDIA		
1.10.34	INDUSTRIAL MANUFACTURERS	INDIA		
1.10.35	REYNOLDS CHEM EQUIPMENTS LTD	INDIA		
1.10.36	UNIVERSAL HEAT EXCHANGERS	INDIA		
<b>1.11</b>	<b>PRESSURE VESSEL-CS/LAS+SS CLAD</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.11.1	ALFA LAVAL INDIA LTD	INDIA		
1.11.2	ANUP ENGINEERING LIMITED (THE)	INDIA		
1.11.3	BHEL	INDIA		
1.11.4	ESSAR HEAVY ENGG SERVICES (UNIT OF EPIL)	INDIA		
1.11.5	EXPO GAS CONTAINERS LTD.	INDIA		
1.11.6	FABTECH PROJECTS & ENGINEERS LTD.	INDIA		
1.11.7	GEECY ENGINEERING PVT LTD	INDIA		
1.11.8	GODREJ & BOYCE MFG. CO. LTD.	INDIA		
1.11.9	GR ENGINEERNG PRIVATE LTD (TARAPORE)	INDIA		
1.11.10	INDIA TUBE MILLS AND METALS INDIA LTD.	INDIA		
1.11.11	INDUS PROJECTS LIMITED	INDIA		
1.11.12	ISGEC HEAVY ENGINEERING LTD	INDIA		
1.11.13	ISGEC HITACHI ZOSEN LTD	INDIA		
1.11.14	LARSEN & TOUBRO LTD	INDIA		
1.11.15	LLOYDS STEELS INDUSTRIES LTD.	INDIA		
1.11.16	PATELS AIRTEMP (INDIA) LTD	INDIA		
1.11.17	PHILS HEAVY ENGINEERING PVT LIMITED	INDIA		
1.11.18	PRECISION EQUIPMENTS (CHENNAI) PVT LTD	INDIA		
1.11.19	R. D. ENGINEERS (INDIA) PVT. LTD	INDIA		
1.11.20	TECHNO PROCESS EQUIPMENTS (INDIA) PV LTD	INDIA		
1.11.21	TITANIUM EQUIPMENT AND ANODE MFG.CO.LTD	INDIA		
1.11.22	VIJAY TANKS & VESSELS PVT LTD	INDIA		
1.11.23	INDUSTRIAL MANUFACTURERS	INDIA		
1.11.24	UNIVERSAL HEAT EXCHANGERS	INDIA		
1.11.25	WALCHANDNAGAR INDUSTRIES LTD	INDIA		
<b>1.12</b>	<b>PRESSURE VESSEL MONEL CLADED</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.12.1	ALFA LAVAL INDIA LTD	INDIA		
1.12.2	ANUP ENGINEERING LIMITED (THE)	INDIA		
1.12.3	BHEL	INDIA		
1.12.4	ESSAR HEAVY ENGG SERVICES( UNIT OF EPIL)	INDIA		
1.12.5	EXPO GAS CONTAINERS LTD. India	INDIA		
1.12.6	GEECY ENGINEERING PVT LTD India	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
1.12.7	GODREJ & BOYCE MFG. CO. LTD. India	INDIA		
1.12.8	ISGEC HEAVY ENGINEERING LTD India	INDIA		
1.12.9	ISGEC HITACHI ZOSEN LTD India	INDIA		
1.12.10	LARSEN & TOUBRO LTD India	INDIA		
1.12.11	PHILS HEAVY ENGINEERING PVT LIMITED India	INDIA		
1.12.12	R. D. ENGINEERS (INDIA) PVT. LTD India	INDIA		
1.12.13	TITANIUM EQUIPMENT AND ANODE MFG.CO.LTD	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
<b>1.13</b>	<b>PRESSURE VESSEL MONEL</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.13.1	ALFA LAVAL INDIA LTD	INDIA		
1.13.2	ANUP ENGINEERING LIMITED (THE)	INDIA		
1.13.3	PHILS HEAVY ENGINEERING PVT LIMITED India	INDIA		
1.13.4	TITANIUM EQUIPMENT AND ANODE MFG.CO.LTD	INDIA		
<b>1.14</b>	<b>CYCLONES (REACTOR &amp; REGENERATOR)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
<b>1.15</b>	<b>DEMISTER-WIRE MESH TYPE</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.15.1	CONTINENTAL PROFILES LTD	INDIA		
1.15.2	EVERGREEN TECHNOLOGIES PVT.LTD.	INDIA		
1.15.3	HAYER STANDARD INDIA PVT LTD	INDIA		
1.15.4	MUNTERS INDIA HUMISITY CONTROL PVT. LTD.	INDIA		
1.15.5	KOCH CHEMICAL TECH. GROUP INDIA PVT LTD	INDIA		
1.15.6	KEVIN ENTERPRISES PVT LTD	INDIA		
1.15.7	PACE ENGINEERING INDUSTRIES PVT. LTD.	INDIA		
1.15.8	JEETMULL JAICHANDLALL PVT LTD INDIA	INDIA		
<b>1.16</b>	<b>COLUMN/TOWER CARBON STEEL</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.16.1	ALFA LAVAL INDIA LTD	INDIA		
1.16.2	ANUP ENGINEERING LIMITED (THE)	INDIA		
1.16.3	BHEL	INDIA		
1.16.4	BTL EPC LIMITED	INDIA		
1.16.5	ESSAR HEAVY ENGG SERVICES (UNIT OF EPIL)	INDIA		
1.16.6	EXPO GAS CONTAINERS LTD.	INDIA		
1.16.7	FABTECH PROJECTS & ENGINEERS LTD.	INDIA		
1.16.8	FAB-TECH WORKS & CONSTN. PVT LTD.	INDIA		
1.16.9	GEECY ENGINEERING PVT LTD	INDIA		
1.16.10	GEMINI ENGI-FAB LTD	INDIA		
1.16.11	GODREJ & BOYCE MFG. CO. LTD.	INDIA		
1.16.12	GR ENGINEERNG PRIVATE LTD (TARAPORE)	INDIA		
1.16.13	JL SUNG ENGINEERING	INDIA		
1.16.14	INDIA TUBE MILLS & METALS INDIA LTD	INDIA		
1.16.15	INDUS PROJECTS LIMITED	INDIA		
1.16.16	INDUSTRIAL MANUFACTURERS INDIA	INDIA		
1.16.17	ISGEC HEAVY ENGINEERING LTD	INDIA		
1.16.18	ISGEC HITACHI ZOSEN LTD	INDIA		
1.16.19	LARSEN & TOUBRO LTD	INDIA		
1.16.20	LLOYDS STEELS INDUSTRIES LTD.	INDIA		
1.16.21	PHILS HEAVY ENGINEERING PVT LIMITED	INDIA		
1.16.22	PRAJ INDUSTRIES LIMITED	INDIA		
1.16.23	PRECISION EQUIPMENTS (CHENNAI) PVT LTD	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
1.16.24	R. D. ENGINEERS (INDIA) PVT. LTD	INDIA		
1.16.25	RAJ ENGINEERING COMPANY	INDIA		
1.16.26	SHARP TANKS & STRUCTURALS (P) LTD	INDIA		
1.16.27	TECHNO PROCESS EQUIPMENTS (INDIA) PV LTD	INDIA		
1.16.28	THE KCP LIMITED	INDIA		
1.16.29	UNIVERSAL HEAT EXCHANGERS LTD	INDIA		
1.16.30	VIJAY TANKS & VESSELS PVT LTD	INDIA		
1.16.31	WALCHANDNAGAR INDUSTRIES LTD.	INDIA		
<b>1.17</b>	<b>COLUMN/TOWER STAINLESS STEEL</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.17.1	ALFA LAVAL INDIA LTD	INDIA		
1.17.2	ANUP ENGINEERING LIMITED (THE)	INDIA		
1.17.3	BHEL	INDIA		
1.17.4	BTL EPC LIMITED	INDIA		
1.17.5	ESSAR HEAVY ENGG SERVICES (UNIT OF EPIL)	INDIA		
1.17.6	EXPO GAS CONTAINERS LTD.	INDIA		
1.17.7	FAB-TECH WORKS & CONSTN. PVT LTD.	INDIA		
1.17.8	GEECY ENGINEERING PVT LTD	INDIA		
1.17.9	GODREJ & BOYCE MFG. CO. LTD.	INDIA		
1.17.10	GR ENGINEERNG PRIVATE LTD (TARAPORE)	INDIA		
1.17.11	INDIA TUBE MILLS AND METALS INDIA LTD.	INDIA		
1.17.12	INDUS PROJECTS LIMITED	INDIA		
1.17.13	INDUSTRIAL MANUFACTURER	INDIA		
1.17.14	ISGEC HEAVY ENGINEERING LTD	INDIA		
1.17.15	ISGEC HITACHI ZOSEN LTD	INDIA		
1.17.16	LARSEN & TOUBRO LTD	INDIA		
1.17.17	LLOYDS STEELS INDUSTRIES LTD.	INDIA		
1.17.18	PHILS HEAVY ENGINEERING PVT LIMITED	INDIA		
1.17.19	PRAJ INDUSTRIES LIMITED	INDIA		
1.17.20	R. D. ENGINEERS (INDIA) PVT. LTD	INDIA		
1.17.21	SHARP TANKS & STRUCTURALS (P) LTD	INDIA		
1.17.22	TECHNO PROCESS EQUIPMENTS (INDIA) PV LTD	INDIA		
1.17.23	THE KCP LIMITED	INDIA		
1.17.24	UNIVERSAL HEAT EXCHANGERS	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
1.17.25	VIJAY TANKS & VESSELS PVT LTD	INDIA		
<b>1.18</b>	<b>COLUMN/TOWER - LOW ALLOY STEEL</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.18.1	ANUP ENGINEERING LIMITED (THE)	INDIA		
1.18.2	BHEL	INDIA		
1.18.3	ESSAR HEAVY ENGG SERVICES (UNIT OF EPIL)	INDIA		
1.18.4	GODREJ & BOYCE MFG. CO. LTD.	INDIA		
1.18.5	GR ENGINEERNG PRIVATE LTD	INDIA		
1.18.6	ISGEC HEAVY ENGINEERING LTD	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
1.18.7	ISGEC HITACHI ZOSEN LTD	INDIA		
1.18.8	LARSEN & TOUBRO LTD	INDIA		
1.18.9	LLOYDS STEELS INDUSTRIES LTD.	INDIA		
1.18.10	PHILS HEAVY ENGINEERING PVT LIMITED	INDIA		
1.18.11	TECHNO PROCESS EQUIPMENTS (INDIA) PV LTD	INDIA		
1.18.12	VIJAY TANKS & VESSELS PVT LTD	INDIA		
<b>1.19</b>	<b>COLUMN/TOWER - LTCS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.19.1	BHEL	INDIA		
1.19.2	ESSAR HEAVY ENGG SERVICES (UNIT OF EPIL)	INDIA		
1.19.3	EXPO GAS CONTAINERS LTD.	INDIA		
1.19.4	GODREJ & BOYCE MFG. CO. LTD.	INDIA		
1.19.5	GR ENGINEERNG PRIVATE LTD	INDIA		
1.19.6	INDIA TUBE MILLS & METALS LTD	INDIA		
1.19.7	INDUS PROJECTS LIMITED	INDIA		
1.19.8	INDUSTRIAL MANUFACTURERS INDIA	INDIA		
1.19.9	ISGEC HEAVY ENGINEERING LTD	INDIA		
1.19.10	ISGEC HITACHI ZOSEN LTD	INDIA		
1.19.11	LARSEN & TOUBRO LTD	INDIA		
1.19.12	LLOYDS STEELS INDUSTRIES LTD.	INDIA		
1.19.13	PHILS HEAVY ENGINEERING PVT LIMITED	INDIA		
1.19.14	R. D. ENGINEERS (INDIA) PVT. LTD	INDIA		
1.19.15	TECHNO PROCESS EQUIPMENTS (INDIA) PV LTD	INDIA		
1.19.16	UNIVERSAL HEAT EXCHANGERS LTD	INDIA		
1.19.17	VIJAY TANKS & VESSELS PVT LTD	INDIA		
<b>1.20</b>	<b>COLUMN/TOWER-CS/LAS+SS CLADDED</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.20.1	ALFA LAVAL INDIA LTD	INDIA		
1.20.2	ANUP ENGINEERING LIMITED (THE)	INDIA		
1.20.3	BHEL	INDIA		
1.20.4	ESSAR HEAVY ENGG SERVICES (UNIT OF EPIL)	INDIA		
1.20.5	EXPO GAS CONTAINERS LTD.	INDIA		
1.20.6	GEECY ENGINEERING PVT LTD	INDIA		
1.20.7	GODREJ & BOYCE MFG. CO. LTD.	INDIA		
1.20.8	GR ENGINEERNG PRIVATE LTD	INDIA		
1.20.9	INDUS PROJECTS LIMITED	INDIA		
1.20.10	INDUSTRIAL MANUFACTURERS	INDIA		
1.20.11	ISGEC HEAVY ENGINEERING LTD	INDIA		
1.20.12	ISGEC HITACHI ZOSEN LTD	INDIA		
1.20.13	LARSEN & TOUBRO LTD	INDIA		
1.20.14	LLOYDS STEELS INDUSTRIES LTD.	INDIA		
1.20.15	PHILS HEAVY ENGINEERING PVT LIMITED	INDIA		
1.20.16	R. D. ENGINEERS (INDIA) PVT. LTD	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
1.20.17	TECHNO PROCESS EQUIPMENTS (INDIA) PV LTD	INDIA		
1.20.18	VIJAY TANKS & VESSELS PVT LTD	INDIA		
<b>1.21</b>	<b>COLUMN - MONEL CLAD</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.21.1	BHEL	INDIA		
1.21.2	ESSAR HEAVY ENGG SERVICES (UNIT OF EPIL)	INDIA		
1.21.3	EXPO GAS CONTAINERS LTD.	INDIA		
1.21.4	GEECY ENGINEERING PVT LTD	INDIA		
1.21.5	GODREJ & BOYCE MFG. CO. LTD.	INDIA		
1.21.6	ISGEC HEAVY ENGINEERING LTD	INDIA		
1.21.7	ISGEC HITACHI ZOSEN LTD	INDIA		
1.21.8	LARSEN & TOUBRO LTD	INDIA		
1.21.9	PHILS HEAVY ENGINEERING PVT LIMITED	INDIA		
1.21.10	R. D. ENGINEERS (INDIA) PVT. LTD	INDIA		
1.21.11	TECHNO PROCESS EQUIPMENTS (INDIA) PV LTD	INDIA		
<b>1.22</b>	<b>CCR PLATFORMING REACTOR</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.22.1	GODREJ & BOYCE MFG. CO. LTD.	INDIA		
1.22.2	ISGEC HEAVY ENGINEERING LTD	INDIA		
1.22.3	LARSEN & TOUBRO LTD	INDIA		
<b>1.23</b>	<b>REACTOR/SEPARATOR-SS CLAD 1.25 Cr 0.5 Mo</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.23.1	ESSAR HEAVY ENGG SERVICES (UNIT OF EPIL)	INDIA		
1.23.2	GODREJ & BOYCE MFG. CO. LTD.	INDIA		
1.23.3	ISGEC HEAVY ENGINEERING LTD	INDIA		
1.23.4	ISGEC HITACHI ZOSEN LTD	INDIA		
1.23.5	LARSEN & TOUBRO LTD	INDIA		
1.23.6	TECHNO PROCESS EQUIPMENTS (INDIA) PV LTD	INDIA		
<b>1.24</b>	<b>REACTOR/SEPARATOR-SS CLAD-2.25 Cr-1 Mo</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.24.1	GODREJ & BOYCE MFG. CO. LTD.	INDIA		
1.24.2	ISGEC HEAVY ENGINEERING LTD	INDIA		
1.24.3	ISGEC HITACHI ZOSEN LTD	INDIA		
1.24.4	LARSEN & TOUBRO LTD	INDIA		
<b>1.25</b>	<b>REACTOR/SEPARATOR- CLAD 2.25Cr 1Mo 0.25V</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.25.1	ISGEC HITACHI ZOSEN LTD	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
1.25.2	LARSEN & TOUBRO LTD	INDIA		
<b>1.26</b>	<b>COLUMN/TOWER-CS (51-100MM THK)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.26.1	BHEL	INDIA		
1.26.2	ESSAR HEAVY ENGG SERVICES (UNIT OF EPIL)	INDIA		
1.26.3	GODREJ & BOYCE MFG. CO. LTD.	INDIA		
1.26.4	GR ENGINEERNG PRIVATE LTD (TARAPORE)	INDIA		
1.26.5	INDUS PROJECTS LIMITED	INDIA		
1.26.6	ISGEC HEAVY ENGINEERING LTD	INDIA		
1.26.7	ISGEC HITACHI ZOSEN LTD	INDIA		
1.26.8	LARSEN & TOUBRO LTD	INDIA		
1.26.9	LLOYDS STEELS INDUSTRIES LTD.	INDIA		
1.26.10	PHILS HEAVY ENGINEERING PVT LIMITED	INDIA		
1.26.11	TECHNO PROCESS EQUIPMENTS (INDIA) PV LTD	INDIA		
1.26.12	VIJAY TANKS & VESSELS PVT LTD	INDIA		
<b>1.27</b>	<b>HEAT EXCHANGER CARBON STEEL</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.27.1	ADOR WELDING LTD.	INDIA		
1.27.2	AERO ENGINEERS	INDIA		
1.27.3	ALFA LAVAL INDIA LTD	INDIA		
1.27.4	ANUP ENGINEERING LIMITED (THE)	INDIA		
1.27.5	BHEL	INDIA		
1.27.6	BTL EPC LIMITED	INDIA		
1.27.7	BUILDWORTH LIMITED	INDIA		
1.27.8	CICB-CHEMICON PVT.LTD.	INDIA		
1.27.9	COPERION IDEAL PVT. LTD.	INDIA		
1.27.10	ESSAR HEAVY ENGG SERVICES (UNIT OF EPIL)	INDIA		
1.27.11	EXPO GAS CONTAINERS LTD.	INDIA		
1.27.12	GANSONS LTD	INDIA		
1.27.13	GEECY ENGINEERING PVT LTD	INDIA		
1.27.14	GMM PFAUDLER LTD	INDIA		
1.27.15	GODREJ & BOYCE MFG. CO. LTD.	INDIA		
1.27.16	GR ENGINEERNG PRIVATE LTD (TARAPORE)	INDIA		
1.27.17	INDCON PROJECTS & EQUIPMENTS LTD	INDIA		
1.27.18	INDIA TUBE MILLS AND METAL INDUSTRIES LTD.	INDIA		
1.27.19	INDUS PROJECTS LIMITED	INDIA		
1.27.20	INDUSTRIAL MANUFACTURERS	INDIA		
1.27.21	ISGEC HEAVY ENGINEERING LTD	INDIA		
1.27.22	ISGEC HITACHI ZOSEN LTD	INDIA		
1.27.23	LARSEN & TOUBRO LTD	INDIA		
1.27.24	LLOYDS STEELS INDUSTRIES LTD.	INDIA		
1.27.25	MEENAKSHI ASSOCIATES PVT LTD	INDIA		
1.27.26	MULTIMAX ENGINEERING WORKS PVT LTD	INDIA		
1.27.27	NEW FIELD INDUSTRIAL EQUIPMENT PVT LTD	INDIA		
1.27.28	NEWTON ENGG & CHEMICALS LTD	INDIA		
1.27.29	ORIENTAL ENTERPRISE PVT. LTD	INDIA		
1.27.30	PATELS AIRTEMP (INDIA) LTD	INDIA		
1.27.31	PHILS HEAVY ENGINEERING PVT LIMITED	INDIA		
1.27.32	PRABHA STEEL INDUSTRIES	INDIA		
1.27.33	PRECISION EQUIPMENTS (CHENNAI) PVT LTD	INDIA		
1.27.34	R. D. ENGINEERS (INDIA) PVT. LTD	INDIA		
1.27.35	RADIANT HEAT EXCHANGER PVT.LTD.	INDIA		
1.27.36	RAJ ENGINEERING COMPANY	INDIA		
1.27.37	RELIANCE FABRICATIONS PVT LTD	INDIA		
1.27.38	TECHNO PROCESS EQUIPMENTS (INDIA) PV LTD	INDIA		
1.27.39	TEMA INDIA LTD.	INDIA		
1.27.40	TEMASME VESELEX INDIA PVT. LTD.	INDIA		
1.27.41	TITANIUM EQUIPMENT AND ANODE MFG.CO.LTD	INDIA		
1.27.42	WALCHANDNAGAR INDUSTRIES LTD.	INDIA		
<b>1.28</b>	<b>HEAT EXCHANGER-ROD AND PLATE TYPE BAFFLE</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
<b>1.29</b>	<b>HEAT EXCHANGER STAINLESS STEEL.</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.29.1	ADOR WELDING LTD.	INDIA		
1.29.2	AERO ENGINEERS	INDIA		
1.29.3	ALFA LAVAL INDIA LTD	INDIA		
1.29.4	ANUP ENGINEERING LIMITED (THE)	INDIA		
1.29.5	BHEL	INDIA		
1.29.6	BTL EPC LIMITED	INDIA		
1.29.7	CICB-CHEMICON PVT.LTD.	INDIA		
1.29.8	COPERION IDEAL PVT. LTD.	INDIA		
1.29.9	ESSAR HEAVY ENGG SERVICES (UNIT OF EPIL)	INDIA		
1.29.10	GANSONS LTD	INDIA		
1.29.11	GEECY ENGINEERING PVT LTD	INDIA		
1.29.12	GMM PFAUDLER LTD	INDIA		
1.29.13	GODREJ & BOYCE MFG. CO. LTD.	INDIA		
1.29.14	GR ENGINEERNG PRIVATE LTD (TARAPORE)	INDIA		
1.29.15	INDCON PROJECTS & EQUIPMENTS LTD	INDIA		
1.29.16	INDIA TUBE MILLS & METALS LTD	INDIA		
1.29.17	INDUS PROJECTS LIMITED	INDIA		
1.29.18	INDUSTRIAL MANUFACTURERS	INDIA		
1.29.19	ISGEC HEAVY ENGINEERING LTD	INDIA		
1.29.20	ISGEC HITACHI ZOSEN LTD	INDIA		
1.29.21	LARSEN & TOUBRO LTD	INDIA		
1.29.22	LLOYDS STEELS INDUSTRIES LTD.	INDIA		
1.29.23	NEW FIELD INDUSTRIAL EQUIPMENT PVT LTD	INDIA		
1.29.24	ORIENTAL ENTERPRISE PVT. LTD	INDIA		
1.29.25	PATELS AIRTEMP (INDIA) LTD	INDIA		
1.29.26	PHILS HEAVY ENGINEERING PVT LIMITED	INDIA		
1.29.27	PRABHA STEEL INDUSTRIES	INDIA		
1.29.28	PRECISION EQUIPMENTS (CHENNAI) PVT LTD	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
1.29.29	RADIANT HEAT EXCHANGER PVT.LTD.	INDIA		
1.29.30	RAJ ENGINEERING COMPANY	INDIA		
1.29.31	RELIANCE FABRICATIONS PVT LTD	INDIA		
1.29.32	TECHNO PROCESS EQUIPMENTS (INDIA) PV LTD	INDIA		
1.29.33	TEMA INDIA LTD	INDIA		
1.29.34	TITANIUM EQUIPMENT AND ANODE MFG.CO.LTD	INDIA		
1.29.35	UNIVERSAL HEAT EXCHANGERS LTD.	INDIA		
1.29.36	WALCHANDNAGAR INDUSTRIES LTD.	INDIA		
<b>1.30</b>	<b>HEAT EXCHANGER LOW ALLOY STEEL</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.30.1	ANUP ENGINEERING LIMITED (THE)	INDIA		
1.30.2	BHEL	INDIA		
1.30.3	ESSAR HEAVY ENGG SERVICES (UNIT OF EPIL)	INDIA		
1.30.4	GEECY ENGINEERING PVT LTD	INDIA		
1.30.5	GEMINI ENGI-FAB LIMITED	INDIA		
1.30.6	GNASONS	INDIA		
1.30.7	GODREJ & BOYCE MFG. CO. LTD.	INDIA		
1.30.8	GR ENGINEERNG PRIVATE LTD (TARAPORE)	INDIA		
1.30.9	INDUSTRIAL MANUFACTURERS	INDIA		
1.30.10	ISGEC HEAVY ENGINEERING LTD	INDIA		
1.30.11	ISGEC HITACHI ZOSEN LTD	INDIA		
1.30.12	LARSEN & TOUBRO LTD	INDIA		
1.30.13	LLYODS STEEL INDUSTRIES LTD	INDIA		
1.30.14	PATELS AIRTEMP (INDIA) LTD	INDIA		
1.30.15	PHILS HEAVY ENGINEERING PVT LIMITED	INDIA		
1.30.16	PRECISION EQUIPMENTS (CHENNAI) PVT LTD	INDIA		
1.30.17	TECHNO PROCESS EQUIPMENTS (INDIA) PV LTD	INDIA		
1.30.18	TEMA INDIA LTD	INDIA		
1.30.19	TITANIUM EQUIPMENT AND ANODE MFG.CO.LTD	INDIA		
1.30.20	UNIVERSAL HEAT EXCHANGERS	INDIA		
1.30.21	WALCHANDNAGAR INDUSTRIES LTD.	INDIA		
<b>1.31</b>	<b>HEAT EXCHANGER LTCS.</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.31.1	AERO ENGINEERS	INDIA		
1.31.2	ANUP ENGINEERING LIMITED (THE)	INDIA		
1.31.3	BHEL	INDIA		
1.31.4	ESSAR HEAVY ENGG SERVICES (UNIT OF EPIL)	INDIA		
1.31.5	GMM PFAUDLER LTD	INDIA		
1.31.6	GODREJ & BOYCE MFG. CO. LTD.	INDIA		
1.31.7	GR ENGINEERNG PRIVATE LTD (TARAPORE)	INDIA		
1.31.8	INDIA TUBE MILLS AND METAL INDIA LTD.	INDIA		
1.31.9	ISGEC HEAVY ENGINEERING LTD	INDIA		
1.31.10	ISGEC HITACHI ZOSEN LTD	INDIA		
1.31.11	LARSEN & TOUBRO LTD	INDIA		
1.31.12	MEENAKSHI ASSOCIATES PVT. LTD.	INDIA		
1.31.13	NEW FIELD INDUSTRIAL EQUIPMENT PVT LTD	INDIA		
1.31.14	PATELS AIRTEMP (INDIA) LTD	INDIA		
1.31.15	PHILS HEAVY ENGINEERING PVT LIMITED	INDIA		
1.31.16	PRECISION EQUIPMENTS (CHENNAI) PVT LTD	INDIA		
1.31.17	RAJ ENGINEERING COMPANY	INDIA		
1.31.18	TECHNO PROCESS EQUIPMENTS (INDIA) PV LTD	INDIA		
1.31.19	TEMA INDIA LTD	INDIA		
1.31.20	TEMASME VESELEX INDIA PVT. LTD.	INDIA		
1.31.21	UNIVERSAL HEAT EXCHANGERS	INDIA		
<b>1.32</b>	<b>HEAT EXCHANGER 3.5 %NI STEEL</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.32.1	ANUP ENGINEERING LIMITED (THE)	INDIA		
1.32.2	BHEL	INDIA		
1.32.3	GODREJ & BOYCE MFG. CO. LTD.	INDIA		
1.32.4	INDUS PROJECTS LIMITED	INDIA		
1.32.5	LARSEN & TOUBRO LTD	INDIA		
1.32.6	TITANIUM EQUIPMENT AND ANODE MFG.CO.LTD.	INDIA		
1.32.7	UNIVERSAL HEAT EXCHANGERS LTD.	INDIA		
<b>1.33</b>	<b>HEAT EXCHANGER-CS/LAS+SS CLAD</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.33.1	ALFA LAVAL INDIA LTD	INDIA		
1.33.2	ANUP ENGINEERING LIMITED (THE)	INDIA		
1.33.3	BHEL	INDIA		
1.33.4	ESSAR HEAVY ENGG SERVICES (UNIT OF EPIL)	INDIA		
1.33.5	GEECY ENGINEERING PVT LTD	INDIA		
1.33.6	GODREJ & BOYCE MFG. CO. LTD.	INDIA		
1.33.7	GR ENGINEERNG PRIVATE LTD (TARAPORE)	INDIA		
1.33.8	INDIA TUBE MILLS AND METAL INDIA LTD.	INDIA		
1.33.9	INDUSTRIAL MANUFACTURERS	INDIA		
1.33.10	ISGEC HEAVY ENGINEERING LTD	INDIA		
1.33.11	ISGEC HITACHI ZOSEN LTD	INDIA		
1.33.12	LARSEN & TOUBRO LTD	INDIA		
1.33.13	PATELS AIRTEMP (INDIA) LTD	INDIA		
1.33.14	PHILS HEAVY ENGINEERING PVT LIMITED	INDIA		
1.33.15	PRECISION EQUIPMENTS (CHENNAI) PVT LTD	INDIA		
1.33.16	TECHNO PROCESS EQUIPMENTS (INDIA) PV LTD	INDIA		
1.33.17	TEMA INDIA LIMITED	INDIA		
1.33.18	TITANIUM EQUIPMENT AND ANODE MFG.CO.LTD	INDIA		
1.33.19	WALCHANDNAGAR INDUSTRIES LTD.	INDIA		
1.33.20	UNIVERSAL HEAT EXCHANGERS	INDIA		
<b>1.34</b>	<b>HEAT EXCHANGER (PLATES-WELDED)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
1.34.1	ALFA LAVAL INDIA LTD	INDIA		
1.34.2	DOVER INDIA PVT LTD	INDIA		
1.34.3	IDMC LTD	INDIA		



MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
1.34.4	FUNKE HEAT EXCHANGERS INDIA LTD.	INDIA		
1.34.5	KELVION INDIA PRIVATE LIMITED	INDIA		
1.34.6	SONDEX HEAT EXCHANGERS INDIA PVT. LTD.	INDIA		
1.34.7	TRANTER INDIA PRIVATE LIMITED	INDIA		
1.34.8	GEA ECOFLEX INDIA PVT LTD (GEA GROUP)	INDIA		
1.34.9	GEA VIEX INC (GEA GROUP)	INDIA		
<b>1.35</b>	<b>HEAT EXCHANGERS (PLATE -GASKETTED)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.35.1	ALFA LAVAL INDIA LTD	INDIA		
1.35.2	FUNKE HEAT EXCHANGERS INDIA LTD.	INDIA		
1.35.3	KELVION INDIA PRIVATE LIMITED	INDIA		
1.35.4	IDMC LIMITED	INDIA		
1.35.5	LARSEN & TOUBRO LTD	INDIA		
1.35.6	GEA ECOFLEX INDIA PVT LTD (GEA GROUP)	INDIA		
1.35.7	SONDEX HEAT EXCHANGERS INDIA PVT. LTD.	INDIA		
1.35.8	TRANTER INDIA PRIVATE LIMITED	INDIA		
<b>1.36</b>	<b>HEAT EXCHANGER NF- (BRASS, CU-NI)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.36.1	AERO ENGINEERS	INDIA		
1.36.2	ALFA LAVAL INDIA LTD	INDIA		
1.36.3	BHEL	INDIA		
1.36.4	CICB-CHEMICON PVT.LTD.	INDIA		
1.36.5	ESSAR HEAVY ENGG SERVICES (UNIT OF EPIL)	INDIA		
1.36.6	GEMINI ENGI-FAB LIMITED	INDIA		
1.36.7	GODREJ & BOYCE MFG. CO. LTD.	INDIA		
1.36.8	GR ENGINEERING PRIVATE LTD (TARAPORE)	INDIA		
1.36.9	INDIA TUBE MILLS & METALS IND. LTD.	INDIA		
1.36.10	INDUSTRIAL MANUFACTURERS	INDIA		
1.36.11	ISGEC HEAVY ENGINEERING LTD	INDIA		
1.36.12	LARSEN & TOUBRO LTD	INDIA		
1.36.13	PATELS AIRTEMP (INDIA) LTD	INDIA		
1.36.14	PRECISION EQUIPMENTS (CHENNAI) PVT LTD	INDIA		
1.36.15	REYNOLDS CHEM EQUIP PVT LTD	INDIA		
1.36.16	TECHNO PROCESS EQUIPMENTS (INDIA) PV LTD	INDIA		
1.36.17	TEMA INDIA LIMITED	INDIA		
1.36.18	UNIVERSAL HEAT EXCHANGERS	INDIA		
1.36.19	WALCHANDNAGAR INDUSTRIES LTD.	INDIA		
<b>1.37</b>	<b>AIR FIN COOLER (CS &amp; SS)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.37.1	AKSHAR PRECISION TUBES PVT LIMITED	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
1.37.2	APPLIED ENGINEERING SINGAPORE/ APPLIED ENGINEERING PTE LTD	INDIA		
1.37.3	BGR ENERGY SYSTEMS LIMITED	INDIA		
1.37.4	BHEL	INDIA		
1.37.5	ENGINEMATES HEAT TRANSFER PVT. LTD.	INDIA		
1.37.6	GEA Bnl INDIA /INTERNATIONAL	INDIA		
1.37.7	JORD INTERNATIONAL PVT Ltd - AUSTRALIA	INDIA		
1.37.8	KELVION INDIA PRIVATE LIMITED	INDIA		
1.37.9	KNM INTERNATIONAL	INDIA		
1.37.10	LARSEN & TOUBRO LTD	INDIA		
1.37.11	PAHARPUR COOLING TOWERS LTD.	INDIA		
1.37.12	PATELS AIRTEMP (INDIA) LTD	INDIA		
1.37.13	GEI INDUSTRIAL SYSTEM LTD	INDIA		
<b>1.38</b>	<b>AIR FIN COOLERS (DUPLEX SS)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.38.1	KELVION INDIA PRIVATE LIMITED	INDIA		
1.38.2	BGR ENERGY SYSTEMS LIMITED	INDIA		
1.38.3	BHEL	INDIA		
1.38.4	GEI INDUSTRIAL SYSTEM LTD	INDIA		
<b>1.39</b>	<b>SAMPLE COOLER</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.39.1	AERO ENGINEERS	INDIA		
1.39.2	CHEMTRON SCIENCE LABORATORIES PVT. LTD. INDIA	INDIA		
1.39.3	ENPRO INDUSTRIES PVT LTD	INDIA		
1.39.4	FLOWLINE INSTRUMENTATION PVT. LTD. INDIA	INDIA		
1.39.5	FORBES MARSHALL PVT. LTD. INDIA	INDIA		
1.39.6	GRAND PRIX ENGINEERING PVT LTD.	INDIA		
1.39.7	GRASIM INDUSTRIES	INDIA		
1.39.8	MEENAKSHI ASSOCIATES PVT LTD	INDIA		
1.39.9	PRECISION EQUIPMENTS (CHENNAI) PVT LTD	INDIA		
1.39.10	RELIANCE FABRICATIONS PVT LTD	INDIA		
1.39.11	TUBE WELD ENGINEERING WORKS LTD.	INDIA		
<b>1.40</b>	<b>CRYOGENIC VAPORIZER-DIRECT STEAM HEATED</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
<b>1.41</b>	<b>HEAT EXCHANGER (AL. BRAZED FIN TYPE)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.41.1	SUMITOMO PRECISION PRODUCTS CO LTD	INDIA		
<b>1.42</b>	<b>HEAT EXCH. MONEL / MONEL CLAD</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.42.1	ALFA LAVAL INDIA LTD	INDIA		
1.42.2	ESSAR HEAVY ENGG SERVICES (UNIT OF EPIL)	INDIA		
1.42.3	GR ENGINEERING PRIVATE LTD (TARAPORE)	INDIA		
1.42.4	PRECISION EQUIPMENTS (CHENNAI) PVT LTD	INDIA		
1.42.5	TITANIUM EQUIPMENT AND ANODE MFG.CO.LTD	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
1.42.6	TEMA INDIA LTD	INDIA		
<b>1.43</b>	<b>HEAT EXCH. NICKEL / NICKEL CLAD</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.43.1	ALFA LAVAL INDIA LTD	INDIA		
1.43.2	PRECISION EQUIPMENTS (CHENNAI) PVT LTD	INDIA		
1.43.3	TITANIUM EQUIPMENT AND ANODE MFG.CO.LTD	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
<b>1.44</b>	<b>HEAT EXCH. HASTALLOY / HASTALLOY CLAD</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.44.1	ALFA LAVAL INDIA LTD	INDIA		
1.44.2	ESSAR HEAVY ENGG SERVICES (UNIT OF EPIL)	INDIA		
1.44.3	TITANIUM EQUIPMENT AND ANODE MFG.CO.LTD	INDIA		
1.44.4	TEMA INDIA LTD	INDIA		
<b>1.45</b>	<b>ELECTRIC HEATER</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.45.1	ESCORTS LIMITED	INDIA		
1.45.2	ETIREX CHROMALOX	INDIA		
1.45.3	SANDVIK ASIA PVT LTD-KANTHAL DIVISION	INDIA		
<b>1.46</b>	<b>HEAT EXCHANGER SS-DUPLEX</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.46.1	ALFA LAVAL INDIA LTD	INDIA		
1.46.2	ANUP ENGINEERING LIMITED (THE)	INDIA		
1.46.3	BHEL	INDIA		
1.46.4	GODREJ & BOYCE MFG. CO. LTD.	INDIA		
1.46.5	GR ENGINEERNG PRIVATE LTD (TARAPORE)	INDIA		
1.46.6	INDUSTRIAL MANUFACTURERS INDIA	INDIA		
1.46.7	ISGEC HEAVY ENGINEERING LTD	INDIA		
1.46.8	LARSEN & TOUBRO LTD	INDIA		
1.46.9	PATELS AIR TEMP	INDIA		
1.46.10	PRECISION EQUIPMENTS (CHENNAI) PVT LTD	INDIA		
1.46.11	REYNODS CHEM EQUIP PVT LTD	INDIA		
1.46.12	TITANIUM EQUIPMENT AND ANODE MFG.CO.LTD	INDIA		
1.46.13	TEMA INDIA LTD	INDIA		
1.46.14	UNIVERSAL	INDIA		
1.46.15	WALCHANNAGAR INDUSTRIES LTD	INDIA		
<b>1.47</b>	<b>HEAT EXCHANGER - ALLOY 625</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.47.1	FLASH FORGE PVT LTD.	INDIA		
1.47.2	GODREJ & BOYCE	INDIA		
1.47.3	ISGEC	INDIA		
1.47.4	LARSEN & TOUBRO	INDIA		
1.47.5	PRECISION EQUIPMENTS (CHENNAI) PVT LTD	INDIA		
1.47.6	TEMA INDIA LIMITED	INDIA		
1.47.7	TITANIUM EQUIPMENT AND ANODE MFG.CO.LTD	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
<b>1.48</b>	<b>LOUVERS FOR AIR FIN COOLERS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.48.1	GEI INDUSTRIAL SYSTEM LTD	INDIA		
<b>1.49</b>	<b>EJECTOR (ENGINEERED)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.49.1	BHEL	INDIA		
1.49.2	CRYSTAL INDUSTRIAL SYNDICATE PVT LTD.	INDIA		
1.49.3	GODREJ & BOYCE MFG. CO. LTD.	INDIA		
1.49.4	MAZDA LIMITED	INDIA		
1.49.5	MICRO PRECISION PRODUCTS PVT LTD	INDIA		
1.49.6	NEW FIELD INDUSTRIAL EQUIPMENT PVT LTD	INDIA		
1.49.7	SSP PVT LTD	INDIA		
<b>1.50</b>	<b>EJECTOR (UNENGINEERED)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.50.1	CHEM PROCESS SYSTEM PVT. LTD.	INDIA		
1.50.2	MAZDA LIMITED	INDIA		
1.50.3	NEW FIELD INDUSTRIAL EQUIPMENT PVT LTD	INDIA		
<b>1.51</b>	<b>SILENCER</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.51.1	ACOUSTICS INDIA PVT LTD	INDIA		
1.51.2	BBM ACOUSTIC INDIA PVT LTD	INDIA		
1.51.3	BURGESS MANNING(INDIA) PVT LTD	INDIA		
1.51.4	FLO-DYNE CONTROLS(INDIA)PVT LTD	INDIA		
1.51.5	GRAND PRIX ENGINEERING PVT LTD.	INDIA		
1.51.6	INDIRA INDUSTRIES	INDIA		
1.51.7	MICROPRECISION PRODUCTS	INDIA		
1.51.8	PR ACOUSTICAL & ENGINEERING WORKS(P)LTD	INDIA		
<b>1.52</b>	<b>VACUUM EJECTOR CONDENSER SYS(ENGINEERED)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.52.1	GODREJ & BOYCE MFG. CO. LTD	INDIA		
1.52.2	BHEL	INDIA		
<b>1.53</b>	<b>VACUUM EJECTOR CONDSR SYS (UNENGINEERED)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.53.1	BHARAT HEAVY ELECTRICALS LTD	INDIA		
1.53.2	NEW FIELD INDUSTRIAL EQUIPMENT	INDIA		
1.53.3	SSP LTD	INDIA		
<b>1.54</b>	<b>DEMISTER-VANE TYPE</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.54.1	FINEPAC STRUCTURES PVT. LTD.	INDIA		
1.54.2	GRAND PRIX ENGINEERING PVT LTD	INDIA		
1.54.3	MUNTERS INDIA HUMIDITY CONTROL PVT. LTD.	INDIA		
1.54.4	KOCH CHEMICAL TECH. GROUP INDIA PVT LTD	INDIA		
1.54.5	SULZER INDIA LIMITED	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
<b>1.55</b>	<b>EXPANSION JOINT-METALLIC</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.55.1	FLEXATHERM EXPANLOW PVT LTD	INDIA		
1.55.2	FLEXICAN BELLOWS AND HOSES PRIVATE LIMITED	INDIA		
1.55.3	FLEXOCON ENGINEERS PRIVATE LIMITED	INDIA		
1.55.4	LONESTAR INDUSTRIES	INDIA		
1.55.5	METALLIC BELLOWS (INDIA) PRIVATE LIMITED	INDIA		
1.55.6	WITZENMANN GMBH	INDIA		
<b>1.56</b>	<b>AIR PRE-HEATER (CAST)</b>			

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
A	INDIAN BIDDERS			
1.56.1	KAMAL ENGINEERING CORPORATION	INDIA		
1.57	AIR PRE-HEATER (GLASS TUBE)			
A	INDIAN BIDDERS			
1.57.1	KAMAL ENGINEERING CORPORATION	INDIA		
1.58	BURNER-CONVENTIONAL			
A	INDIAN BIDDERS			
1.58.1	AIROIL FLAREGAS (INDIA) LTD.	INDIA		
1.58.2	JOHN ZINK INTERNATIONAL LUXEMBOURG SARL	INDIA		
1.59	BURNER-LOW NOx (PROCESS FIRED HEATER)			
A	INDIAN BIDDERS			
1.59.1	JOHN ZINK INTERNATIONAL LUXEMBOURG SARL	INDIA		
1.60	BURNER-SRU			
A	INDIAN BIDDERS			
1.60.1	JOHN ZINK INTERNATIONAL LUXEMBOURG SARL	INDIA		
1.61	AIR HEATER (DIRECT FIRED)			
A	INDIAN BIDDERS			
1.61.1	JOHN ZINK INTERNATIONAL LUXEMBOURG SARL	INDIA		
1.62	LNG VAPORIZER			
A	INDIAN BIDDERS			
1.63	TOWER PACKING: METALLIC (NON-PROPRIETARY)			
A	INDIAN BIDDERS			
1.63.1	HI-PACK MASS TRANSFER PRODUCTS	INDIA		
1.63.2	MUNTERS INDIA HUMIDITY CONTROL PVT. LTD.	INDIA		
1.63.3	KOCH CHEMICAL TECH. GROUP INDIA PVT LTD	INDIA		
1.63.4	MASS TRANSFER PRODUCT INDUSTRIES	INDIA		
1.63.5	KEVIN ENTERPRISES PVT LTD	INDIA		
1.63.6	SWAN ENTERPRISES PVT LTD	INDIA		
1.64	TOWER PCKG & ASSTD INTL: METALLIC (PROPRIETARY)			
A	INDIAN BIDDERS			
1.64.1	MUNTERS INDIA HUMIDITY CONTROL PVT. LTD.	INDIA		
1.64.2	KOCH CHEMICAL TECH. GROUP INDIA PVT LTD	INDIA		
1.64.3	SULZER INDIA LIMITED	INDIA		
1.64.4	KEVIN ENTERPRISES PVT LTD	INDIA		
Sr.No	VENDOR NAME	COUNTRY		
1.65	TOWER PKG-NON METALLIC(PROPRIETARY)			
A	INDIAN BIDDERS			
1.65.1	KOCH CHEMICAL TECH. GROUP INDIA PVT LTD	INDIA		
1.65.2	KOCH GLITSCH	INDIA		
1.65.3	SULZER INDIA PVT LTD	INDIA		
1.65.4	KEVIN ENTERPRISES (MUNTER)	INDIA		
1.66	TOWER PACKING: CERAMIC			
A	INDIAN BIDDERS			
1.66.1	DEVSON INSULATORS PVT. LTD.	INDIA		
1.66.2	TOPACK CERAMICS PVT LTD	INDIA		
1.66.3	Khyati Ceramics	INDIA		
1.66.4	Fullmoon Industrial Ceramics (P) Ltd	INDIA		
1.66.5	Filtra Catalysts & Chemicals Limited	INDIA		
1.66.6	Nilgiri Chemical Stoneware Co. Private Limited	INDIA		
1.66.7	Oxide (India) Pvt. Ltd	INDIA		
1.66.8	Excel Micron Poona PVT LTD	INDIA		
1.67	COLUMN TRAYS-HIGH CAPACITY			
A	INDIAN BIDDERS			
1.67.1	MUNTERS INDIA HUMIDITY CONTROL PVT. LTD.	INDIA		
1.67.2	KOCH CHEMICAL TECH. GROUP INDIA PVT LTD	INDIA		
1.67.3	SULZER INDIA LIMITED	INDIA		
1.67.4	UOP	INDIA		
1.67.5	KEVIN ENTERPRISES PVT LTD	INDIA		
1.68	NON-PROP. PACKGS WITH CONVENL INTERNALS			
A	INDIAN BIDDERS			
1.68.1	GODREJ & BOYCE MFG. CO. LTD.	INDIA		
1.68.2	KAMAL ENGINEERING CORPORATION	INDIA		
1.68.3	MUNTERS INDIA HUMIDITY CONTROL PVT. LTD.	INDIA		
1.68.4	KOCH CHEMICAL TECH. GROUP INDIA PVT LTD	INDIA		
1.68.5	LARSEN & TOUBRO LTD	INDIA		
1.68.6	SULZER INDIA LIMITED	INDIA		
1.68.7	KEVIN ENTERPRISES PVT LTD	INDIA		
1.69	NON-PROP PKG,HIGH QUAL DISR& INL-UN ENGIN			
A	INDIAN BIDDERS			
1.69.1	GODREJ & BOYCE MFG. CO. LTD.	INDIA		
1.69.2	KAMAL ENGINEERING CORPORATION	INDIA		
1.69.3	MUNTERS INDIA HUMIDITY CONTROL PVT. LTD.	INDIA		
1.69.4	KOCH CHEMICAL TECH. GROUP INDIA PVT LTD	INDIA		
1.69.5	SULZER INDIA LIMITED	INDIA		
1.69.6	KEVIN ENTERPRISES PVT LTD	INDIA		
1.70	INLET FEED DEVICE (VANE TYPE)			
A	INDIAN BIDDERS			
1.70.1	GODREJ & BOYCE MFG. CO. LTD.	INDIA		
Sr.No	VENDOR NAME	COUNTRY		
1.70.2	KAMAL ENGINEERING CORPORATION	INDIA		
1.70.3	MUNTERS INDIA HUMIDITY CONTROL PVT. LTD.	INDIA		
1.71	SEPARATOR INTERNALS			
A	INDIAN BIDDERS			
1.71.1	GODREJ & BOYCE MFG. CO. LTD.	INDIA		
1.71.2	KAMAL ENGINEERING CORPORATION	INDIA		
1.71.3	MUNTERS INDIA HUMIDITY CONTROL PVT. LTD.	INDIA		
1.71.4	KOCH CHEMICAL TECH. GROUP INDIA PVT LTD	INDIA		
1.71.5	SULZER INDIA LIMITED	INDIA		
1.72	REACTOR INTERNALS			
A	INDIAN BIDDERS			
1.72.1	ANDRITZ EUROSLOT INDIA PVT. LTD.	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
1.72.2	AQSEPTENCE GROUP INDIA PVT. LTD.	INDIA		
1.72.3	BILFINGER WATER TECHNOLOGIES (I) PVT LTD	INDIA		
1.72.4	EUROSLOT KDSS INDIA PVT LTD	INDIA		
1.72.5	EVERGREEN TECHNOLOGIES PVT LTD INDIA	INDIA		
1.72.6	GODREJ AND BOYCE MFG. CO. LTD.	INDIA		
1.72.7	HEAVY ENGINEERING SERVICES (A UNIT OF EPC CONSTRUCTIONS INDIA LTD)	INDIA		
1.72.8	ISGEC HITACHI ZOSEN LIMITED	INDIA		
1.72.9	KAMAL ENGG INDIA	INDIA		
1.72.10	LARSEN & TOUBRO LTD	INDIA		
1.72.11	TECHNO PROCESS EQUIPMENTS (INDIA) PV LTD	INDIA		
<b>1.73</b>	<b>SPRAY NOZZLE-PROCESS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.73.1	DEMACH ENGINEERS (P) LTD.	INDIA		
1.73.2	DE'S TECHNICO	INDIA		
1.73.3	FIRE TECH EQUIPMENTS & SYSTEMS PVT LTD	INDIA		
1.73.4	HD FIRE PROTECT PRIVATE LTD INDIA	INDIA		
1.73.5	JOHN ZINK COMPANY LTD	INDIA		
1.73.6	LECHLER (INDIA) PVT LIMITED	INDIA		
1.73.7	SIDDHARTH ENTERPRISES	INDIA		
1.73.8	SPRAYING SYSTEMS (INDIA) PVT. LTD.	INDIA		
1.73.9	SPRAYTECH	INDIA		
<b>1.74</b>	<b>SPRAY NOZZLE-TORCH OIL</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.74.1	JOHN ZINK INTERNATIONAL LUXEMBOURG SARL	INDIA		
1.74.2	SPRAYING SYSTEMS LTD.	INDIA		
<b>1.75</b>	<b>TOWER PACKING-CARBON</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.75.1	BLAST CARBOBLOCKS PVT. LTD.	INDIA		
1.75.2	CARBON PRODUCTS INDIA	INDIA		
1.75.3	SUGUNA INTERNATIONAL	INDIA		
<b>1.76</b>	<b>TOWER PACKINGS:PVC &amp; PP(NON-PROPRIETARY)</b>			
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.76.1	HI-PACK MASS TRANSFER PRODUCTS	INDIA		
1.76.2	MUNTERS INDIA HUMIDITY CONTROL PVT. LTD.	INDIA		
1.76.3	MASS TRANSFER PRODUCT INDUSTRIES	INDIA		
<b>1.77</b>	<b>WASTE HEAT BOILERS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.77.1	ALSTOM PROJECTS INDIA LTD	INDIA		
1.77.2	BHEL	INDIA		
1.77.3	CHEEMA BOILERS	INDIA		
1.77.4	ISGEC	INDIA		
1.77.5	L&T	INDIA		
1.77.6	THERMAL SYSTEMS	INDIA		
1.77.7	THERMAX BABCOCK & WILCOX LTD.	INDIA		
1.77.8	THERMAX LIMITED	INDIA		
1.77.9	WALCHANDNAGAR INDUSTRIES LTD.	INDIA		
<b>1.78</b>	<b>REFRACTORY FIRE BRICKS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.78.1	ABS REFRACTORIES PVT. LTD	INDIA		
1.78.2	ASHOKE REFRACTORIES PVT LTD	INDIA		
1.78.3	ASSOCIATED CERAMICS LTD.	INDIA		
1.78.4	CHAMPION CERAMICS PVT LTD	INDIA		
1.78.5	CONTINENTAL REFRACTORIES PVT LTD	INDIA		
1.78.6	DALMIA REFRACTORIES LTD.	INDIA		
1.78.7	GITA REFRACTORIES PVT LIMITED	INDIA		
1.78.8	MAHAKOSHAL REFRACTORIES PVT.LTD.	INDIA		
1.78.9	MAITHAN CERAMIC LTD	INDIA		
1.78.10	MANISHRI REFRACTORIES & CERAMICS PVT LTD	INDIA		
1.78.11	MPR REFRACTORIES	INDIA		
1.78.12	NATIONAL REFRACTORIES	INDIA		
1.78.13	NILACHAL REFRACTORIES LTD	INDIA		
1.78.14	OCL INDIA LTD	INDIA		
1.78.15	PACIFIC REFRACTORIES LTD	INDIA		
1.78.16	PREMIER REFRACTORIES OF INDIA PVT LTD	INDIA		
1.78.17	RAASI REFRACTORIES LTD	INDIA		
1.78.18	RAJ CERAMICS	INDIA		
1.78.19	RAJHANS REFRACTORIES (P) LTD	INDIA		
1.78.20	RHI CLASIL LTD	INDIA		
1.78.21	SHRI VALLEY REFRACTORIES LIMITED	INDIA		
1.78.22	TRL KROSAKI REFRACTORIES LIMITED	INDIA		
1.78.23	SHREEKANT INDUS	INDIA		
<b>1.79</b>	<b>INSULATING REFRACTORY CASTABLE</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.79.1	CALDERYS INDIA REF.LTD	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
1.79.2	CARBORUNDUM UNIVERSAL LTD	INDIA		
1.79.3	CASTWELL INDUSTRIES PVT. LTD.	INDIA		
1.79.4	JSL REFRACTORIES LIMITED	INDIA		
1.79.5	MAHAKOSHAL REFRACTORIES PVT.LTD.	INDIA		
1.79.6	MAITHAN CERAMIC LTD	INDIA		
1.79.7	MPR REFRACTORIES	INDIA		
1.79.8	OCL INDIA LTD	INDIA		
1.79.9	PACIFIC REFRACTORIES LTD	INDIA		
1.79.10	PREMIER REFRACTORIES OF INDIA PVT LTD	INDIA		
1.79.11	PROGRESSIVE REFRACTORY & MONOLITHICS P.L	INDIA		
1.79.12	SHARAD REFRACTORIES PVT LTD	INDIA		
1.79.13	SHARADAA CERAMICS PVT. LTD.	INDIA		
1.79.14	TRL KROSAKI REFRACTORIES LIMITED	INDIA		
1.79.15	VESUVIUS INDIA LTD.	INDIA		
<b>1.80</b>	<b>SULPHUR TRAPS</b>			

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
<b>A</b>	<b>INDIAN BIDDERS</b>			
<b>1.81</b>	<b>STORAGE TANKS, BULLETS &amp; MOUNDED BULLETS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.81.1	ISGEC	INDIA		
1.81.2	VIJAY TANKS & VESSELS PVT LTD	INDIA		
1.81.3	FAB-TECH WORKS & CONSTRUCTIONS PVT. LTD.	INDIA		
1.81.4	INDIAN OIL TANK	INDIA		
1.81.5	SHARP TANKS AND STRUCTURALS PVT LTD	INDIA		
<b>1.82</b>	<b>DEAERATOR</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.82.1	ANUP ENGINEERING LIMITED (THE)	INDIA		
1.82.2	ESSAR HEAVY ENGG SERVICES (UNIT OF EPIL)	INDIA		
1.82.3	G.R. ENGINEERING PRIVATE LIMITED	INDIA		
1.82.4	GODREJ & BOYCE MFG. CO. LTD.	INDIA		
1.82.5	ISGEC	INDIA		
1.82.6	PHILS HEAVY ENGINEERING PVT LIMITED	INDIA		
<b>1.83</b>	<b>FILTER - BASKET</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.83.1	BOMBAY CHEMICAL EQUIPMENTS	INDIA		
1.83.2	FIL SEP EQUIPMENTS PVT LTD	INDIA		
1.83.3	FILTRATION ENGINEER (I) PVT LTD	INDIA		
1.83.4	FLASH POINT EQUIPMENTS PVT LTD	INDIA		
1.83.5	GRAND PRIX ENGINEERING PVT LTD	INDIA		
1.83.6	GUJARAT OTOFILT	INDIA		
1.83.7	MAHLE FILTER SYSTEMS (INDIA) PRIVATE LIMITED	INDIA		
1.83.8	MULTITEX FILTRATION ENGINEERS LTD	INDIA		
1.83.9	PALL	INDIA		
1.83.10	PETROMAR ENGINEERED SOLN. P LTD	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
1.83.11	SUNGOV ENGINEERING PVT LTD	INDIA		
1.83.12	SUPERFLO FILTERS PVT LTD INDIA	INDIA		
1.83.13	BARTOM FIRTOP ENGINEERING CO LTD	INDIA		
<b>1.84</b>	<b>FILTER - CARTRIDGE/CANDLE</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.84.1	3M ELECTRO & COMMUNICATION INDIA	INDIA		
1.84.2	AAF INDIA PVT LTD	INDIA		
1.84.3	CECO FILTER INDIA PVT LTD	INDIA		
1.84.4	CLARK RELIANCE (FOR GAS APPLICATION)	INDIA		
1.84.5	DOLLINGER	INDIA		
1.84.6	FIL SEP EQUIPMENT PVT LTD	INDIA		
1.84.7	FILTRATION ENGINEERS (I) PVT LTD	INDIA		
1.84.8	FLASH POINT EQUIPMENTS PVT. LTD.	INDIA		
1.84.9	GAS PROCESSING EQUIPMENT PVT. LTD	INDIA		
1.84.10	GEOFLUID PROCESSORS PVT LTD	INDIA		
1.84.11	GRAND PRIX ENGINEERING PVT LTD.	INDIA		
1.84.12	GUJARAT OTOFILT	INDIA		
1.84.13	INDCON PROJECTS & EQUIPMENTS LTD	INDIA		
1.84.14	JONELL	INDIA		
1.84.15	MULTITEX FILTRATION ENGINEERS LTD	INDIA		
1.84.16	NIRMAL INDUSTRIAL CONTROL PVT LTD	INDIA		
1.84.17	PALL INDIA PVT LTD	INDIA		
1.84.18	PARKER HANFFIN	INDIA		
1.84.19	PEERLESS	INDIA		
1.84.20	PETROMAR ENGINEERED SOLN. P LTD	INDIA		
1.84.21	SPX INDIA PVT LTD	INDIA		
1.84.22	ULTRAFILTER (INDIA) PVT LTD	INDIA		
1.84.23	EPE PROCESS FILTERS & ACCUMULATORS	INDIA		
1.84.24	HYDAC INDIA PVT. LTD.	INDIA		
<b>1.85</b>	<b>FILTER - PRESSURE</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
<b>1.86</b>	<b>FURNACE</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.86.1	FURNACE FABRICA (INDIA) LIMITED	INDIA		
<b>1.87</b>	<b>FLARE/FLARE STACK COMPONENTS</b>			
1.87.1	ADOR WELDING LTD.	INDIA		
1.87.2	ADVANI-OERLIKON LTD (ADOR SAMIA LTD)	INDIA		
1.87.3	AIR OIL FLAREGAS PVT LTD.	INDIA		
1.87.4	JOHN ZINK INDIA	INDIA		
<b>1.88</b>	<b>MAIN COMBUSTN. CHAMBR PKG(SRU)-ENGINEERED</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.88.1	BHEL	INDIA		
1.88.2	GODREJ & BOYCE MFG. CO. LTD.	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
1.88.3	ISGEC HEAVY ENGINEERING LTD	INDIA		
1.88.4	LARSEN & TOUBRO LTD	INDIA		
1.88.5	THERMAL SYSTEMS (HYDERABAD) PVT LTD	INDIA		
1.88.6	THERMAX LIMITED	INDIA		
<b>1.89</b>	<b>INCINERATOR PACKAGE FOR SRU</b>			
1.89.1	JOHN ZINK INDIA	INDIA		
1.89.2	PARAMOUNT POLLUTION CONTROL LTD.	INDIA		
1.89.3	JOHN ZINK COMPANY LTD	INDIA		
<b>1.90</b>	<b>FIRE HEATERS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.90.1	LARSEN & TOUBRO LTD.	INDIA		
1.90.2	THERMAX LIMITED	INDIA		
1.90.3	PETRON ENGINEERING & CONSTRUCTION LTD	INDIA		
1.90.4	BRIDGE & ROOF CO (INDIA) LTD.	INDIA		
1.90.5	MUKAND LTD.	INDIA		
1.90.6	ENGINEERING CONSTRUCTION CORP. LTD.	INDIA		
1.90.7	ESTEEM PROJECTS PVT. LTD.	INDIA		
1.90.8	TECHNICAS REUNIDAS	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
1.90.9	JNK HEATERS LTD	INDIA		
1.90.10	HEURTEY PETROCHEM	INDIA		
1.90.11	TECHNIP KT INDIA LTD	INDIA		
<b>1.91</b>	<b>COLUMN / DRUM (SITE FABRICATED)</b>			
1.91.1	ISGEC India	INDIA		
1.91.2	VIJAY TANKS & VESSELS PVT LTD	INDIA		
<b>1.92</b>	<b>HAIRPIN EXCHANGER</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.92.1	PATELS AIRTEMP (INDIA) LTD	INDIA		
1.92.2	PRECISION EQUIPMENTS (CHENNAI) PVT LTD	INDIA		
1.92.3	HRS PROCESS SYSTEMS LTD	INDIA		
1.92.4	KINAM ENGINEERING INDUSTRIES	INDIA		
1.92.5	INDUSTRIAL MANUFACTURERS	INDIA		
1.92.6	TEMA INDIA LIMITED	INDIA		
<b>1.93</b>	<b>SILOS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
<b>1.94</b>	<b>LOW FIN HEAT EXCHANGER</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.94.1	THE ANUP ENGINEERING LIMITED	INDIA		
1.94.2	TECHNO PROCESS EQUIPMENT (INDIA) LIMITED	INDIA		
1.94.3	ISGEC (a unit of Saraswati Industrial syndicate Ltd.)	INDIA		
1.94.4	LARSEN & TOUBRO LTD.	INDIA		
1.94.5	GODREG & BOYCE MFG. CO	INDIA		
<b>2</b>	<b>ROTARY EQUIPMENT</b>			
<b>2.1</b>	<b>PUMP-CENT.HOR(GPP)</b>			
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.1.1	BEACON WEIR LTD. INDIA	INDIA		
2.1.2	SPX FLOW (CLYDE UNION PUMP)	INDIA		
2.1.3	FLOWSERVE INDIA CONTROLS PVT LTD	INDIA		
2.1.4	FLOWSERVE (THOMPSONS KELLY&LEWIS PTY LTD)	INDIA		
2.1.5	HAYWARD TYLER FLUID DYNAMICS LTD.	INDIA		
2.1.6	ITT CORPORATION INDIA PVT LTD	INDIA		
2.1.7	KIRLOSKAR BROTHERS LTD	INDIA		
2.1.8	KIRLOSKAR EBARA PUMPS LTD	INDIA		
2.1.9	KSB PUMPS LTD	INDIA		
2.1.10	MATHER & PLATT PUMPS LTD.	INDIA		
2.1.11	NUOVO PIGNONE INTERNATIONAL S.R.L. (GE OIL CO.)	INDIA		
2.1.12	RUHRPUMPEN INDIA PVT LTD.	INDIA		
2.1.13	SAM TURBO INDUSTRY PVT. LTD	INDIA		
2.1.14	SU MOTORS PVT LTD	INDIA		
2.1.15	SULZER PUMPS INDIA LIMITED	INDIA		
2.1.16	WILO MATHER AND PLATT PUMPS PVT. LTD.	INDIA		
2.1.17	FLOWMORE LTD	INDIA		
2.1.18	GOULDS PUMPS INC	INDIA		
2.1.19	SUNDYNE NIKKISO	INDIA		
2.1.20	SHIN NIPPON MACHINERY CO LTD	INDIA		
2.1.21	JYOTI LTD	INDIA		
2.1.22	MICROFINISH PUMPS PVT. LTD.	INDIA		
<b>2.2</b>	<b>PUMP-CENT.HOR(SPP)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.2.1	SPX FLOW (CLYDE UNION PUMP)	INDIA		
2.2.2	FLOWSERVE INDIA CONTROLS PVT LTD	INDIA		
2.2.3	FLOWSERVE (THOMPSONS KELLY&LEWIS PTY LTD)	INDIA		
2.2.4	HAYWARD TYLER FLUID DYNAMICS LTD.	INDIA		
2.2.5	ITT CORPORATION INDIA PVT LTD	INDIA		
2.2.6	KIRLOSKAR EBARA PUMPS LTD	INDIA		
2.2.7	KSB PUMPS LTD	INDIA		
2.2.8	NUOVO PIGNONE INTERNATIONAL S.R.L. (GE OIL CO.)	INDIA		
2.2.9	RUHRPUMPEN INDIA PVT LTD	INDIA		
2.2.10	SULZER PUMPS INDIA LIMITED	INDIA		
2.2.11	GOULDS PUMPS INC	INDIA		
2.2.12	SHIN NIPPON MACHINERY CO LTD	INDIA		
2.2.13	MICROFINISH PUMPS PVT. LTD.	INDIA		
<b>2.3</b>	<b>PUMP-CENT.HOR(GWS)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.3.1	BEACON WEIR LIMITED	INDIA		
2.3.2	SPX FLOW (CLYDE UNION PUMP)	INDIA		
2.3.3	FLOWMORE LIMITED	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
2.3.4	FLOWSERVE INDIA CONTROLS PVT LTD	INDIA		
2.3.5	FLOWSERVE (THOMPSONS KELLY&LEWIS PTY LTD)	INDIA		
2.3.6	ITT CORPORATION INDIA PVT LTD	INDIA		
2.3.7	KIRLOSKAR BROTHERS LTD	INDIA		
2.3.8	KSB PUMPS LTD	INDIA		
2.3.9	RUHRPUMPEN INDIA PVT LTD.	INDIA		
2.3.10	SAM TURBO INDUSTRYPVT. LTD (ENQ-ACE MKTG)	INDIA		
2.3.11	SU MOTORS PVT LTD	INDIA		
2.3.12	SULZER PUMPS INDIA LIMITED	INDIA		
2.3.13	WILO MATHER AND PLATT PUMPS PVT. LTD.	INDIA		
2.3.14	WPIL LTD	INDIA		
2.3.15	FLOWMORE LTD	INDIA		
2.3.16	GOULDS PUMPS INC	INDIA		
2.3.17	RUHRPUMPEN INDIA PVT LTD.	INDIA		
2.3.18	SHIN NIPPON MACHINERY CO LTD	INDIA		
2.3.19	SUNDYNE NIKKISO	INDIA		
2.3.20	MICROFINISH PUMPS PVT. LTD.	INDIA		
<b>2.4</b>	<b>PUMP-CENT.HOR(LCWS)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.4.1	BEACON WEIR LIMITED	INDIA		
2.4.2	SPX FLOW (CLYDE UNION PUMP)	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
2.4.3	FLOWMORE LIMITED	INDIA		
2.4.4	FLOWSERVE INDIA CONTROLS PVT LTD	INDIA		
2.4.5	FLOWSERVE (THOMPSONS KELLY&LEWIS PTY LTD)	INDIA		
2.4.6	ITT CORPORATION INDIA PVT LTD	INDIA		
2.4.7	KIRLOSKAR BROTHERS LTD	INDIA		
2.4.8	MATHER & PLATT PUMPS LTD.	INDIA		
2.4.9	KSB PUMPS	INDIA		
2.4.10	NUOVO PIGNONE INTERNATIONAL S.R.L. (GE OIL CO.)	INDIA		
2.4.11	RUHRPUMPEN INDIA PVT LTD.	INDIA		
2.4.12	SULZER PUMPS INDIA LIMITED	INDIA		
2.4.13	WILO MATHER AND PLATT PUMPS PVT. LTD.	INDIA		
2.4.14	WPIL Ltd	INDIA		
2.4.15	FLOWMORE LTD	INDIA		
2.4.16	ENSIVAL MORET BELGIUM SA	INDIA		
2.4.17	GOULDS PUMPS INC	INDIA		
2.4.18	SHIN NIPPON MACHINERY CO LTD	INDIA		
2.4.19	HAYWARD TYLER FLUID DYNAMICS LTD.	INDIA		
2.4.20	JYOTI LTD	INDIA		
2.4.21	RUHRPUMPEN INDIA PVT LTD.	INDIA		
2.4.22	MICROFINISH PUMPS PVT. LTD.	INDIA		
<b>2.5</b>	<b>PUMP-CENT.HOR.(MOLTEN SULPHUR)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
2.5.1	GOULDS PUMPS INC (C/o ITT Corporation)	INDIA		
2.5.2	FLOWSERVE CORPORATION	INDIA		
<b>2.6</b>	<b>PUMP-CENT.VERT(GPP)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.6.1	SPX FLOW (CLYDE UNION PUMP)	INDIA		
2.6.2	FLOWSERVE INDIA CONTROLS PVT LTD	INDIA		
2.6.3	FLOWSERVE (THOMPSONS KELLY&LEWIS PTY LTD)	INDIA		
2.6.4	ITT CORPORATION INDIA PVT LTD	INDIA		
2.6.5	KIRLOSKAR BROTHERS LTD	INDIA		
2.6.6	KIRLOSKAR EBARA PUMPS LTD	INDIA		
2.6.7	KISHOR PUMPS PVT LTD.	INDIA		
2.6.8	KSB PUMPS	INDIA		
2.6.9	NUOVO PIGNONE INTERNATIONAL S.R.L. (GE OIL CO.)	INDIA		
2.6.10	RUHRPUMPEN INDIA PVT LTD	INDIA		
2.6.11	SAM TURBO INDUSTRYPVT. LTD (ENQ-ACE MKTG)	INDIA		
2.6.12	SU MOTORS PVT LTD	INDIA		
2.6.13	SULZER PUMPS INDIA LIMITED	INDIA		
2.6.14	WILO MATHER AND PLATT PUMPS PVT. LTD.	INDIA		
2.6.15	WPIL Ltd	INDIA		
2.6.16	FLOWMORE LTD	INDIA		
2.6.17	GOULDS PUMPS INC	INDIA		
2.6.18	DENCIL PUMPS & SYSTEMS PVT. LTD.	INDIA		
<b>2.7</b>	<b>PUMP-CENT.VERT. BARREL TYPE(SPP)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.7.1	SPX FLOW (CLYDE UNION PUMP)	INDIA		
2.7.2	FLOWSERVE INDIA CONTROLS PVT LTD	INDIA		
2.7.3	FLOWSERVE (THOMPSONS KELLY&LEWIS PTY LTD)	INDIA		
2.7.4	ITT CORPORATION INDIA PVT LTD	INDIA		
2.7.5	KIRLOSKAR EBARA PUMPS LTD	INDIA		
2.7.6	KSB PUMPS LTD	INDIA		
2.7.7	LAWRENCE PUMPS ASIA PTE LTD.	INDIA		
2.7.8	NUOVO PIGNONE INTERNATIONAL S.R.L. (GE OIL CO.)	INDIA		
2.7.9	RUHRPUMPEN INDIA PVT LTD	INDIA		
2.7.10	SULZER PUMPS INDIA LIMITED	INDIA		
2.7.11	GOULDS PUMPS INC	INDIA		
2.7.12	SHIN NIPPON MACHINERY CO LTD	INDIA		
<b>2.8</b>	<b>PUMP-CENT.VERT.(GWS)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.8.1	SPX FLOW (CLYDE UNION PUMP)	INDIA		
2.8.2	FLOWMORE LIMITED	INDIA		
2.8.3	FLOWSERVE INDIA CONTROLS PVT LTD	INDIA		
2.8.4	FLOWSERVE (THOMPSONS KELLY&LEWIS PTY LTD)	INDIA		
2.8.5	ITT CORPORATION INDIA PVT LTD	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
2.8.6	KIRLOSKAR BROTHERS LTD	INDIA		
2.8.7	KISHOR PUMPS PVT LTD.	INDIA		
2.8.8	KSB PUMPS LTD	INDIA		
2.8.9	NUOVO PIGNONE INTERNATIONAL S.R.L. (GE OIL CO.)	INDIA		
2.8.10	SAM TURBO INDUSTRYPVT. LTD (ENQ-ACE MKTG)	INDIA		
2.8.11	SU MOTORS PVT LTD	INDIA		
2.8.12	SULZER PUMPS INDIA LIMITED	INDIA		
2.8.13	WILO MATHER AND PLATT PUMPS PVT. LTD.	INDIA		
2.8.14	WPIL LTD	INDIA		
2.8.15	FLOWMORE LTD	INDIA		
2.8.16	RUHRPUMPEN INDIA PVT LTD	INDIA		
2.8.17	JYOTI LTD	INDIA		
2.8.18	SHIN NIPPON MACHINERY CO LTD	INDIA		
2.8.19	DENCIL PUMPS & SYSTEMS PVT. LTD.	INDIA		
<b>2.9</b>	<b>PUMP-CENT.VERT(LCWS)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.9.1	SPX FLOW (CLYDE UNION PUMP)	INDIA		
2.9.2	FLOWMORE LIMITED	INDIA		
2.9.3	FLOWSERVE INDIA CONTROLS PVT LTD	INDIA		
2.9.4	FLOWSERVE (THOMPSONS KELLY&LEWIS PTY LTD)	INDIA		
2.9.5	ITT CORPORATION INDIA PVT LTD	INDIA		
2.9.6	KIRLOSKAR BROTHERS LTD	INDIA		
2.9.7	KISHOR PUMPS PVT. LTD.	INDIA		
2.9.8	KSB PUMPS	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
2.9.9	NUOVO PIGNONE INTERNATIONAL S.R.L. (GE OIL CO.)	INDIA		
2.9.10	SAM TURBO INDUSTRY LTD.	INDIA		
2.9.11	WILO MATHER AND PLATT PUMPS PVT. LTD.	INDIA		
2.9.12	WPIL LTD	INDIA		
2.9.13	FLOWMORE LTD	INDIA		
2.9.14	SULZER PUMPS	INDIA		
2.9.15	RUHRPUMPEN INDIA PVT LTD	INDIA		
2.9.16	JYOTI LTD	INDIA		
2.9.17	SHIN NIPPON MACHINERY CO LTD	INDIA		
2.9.18	MICROFINISH PUMPS PVT. LTD.	INDIA		
<b>2.10</b>	<b>PUMP-CENT.VERT.(MOLTEN SULPHUR)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.10.1	GOULDS PUMPS INC (C/o ITT Corporation)	INDIA		
2.10.2	FLOWSERVE CORPORATION	INDIA		
<b>2.11</b>	<b>PUMP-CENT. (BFW)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.11.1	BHEL	INDIA		
2.11.2	SPX FLOW (CLYDE UNION PUMP)	INDIA		
2.11.3	GOULDS PUMPS INC (C/o ITT Corporation)	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
2.11.4	FLOWSERVE INDIA CONTROLS PVT LTD	INDIA		
2.11.5	FLOWSERVE (THOMPSONS KELLY&LEWIS PTY LTD)	INDIA		
2.11.6	ITT CORPORATION INDIA PVT LTD	INDIA		
2.11.7	KIRLOSKAR EBARA PUMPS LTD	INDIA		
2.11.8	KSB PUMPS LTD	INDIA		
2.11.9	NUOVO PIGNONE INTERNATIONAL S.R.L. (GE OIL CO.)	INDIA		
2.11.10	RUHRPUMPEN INDIA PVT LTD	INDIA		
2.11.11	STERLING FLUID SYSTEMS LTD	INDIA		
2.11.12	SULZER PUMPS INDIA LIMITED	INDIA		
2.11.13	ENSIVAL MORET BELGIUM SA	INDIA		
2.11.14	SUNDYNE NIKKISO	INDIA		
2.11.15	WEIR GABBIONETA SPA	INDIA		
2.11.16	SHIN NIPPON MACHINERY CO LTD	INDIA		
2.11.17	CNP PUMPS INDIA PVT LTD	INDIA		
<b>2.12</b>	<b>PUMP-CENT.SU.(MCRYO)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
<b>2.13</b>	<b>PUMP-CENT.HM/(FW)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.13.1	FLOWMORE LIMITED	INDIA		
2.13.2	KIRLOSKAR BROTHERS LTD	INDIA		
2.13.3	WILO MATHER AND PLATT PUMPS PVT. LTD.	INDIA		
2.13.4	WPIL LTD	INDIA		
2.13.5	FLOWSERVE	INDIA		
2.13.6	ITT	INDIA		
2.13.7	KSB	INDIA		
<b>2.14</b>	<b>PUMP-CENT.HOR.MULTI STAGE(SPP)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.14.1	SPX FLOW (CLYDE UNION PUMP)	INDIA		
2.14.2	FLOWSERVE INDIA CONTROLS PVT LTD	INDIA		
2.14.3	FLOWSERVE (THOMPSONS KELLY&LEWIS PTY LTD)	INDIA		
2.14.4	ITT CORPORATION INDIA PVT LTD	INDIA		
2.14.5	KIRLOSKAR EBARA PUMPS LTD	INDIA		
2.14.6	KSB PUMPS LTD	INDIA		
2.14.7	NUOVO PIGNONE INTERNATIONAL S.R.L. (GE OIL CO.)	INDIA		
2.14.8	RUHRPUMPEN INDIA PVT LTD	INDIA		
2.14.9	SULZER PUMPS INDIA LIMITED	INDIA		
<b>2.15</b>	<b>PUMP-CENT. (LOW CAPACITY HIGH HEAD)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.15.1	FLOWSERVE INDIA CONTROLS PVT LTD.	INDIA		
<b>2.16</b>	<b>PUMP-ROTARY.SCREW</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.16.1	ALEKTON ENGG INDUSTRIES PVT. LTD	INDIA		
2.16.2	FLOWSERVE INDIA CONTROLS PVT LTD	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
2.16.3	NETZSCH TECHNOLOGIES INDIA PVT.LTD	INDIA		
2.16.4	ROTO PUMPS LTD	INDIA		
2.16.5	SEEPX GMBH	INDIA		
2.16.6	ALLWEILER INDIA PVT LTD. (A CIRCOR BUSINESS UNIT)	INDIA		
2.16.7	TUSHACO PUMPS PVT. LTD	INDIA		
2.16.8	UT PUMPS & SYSTEMS PVT. LTD. (BORNEMAN)	INDIA		
2.16.9	ITT	INDIA		
2.16.10	KSB	INDIA		
2.16.11	PLENTY MIRRLESS PUMPS(SPX FLOW)	INDIA		
2.16.12	MADAV FLUID SOLUTIONS-(VIKING)	INDIA		
<b>2.17</b>	<b>PUMP-ROTARY.GEAR</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.17.1	DEL PD PUMPS & GEARS PVT. LTD.	INDIA		
2.17.2	FLOWSERVE INDIA CONTROLS PVT LTD	INDIA		
2.17.3	TUSHACO PUMPS PVT. LTD	INDIA		
2.17.4	ITT	INDIA		
2.17.5	KSB	INDIA		
2.17.6	ALLWEILER INDIA PVT LTD	INDIA		
2.17.7	NETZSCH TECHNOLOGIES INDIA PVT.LTD.	INDIA		
2.17.8	MADAV FLUID SOLUTIONS-(VIKING)	INDIA		
2.17.9	PLENTY MIRRLESS PUMPS(SPX FLOW)	INDIA		
<b>2.18</b>	<b>PUMP-ROTARY.SL.VANE</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.18.1	KSB	INDIA		
2.18.2	FLOWSERVE	INDIA		
2.18.3	ITT	INDIA		
<b>2.19</b>	<b>PUMP-ROT.SCR.ARC(ES)</b>			



MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.19.1	KSB	INDIA		
2.19.2	FLOWSERVE	INDIA		
2.19.3	ITT	INDIA		
<b>2.20</b>	<b>PUMP-ROTARY(LOBE)</b>			
2.20.1	FLOWSERVE	INDIA		
2.20.2	GOULDS PUMPS INC	INDIA		
2.20.3	KSB PUMPS LTD	INDIA		
2.20.4	VOGEL SANG INDIA PVT LTD	INDIA		
<b>2.21</b>	<b>PUMP-SLURRY.RECIPRO</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
<b>2.22</b>	<b>PUMP-SLURRY.CENT.H/V</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.22.1	SPX FLOW (CLYDE UNION PUMP)	INDIA		
2.22.2	FLOWSERVE CORPORATION	INDIA		
2.22.3	FLOWSERVE(THOMPSONS KELLY&LEWIS PTY LTD)	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
2.22.4	ITT CORPORATION INDIA PVT LTD	INDIA		
2.22.5	KIRLOSKAR BROTHERS LTD	INDIA		
2.22.6	KSB PUMPS LTD (POONA)	INDIA		
2.22.7	SAM TURBO INDUSTRY PVT. LTD(ENQ-ACE MKTG)	INDIA		
2.22.8	SULZER PUMPS INDIA LIMITED	INDIA		
2.22.9	SULZER BROTHERS LTD	INDIA		
<b>2.23</b>	<b>PUMP-RECIPRO (API 674)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.23.1	DENCIL PUMPS AND SYSTEMS PVT LTD	INDIA		
2.23.2	FLOWSERVE INDIA CONTROLS PVT LTD	INDIA		
2.23.3	GOMA ENGINEERING PVT LTD	INDIA		
2.23.4	HIRO NISHA SYSTEMS PVT. LTD.	INDIA		
2.23.5	ITT	INDIA		
2.23.6	KSB	INDIA		
2.23.7	SWELORE ENGG. PVT. LTD.	INDIA		
2.23.8	V.K. PUMPS INDUSTRIES PVT. LTD.	INDIA		
2.23.9	POSITIVE METERING PUMP PVT. LTD.	INDIA		
2.23.10	ACCUDYNE INDUSTRIES INDIA PVT. LTD.	INDIA		
<b>2.24</b>	<b>PUMP-A.F.PROPELLER</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.24.1	SPX FLOW (CLYDE UNION PUMP)	INDIA		
2.24.2	FLOWSERVE CORPORATION	INDIA		
2.24.3	ITT	INDIA		
2.24.4	KSB	INDIA		
<b>2.25</b>	<b>PUMP - AIR OPERATED DIAPHRAGM</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.25.1	HI-LIFE MANUFACTURING CO.	INDIA		
2.25.2	MONIBA ANAND ELECTRICALS PVT LTD	INDIA		
2.25.3	ITT	INDIA		
2.25.4	FLOWSERVE	INDIA		
2.25.5	KSB	INDIA		
<b>2.26</b>	<b>EJECTOR</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.26.1	MAZDA LIMITED	INDIA		
2.26.2	NEW FIELD INDUSTRIAL EQUIPMENT PVT LTD	INDIA		
2.26.3	CHEM PROCESS	INDIA		
<b>2.27</b>	<b>COMP-RECIPRO(SPP)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.27.1	BURCKHARDT COMPRESSION (INDIA) PVT.LTD.	INDIA		
2.27.2	SIEMENS (FORMER DRESSER RAND INDIA PVT LTD)	INDIA		
2.27.3	GARDNER DENVER	INDIA		
2.27.4	HITACHI LTD. INTERNATIONAL	INDIA		
2.27.5	NEUMAN & ESSER ENGINEERING INDIA PVT LTD	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
2.27.6	ATLAS COPCO	INDIA		
2.27.7	DRESSER RAND	INDIA		
2.27.8	HOWDEN	INDIA		
2.27.9	EMERSON COPELAND	INDIA		
<b>2.28</b>	<b>COMP-RECIPRO(PIANS)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.28.1	BURCKHARDT COMPRESSION (INDIA) PVT. LTD.	INDIA		
2.28.2	DRESSER RAND INDIA PVT LTD	INDIA		
2.28.3	SIEMENS (FORMER DRESSER RAND INDIA PVT LTD)	INDIA		
2.28.4	GARDNER DENVER	INDIA		
2.28.5	HITACHI LTD	INDIA		
2.28.6	INGERSOLL-RAND (INDIA) LTD.	INDIA		
2.28.7	KIRLOSKAR PNEUMATIC CO LTD	INDIA		
2.28.8	NEUMAN & ESSER ENGINEERING INDIA PVT LTD	INDIA		
2.28.9	NUOVO PIGNONE SPA	INDIA		
2.28.10	ATLAS COPCO	INDIA		
2.28.11	EMERSON COPELAND	INDIA		
<b>2.29</b>	<b>COMP-RECIPRO(DIAPHRAGM)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.29.1	NEUMAN & ESSER ENGINEERING INDIA PVT LTD	INDIA		
2.29.2	SUNDYNE	INDIA		
<b>2.30</b>	<b>COMP-RECIPRO(LABYRINTH)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.30.1	BURCKHARDT COMPRESSION AG	INDIA		
<b>2.31</b>	<b>COMP. HIGH PRESSURE(PIANS)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.31.1	NEUMAN & ESSER ENGINEERING (I) PVT LTD.	INDIA		
<b>2.32</b>	<b>COMP-CENT.(SPP)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.32.1	BHEL	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
2.32.2	NUOVO PIGNONE INTERNATIONAL S.R.L. (GE OIL CO.)	INDIA		
2.32.3	HITACHI LTD	INDIA		
2.32.4	MAN TURBOMASCHINEN AG	INDIA		
2.32.5	mitsubishi heavy industries ltd	INDIA		
2.32.6	SIEMENS (FORMER DRESSER RAND INDIA PVT LTD)	INDIA		
2.32.7	ATLAS COPCO	INDIA		
<b>2.33</b>	<b>COMP-ROT.LIQUID RING/VP(PS)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.33.1	BUSCH GVT LTD (FORMER GRAHAM PRECISION PUMP)	INDIA		
2.33.2	EDWARDS LTD (PROCESS VACUUM SYSTEMS)	INDIA		
2.33.3	GARDNER DENVER NASH ENGINEERED PRODUCTS INDIA PVT LTD	INDIA		
2.33.4	JB SAWANT ENGG PVT LTD	INDIA		
2.33.5	PPI SYSTEM	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
2.33.6	SIEMENS (FORMER DRESSER RAND INDIA PVT LTD)	INDIA		
2.33.7	SIHI PUMPS ( SHANGHAI) CO.,LTD	INDIA		
2.33.8	SWAM PNEUMATICS PVT. LTD.	INDIA		
2.33.9	UNOZAWA GUMI IRON WORKS LTD	INDIA		
2.33.10	FLOWSERVE	INDIA		
<b>2.34</b>	<b>COMP-ROT.LIQUID RING / VP(AS)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.34.1	GARDNER DENVER NASH ENGINEERED PRODUCTS INDIA PVT LTD	INDIA		
2.34.2	BUSCH GVT LTD (FORM GRAHAM PRECISION PUMP	INDIA		
2.34.3	EDWARDS LTD (PROCESS VACUUM SYSTEMS)	INDIA		
2.34.4	JB SAWANT ENGG PVT LTD	INDIA		
2.34.5	PPI SYSTEM	INDIA		
2.34.6	SIHI PUMPS ( SHANGHAI) CO.,LTD	INDIA		
2.34.7	SWAM PNEUMATICS PVT. LTD.	INDIA		
2.34.8	DRESSER RAND	INDIA		
2.34.9	PRECISION PNEUMATICS INDUSTRIES	INDIA		
<b>2.35</b>	<b>MECH.SEAL FOR PUMPS/AGITATORS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.35.1	AESSEAL INDIA PVT.LTD.	INDIA		
2.35.2	CHHETRA SEALS INDIA PVT. LTD.	INDIA		
2.35.3	EAGLEBURGMANN INDIA PVT LTD	INDIA		
2.35.4	FLOWSERVE SANMAR LTD	INDIA		
2.35.5	JOHN CRANE SEALING SYSTEMS INDIA PVT. LTD.	INDIA		
2.35.6	LEAK PROOF ENGG (I) PVT LTD	INDIA		
<b>2.36</b>	<b>MECHANICAL SEALS (API 682 TYPE &amp; DRY GAS SEAL)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.36.1	AESSEAL INDIA PVT.LTD.	INDIA		
2.36.2	CHHETRA SEALS INDIA PVT. LTD.	INDIA		
2.36.3	EAGLEBURGMANN INDIA PVT LTD	INDIA		
2.36.4	FLOWSERVE SANMAR LTD	INDIA		
2.36.5	JOHN CRANE SEALING SYSTEMS INDIA PVT. LTD.	INDIA		
2.36.6	LEAK PROOF ENGG (I) PVT LTD	INDIA		
<b>2.37</b>	<b>COMP-ROT.SCREW(PS)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.37.1	ATLAS COPCO	INDIA		
2.37.2	NUOVO PIGNONE INTERNATIONAL S.R.L. (GE OIL CO.)	INDIA		
2.37.3	HOWDEN SOLYVENT (INDIA) PVT. LTD. (C/O Howden Thomassen India Pvt Ltd)	INDIA		
2.37.4	INGERSOLL RAND	INDIA		
2.37.5	KIRLOSKAR PNEUMATIC CO LTD	INDIA		
2.37.6	MAN TURBOMASCHINEN AG	INDIA		
2.37.7	SIEMENS	INDIA		
2.37.8	ELGI EQUIPMENT LIMITED	INDIA		
<b>2.38</b>	<b>COMP-ROT.SCREW(PIAS)</b>			
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.38.1	ELGI EQUIPMENTS LTD.	INDIA		
2.38.2	HOWDEN SOLYVENT (INDIA) PVT. LTD. (C/O Howden Thomassen India Pvt Ltd)	INDIA		
2.38.3	INGERSOLL-RAND (INDIA) LTD.	INDIA		
2.38.4	KIRLOSKAR PNEUMATIC CO LTD- (PUNE)	INDIA		
2.38.5	MAN TURBOMASCHINEN AG	INDIA		
2.38.6	ATLAS COPCO	INDIA		
<b>2.39</b>	<b>COMP-EXPANDER(PRO)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.39.1	NUOVO PIGNONE INTERNATIONAL S.R.L. (GE OIL CO.)	INDIA		
<b>2.40</b>	<b>COMP-EXPANDER(AIR)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.40.1	NUOVO PIGNONE INTERNATIONAL S.R.L. (GE OIL CO.)	INDIA		
<b>2.41</b>	<b>TURBINE-STEAM(GP)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.41.1	BELLISS INDIA LTD	INDIA		
2.41.2	HITACHI LTD.	INDIA		
2.41.3	MAN TURBOMASCHINEN AG	INDIA		
2.41.4	mitsubishi heavy industries ltd	INDIA		
2.41.5	NUOVO PIGNONE INTERNATIONAL S.R.L. (GE OIL CO.)	INDIA		
2.41.6	SIEMENS (FORMER DRESSER RAND INDIA PVT LTD)	INDIA		
2.41.7	WESTINGHOUSE ELECTRIC CORPORATION	INDIA		
2.41.8	KIRLOSKAR EBARA PUMPS LTD.	INDIA		
<b>2.42</b>	<b>TURBINE-STEAM(SP)</b>			
2.42.1	ABB LTD	INDIA		
2.42.2	BHEL	INDIA		
2.42.3	GEC ALSTHOM TURBINE GENERATORS	INDIA		
2.42.4	HITACHI LTD.	INDIA		
2.42.5	MAN TURBOMASCHINEN AG	INDIA		
2.42.6	mitsubishi heavy industries ltd	INDIA		
2.42.7	NUOVO PIGNONE INTERNATIONAL S.R.L. (GE OIL CO.)	INDIA		
2.42.8	SIEMENS (FORMER DRESSER RAND INDIA PVT LTD)	INDIA		
2.42.9	WESTINGHOUSE ELECTRIC CORPORATION	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
2.42.10	KIRLOSKAR EBARA PUMPS LTD.	INDIA		
<b>2.43</b>	<b>TURBINE-GAS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.43.1	BHEL	INDIA		
2.43.2	MAN TURBOMASCHINEN AG	INDIA		
2.43.3	mitsubishi heavy industries ltd	INDIA		
2.43.4	NUOVO PIGNONE INTERNATIONAL S.R.L. (GE OIL CO.)	INDIA		
2.43.5	SIEMENS INDUSTRIAL TURBO MACHINERY LTD.	INDIA		
2.43.6	WESTINGHOUSE ELECTRIC CORPORATION	INDIA		
<b>2.44</b>	<b>FAN-ID/FD</b>			
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.44.1	ABB ALVI	INDIA		
2.44.2	AEROTO BOLDROCCHI (I) P.LTD.	INDIA		
2.44.3	AIR CONTROL & CHEMICAL ENGG.CO.LTD.	INDIA		
2.44.4	ANDREW YULE & CO LTD-KOLKATA	INDIA		
2.44.5	BHEL	INDIA		
2.44.6	CBI Group	INDIA		
2.44.7	EBARA CORPORATION	INDIA		
2.44.8	FLAKT (INDIA) LTD (UPTO 130 kW CHENNAI)	INDIA		
2.44.9	HOWDEN SOLYVENT (INDIA) PVT. LTD.	INDIA		
2.44.10	mitsubishi heavy industries ltd	INDIA		
2.44.11	REITZ INDIA LTD	INDIA		
2.44.12	SOLYVENT FLAKT (INDIA) PVT. LIMITED	INDIA		
2.44.13	THERMAX LTD	INDIA		
2.44.14	TLT ENGINEERING INDIA PVT LTD	INDIA		
2.44.15	HOWDEN PROCESS COMPRESSORS	INDIA		
2.44.16	TUTHILL	INDIA		
<b>2.45</b>	<b>FAN-AXIAL FLOW</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.45.1	MARATHON ELECTRIC MOTOR I LTD-	INDIA		
2.45.2	PATELS AIRFLOW LTD.	INDIA		
<b>2.46</b>	<b>BLOWER-TURBO CENTRIFUGAL</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.46.1	AIR CONTROL & CHEMICAL ENGG.CO.LTD.	INDIA		
2.46.2	BATLIBOI ENVIRONMENTAL ENGG.LIMITED	INDIA		
2.46.3	BOLDROCCHI (I) PVT. LTD.	INDIA		
2.46.4	HITACHI LTD.	INDIA		
2.46.5	HOWDEN SOLYVENT (INDIA) PVT. LTD.	INDIA		
2.46.6	MAN TURBOMASCHINEN AG	INDIA		
2.46.7	MARATHON ELECTRIC MOTOR I LTD-	INDIA		
2.46.8	mitsubishi heavy industries ltd	INDIA		
2.46.9	NUOVO PIGNONE INTERNATIONAL S.R.L. (GE OIL CO.)	INDIA		
2.46.10	PATELS AIRFLOW LTD.	INDIA		
2.46.11	SOLYVENT FLAKT (INDIA) PVT. LTD.	INDIA		
2.46.12	HOWDEN PROCESS COMPRESSORS	INDIA		
2.46.13	SIEMENS	INDIA		
2.46.14	TUTHILL	INDIA		
2.46.15	TMVT INDUSTRIES PVT. LTD.	INDIA		
2.46.16	PPI SYSTEM	INDIA		
<b>2.47</b>	<b>POSITIVE DISPLACEMENT PUMPS RECIPROCATING - (CONTROLLED VOLUME)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.47.1	ACCLUDYNE INDUSTRIES	INDIA		
2.47.2	FLOWSERVE	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
2.47.3	GOULDS PUMPS INC (M/s ITT Corporation Ltd.)	INDIA		
2.47.4	KSB PUMPS LTD	INDIA		
2.47.5	POSITIVE METERING SYSTEM	INDIA		
2.47.6	SPX FLOW TECHNOLOGIES PVT. LTD.	INDIA		
2.47.7	SWELORE ENGG (P) LTD.	INDIA		
2.47.8	V.K.PUMPS INDUSTRIES	INDIA		
2.47.9	MILTON ROY	INDIA		
2.47.10	SHAPO TOOLS	INDIA		
<b>2.48</b>	<b>AGITATOR</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.48.1	A J SERVICES	INDIA		
2.48.2	CEECONS INDIA	INDIA		
2.48.3	GMM PFAUDLER LTD	INDIA		
2.48.4	HITACHI LTD.	INDIA		
2.48.5	METSO MINERALS CANADA INC.	INDIA		
2.48.6	MIXRITE CORPORATION	INDIA		
2.48.7	MIXRITE MIXING SYSTEMS	INDIA		
2.48.8	RATHI MIXERS PVT LTD	INDIA		
2.48.9	REMI PROCESS PLANT & MACHINERY LTD	INDIA		
2.48.10	SHAPOTOOLS INDIA	INDIA		
2.48.11	STANDARD ENGINEERS	INDIA		
2.48.12	SUDARSHAN CHEMICAL INDUSTRIES LTD (FORMERLY DIV. KNOWN AS RATHI VESSELS & SYSTEMS PVT LTD.) INDIA	INDIA		
2.48.13	SPX PROCESS EQUIPMENT LTD	INDIA		
<b>2.49</b>	<b>Centrifugal Pumps - Sealless General Service</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.49.1	FLOWSERVE	INDIA		
<b>2.50</b>	<b>Special Purpose Gear Unit</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.50.1	TRIVENI	INDIA		
2.50.6	TRIVENI	INDIA		
<b>2.51</b>	<b>ONE WAY CLUTCH</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
<b>2.52</b>	<b>FLEXIBLE METALLIC COUPLING</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
2.52.1	EUROFLEX (NON API 617)	INDIA		
2.52.2	RATHI (NON API 617)	INDIA		
2.52.3	UNIQUE (NON API 617)	INDIA		
2.52.4	JOHNCRANE	INDIA		
<b>2.53</b>	<b>Centrifugal Pumps - Non Metallic / Lined</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.53.1	FLOWSERVE	INDIA		
2.53.2	ITT (GOULDS PUMPS)	INDIA		
2.53.3	AMBICA	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
2.53.4	Bhagwati Engineering Works	INDIA		
2.53.5	Process Pumps (I) Pvt.Ltd.	INDIA		
2.53.6	Leak-Proof Pumps (I) Pvt.Ltd.	INDIA		
<b>2.54</b>	<b>VACUUM PUMPS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
2.54.1	PPI PUMPS PVT. LTD.	INDIA		
2.54.2	VINDI VAK PUMP PVT. LTD.	INDIA		
2.54.3	JOYAM ENGINEERS & CONSULTANTS PVT. LTD.	INDIA		
2.54.4	INDO-AIR COMPRESSORS PVT. LTD.	INDIA		
2.54.5	CORE ENERGY SYSTEMS PVT. LTD.	INDIA		
2.54.9	GARDNER DENVER ENGINEERING PRODUCTS INDIA PVT. LTD.	INDIA / SINGAPORE		
2.54.11	BUSCH VACUUM INDIA PVT LTD.	UK / INDIA		
2.54.12	INDUSTRIAL BLOWERS SERVICES LTD.	UK / INDIA		
<b>2.55</b>	<b>PUMP-CRITICAL TEMPERATURE COLD SERVICE</b>			
<b>3</b>	<b>FIRE FIGHTING EQUIPMENT</b>			
<b>3.1</b>	<b>FIRE EXTINGUISHERS (PORTABLE)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
3.1.1	ASCO STRUMECH PVT LTD	INDIA		
3.1.2	BHARAT ENGG. WORKS	INDIA		
3.1.3	BRIJBASI HI-TECH UDYOG	INDIA		
3.1.4	FIRE SAFETY DEVICES PVT. LIMITED	INDIA		
3.1.5	GUNNEBO INDIA LIMITED	INDIA		
3.1.6	INTEGRATED FIRE PROTECTION PVT. LTD.	INDIA		
3.1.7	INTIME FIRE APPLIANCES PVT LTD	INDIA		
3.1.8	KANADIA FYR FYTER PVT. LTD.	INDIA		
3.1.9	KIDDE INDIA LTD.	INDIA		
3.1.10	NEWAGE INDUSTRIES	INDIA		
3.1.11	NITIN FIRE PROTECTION INDUSTRIES LTD	INDIA		
3.1.12	SAFEX FIRE SERVICES LTD.	INDIA		
3.1.13	SUPREMEX EQUIPMENTS	INDIA		
3.1.14	UNITED FIRE EQUIPMENTS PVT. LTD.	INDIA		
3.1.15	VIMAL FIRE CONTROLS PVT LTD	INDIA		
3.1.16	ZENITH FIRE SERVICES (INDIA) PVT. LTD.	INDIA		
3.1.17	MINIMAX	INDIA		
<b>3.2</b>	<b>SAFETY SHOWER &amp; EYE WASHER</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
3.2.1	CREATIVE ENGINEERS	INDIA		
3.2.2	PRADEEP SAFETY PVT LTD.	INDIA		
3.2.3	FRANCIS LESLIE & CO.	INDIA		
3.2.4	STAR ENGINEERS	INDIA		
3.2.5	TYCO FIRE & INTEGRATED SOLUTIONS	INDIA		
3.2.6	UNICARE EMERGENCY EQPT	INDIA		
<b>3.3</b>	<b>CLEAN AGENT SYSTEM</b>			
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
<b>A</b>	<b>INDIAN BIDDERS</b>			
3.3.1	CHETAN CORPORATION	INDIA		
3.3.2	MX SYSTEMS INTERNATIONAL PVT. LTD.	INDIA		
3.3.3	NEW FIRE ENGINEERS (P) LTD	INDIA		
3.3.4	NITIN FIRE PROTECTION INDUSTRIES LTD	INDIA		
3.3.5	SIEMENS LIMITED	INDIA		
3.3.6	TYCO FIRE & SECURITY INDIA PVT. LTD	INDIA		
3.3.7	UNITECH NOHMI FIRE PROTECTION SYS(P)LTD	INDIA		
3.3.8	CHETAN ENGINEERS	INDIA		
3.3.9	MINIMAX	INDIA		
3.3.10	VIMAL FIRE CONTROLS PVT LTD.	INDIA		
3.3.11	STERLING FIRE FIGHTING SERVICES PVT LTD.	INDIA		
3.3.12	WILSON FIRE FIGHTING EQUIPMENTS	INDIA		
<b>3.4</b>	<b>DELUGE VALVE AND HEAT DETECTORS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
3.4.1	DE'S TECHNICO PVT LTD	INDIA		
3.4.2	FIRETECH EQUIPMENTS & SYSTEM PVT. LTD.	INDIA		
3.4.3	FLOW-TEK VALVES & CONTROLS INC	INDIA		
3.4.4	HD FIREPROTECT PVT. LTD.	INDIA		
3.4.5	UTC FIRE AND SECURITY INDIA	INDIA		
3.4.6	TYCO FIRE AND INTEGRATED SOLUTIONS	INDIA		
3.4.7	MINIMAX	INDIA		
<b>3.5</b>	<b>HOSE DELIVERY</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
3.5.1	CHHATARIYA FIRETECH INDUSTRIES	INDIA		
3.5.2	DEWAS HYDROQUIP PVT LTD	INDIA		
3.5.3	HELIFLEX HYDRAULICS & ENGG.CO.	INDIA		
3.5.4	INDUSTRIAL COMMERTIAL CORPORATION	INDIA		
3.5.5	NEWAGE FIRE PROTECTION INDUSTRIES P LTD	INDIA		
3.5.6	NEWAGE FIREFIGHTING CO. LTD.	INDIA		
3.5.7	NITIN FIRE PROTECTION INDUSTRIES LTD	INDIA		
3.5.8	SUKAN EQUIPMENTS PVT LTD	INDIA		
3.5.9	CHHATARIYA RUBBER & CHEMICAL INDUSTRIES	INDIA		
<b>3.6</b>	<b>FIRE HOSE ACCESSORIES</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
3.6.1	ASCO STRUMECH PVT.LTD.	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
3.6.2	BRIJBASI HI-TECH UDYOG	INDIA		
3.6.3	GUNNEBO INDIA LIMITED	INDIA		
3.6.4	KIDDE INDIA LTD.	INDIA		
3.6.5	NEWAGE FIRE PROTECTION INDUSTRIES P LTD	INDIA		
3.6.6	NEWAGE INDUSTRIES	INDIA		
3.6.7	SHAH BHOGILAL JETHALAL & BROTHERS	INDIA		
3.6.8	SUKAN EQUIPMENTS PVT LTD	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
3.6.9	SUPREMEX EQUIPMENTS	INDIA		
3.6.10	UNITED FIRE EQUIPMENTS PVT. LTD.	INDIA		
3.6.11	VIMAL FIRE CONTROLS PVT LTD	INDIA		
<b>3.7</b>	<b>FOAM MAKER</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
3.7.1	BRIJBASI HI-TECH UDYOG	INDIA		
3.7.2	FIRETECH EQUIPMENTS & SYSTEM PVT. LTD.	INDIA		
3.7.3	HD FIREPROTECT PVT. LTD.	INDIA		
3.7.4	NEWAGE INDUSTRIES	INDIA		
<b>3.8</b>	<b>VAPOUR SEAL CHAMBER</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
3.8.1	BRIJBASI HI-TECH UDYOG	INDIA		
3.8.2	HD FIREPROTECT PVT. LTD.	INDIA		
3.8.3	NEWAGE FIREFIGHTING CO, LTD.	INDIA		
<b>3.9</b>	<b>BRANCH PIPES</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
3.9.1	ASCO STRUMECH PVT LTD	INDIA		
3.9.2	BRIJBASI HI-TECH UDYOG	INDIA		
3.9.3	GUNNEBO INDIA LIMITED	INDIA		
3.9.4	NEWAGE FIREFIGHTING CO.LTD.	INDIA		
3.9.5	NITIN FIRE PROTECTION INDUSTRIES LTD	INDIA		
3.9.6	SHAH BHOGILAL JETHALAL & BROTHERS	INDIA		
3.9.7	SUKAN EQUIPMENTS PVT LTD	INDIA		
3.9.8	SUPREMEX EQUIPMENTS	INDIA		
3.9.9	UNITED FIRE EQUIPMENTS PVT. LTD.	INDIA		
3.9.10	VIMAL FIRE CONTROLS PVT LTD	INDIA		
3.9.11	ZENITH FIRE SERVICES (INDIA) PVT. LTD.	INDIA		
<b>3.1</b>	<b>INLINE INDUCTORS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
3.10.1	BRIJBASI HI-TECH UDYOG	INDIA		
3.10.2	FIRETECH EQUIPMENTS & SYSTEM PVT. LTD.	INDIA		
3.10.3	INTEGRATED FIRE PROTECTION PVT. LTD.	INDIA		
3.10.4	NEWAGE FIREFIGHTING CO.LTD.	INDIA		
<b>3.11</b>	<b>WATER SPRINKLER</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
3.11.1	HD FIREPROTECT PVT. LTD.	INDIA		
3.11.2	MX SYSTEMS INTERNATIONAL PVT. LTD.	INDIA		
3.11.3	NITIN FIRE PROTECTION INDUSTRIES LTD	INDIA		
3.11.4	TYCO FIRE & SECURITY INDIA PVT. LTD	INDIA		
3.11.5	MINIMAX	INDIA		
<b>3.12</b>	<b>FIXED FOAM SYSTEM (FOAM PACKAGE)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
3.12.1	BRIJBASI HI-TECH UDYOG	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
3.12.2	HD FIREPROTECT PVT. LTD.	INDIA		
3.12.3	MX SYSTEMS INTERNATIONAL PVT. LTD.	INDIA		
<b>3.13</b>	<b>HYDRANT/LANDING VALVE</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
3.13.1	ASCO STRUMECH PVT.LTD.	INDIA		
3.13.2	BRIJBASI HI-TECH UDYOG	INDIA		
3.13.3	GUNNEBO INDIA LIMITED	INDIA		
3.13.4	NEWAGE FIREFIGHTING CO.LTD.	INDIA		
3.13.5	NITIN FIRE PROTECTION INDUSTRIES LTD	INDIA		
3.13.6	SHAH BHOGILAL JETHALAL & BROTHERS	INDIA		
3.13.7	SUKAN EQUIPMENTS PVT LTD	INDIA		
3.13.8	UNITED FIRE EQUIPMENTS PVT. LTD.	INDIA		
3.13.9	VENUS PUMP & ENGINEERING WORKS	INDIA		
3.13.10	KIDDE INDIA LTD	INDIA		
3.13.11	TYCO FIRE & INTEGRATED FIRE SOLUTION	INDIA		
3.13.12	ZENITH FIRE SERVICES	INDIA		
<b>3.14</b>	<b>SPRAY NOZZLE- FIRE FIGHTING</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
3.14.1	FIRETECH EQUIPMENTS & SYSTEM PVT. LTD.	INDIA		
3.14.2	HD FIREPROTECT PVT. LTD.	INDIA		
3.14.3	TYCO FIRE & INTEGRATED FIRE SOLUTION	INDIA		
3.14.4	UTC FIRE AND SECURITY INDIA LTD	INDIA		
<b>3.15</b>	<b>AUTO DCP EXTINGUISHING SYSTEM</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
3.15.1	MX SYSTEMS INTERNATIONAL PVT. LTD.	INDIA		
3.15.2	VUJAY FIRE VEHICLES AND PUMPS LTD	INDIA		
<b>3.16</b>	<b>HVMV SPRAY SYSTEMS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
3.16.1	AGNICE FIRE PROTECTION. PVT LTD.	INDIA		
3.16.2	DE'S TECHNICO PVT LTD.	INDIA		
3.16.3	HD FIREPROTECT PVT. LTD.	INDIA		
3.16.4	HONEYWELL AUTOMATION INDIA LTD	INDIA		
3.16.5	KIDDE INDIA LTD.	INDIA		
3.16.6	Wilb MATHER & PLATT PUMPS LTD.	INDIA		
3.16.7	MX SYSTEMS INTERNATIONAL PVT. LTD.	INDIA		
3.16.8	NEW FIRE ENGINEERS (P) LTD	INDIA		
3.16.9	TECHNO FIRE PROTECTION SERVICES PVT LTD	INDIA		
3.16.10	THERMOSYSTEMS PVT LTD	INDIA		
3.16.11	MEHTA AND ASSO FIRE PROTECTION SYSTEM	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
3.16.12	TYCO ENGINEERING AND CONSTRUCTION PVT LTD	INDIA		
<b>3.17</b>	<b>RM SEAL FIRE PROTECTION SYSTEM</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
3.17.1	HSE ENGINEERS PVT. LTD.	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
3.17.3	VIMAL FIRE CONTROLS PVT LTD	INDIA		
<b>3.18</b>	<b>WATER MONITOR</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
3.18.1	AKRON BRASS COMPANY	INDIA		
3.18.2	BRIJBASI HI-TECH UDYOG	INDIA		
3.18.3	DE'S TECHNICO PVT LTD.	INDIA		
3.18.4	FIRETECH EQUIPMENTS & SYSTEM PVT. LTD.	INDIA		
3.18.5	GUNNEBO INDIA LIMITED	INDIA		
3.18.6	HD FIREPROTECT PVT. LTD.	INDIA		
3.18.7	NEWAGE FIREFIGHTING CO.LTD.	INDIA		
3.18.8	NEWAGE INDUSTRIES	INDIA		
3.18.9	SHAH BHOGILAL JETHALAL & BROTHERS	INDIA		
3.18.10	SUPREMEX EQUIPMENTS	INDIA		
3.18.11	VIMAL FIRE CONTROLS PVT LTD	INDIA		
3.18.12	VISHAL FIRE PROTECTION EQUIPMENTS	INDIA		
3.18.13	ZENITH FIRE SERVICES (INDIA) PVT LTD.	INDIA		
3.18.14	MINIMAX	INDIA		
<b>3.19</b>	<b>WATER CUM FOAM MONITOR</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
3.19.1	AKRON BRASS COMPANY	INDIA		
3.19.2	FIRETECH EQUIPMENTS & SYSTEM PVT. LTD.	INDIA		
3.19.3	HD FIREPROTECT PVT. LTD.	INDIA		
3.19.4	NEWAGE FIREFIGHTING CO.LTD.	INDIA		
3.19.5	SHAH BHOGILAL JETHALAL & BROTHERS	INDIA		
3.19.6	VIMAL FIRE CONTROLS PVT LTD	INDIA		
3.19.7	ANGUS FIRE ARMER LTD	INDIA		
3.19.8	TYCO FIRE AND INTEGRATED SOLUTIONS	INDIA		
3.19.9	VISHAL FIRE PROTECTION EQUIPMENTS	INDIA		
<b>3.2</b>	<b>LONG RANGE MONITOR</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
3.20.1	AKRON BRASS COMPANY	INDIA		
3.20.2	HD FIREPROTECT PVT. LTD.	INDIA		
3.20.3	NEWAGE FIREFIGHTING CO.LTD.	INDIA		
3.20.4	NEWAGE INDUSTRIES	INDIA		
3.20.5	SHAH BHOGILAL JETHALAL & BROTHERS	INDIA		
3.20.6	VIMAL FIRE CONTROLS PVT LTD	INDIA		
<b>3.21</b>	<b>REMOTE CONTROLLED MONITORS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
3.21.1	AKRON BRASS COMPANY	INDIA		
3.21.2	HD FIRE PROTECT PRIVATE LTD	INDIA		
3.21.3	NEWAGE FIREFIGHTING CO.LTD.	INDIA		
3.21.4	NEWAGE INDUSTRIES	INDIA		
3.21.5	SHAH BHOGILAL JETHALAL & BROTHERS	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
3.21.6	VIMAL FIRE CONTROLS PVT LTD	INDIA		
<b>4</b>	<b>PACKAGES , HVAC &amp; MISCELLANEOUS</b>			
<b>4.1</b>	<b>DESALTER PACKAGE (COALESCER - ELECTROSTATIC)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
<b>4.2</b>	<b>VACUUM EJECTOR CONDENSER SYS(ENGINEERED)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.2.1	GODREJ & BOYCE MFG. CO. LTD.	INDIA		
4.2.2	MAZDA LIMITED.	INDIA		
<b>4.3</b>	<b>VACUUM EJECTOR CONDENSER SYS(UNENGINEERED)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.3.1	MAZDA LIMITED.	INDIA		
<b>4.4</b>	<b>DOSING PACKAGE(SKID MOUNTED)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.4.1	ACCUDYNE INDUSTRIES INDIA PVT. LTD.	INDIA		
4.4.2	DENCIL PUMPS AND SYSTEMS PVT. LTD.	INDIA		
4.4.3	ENPRO INDUSTRIES PVT LTD	INDIA		
4.4.4	SWELORE ENGG. (P) LTD	INDIA		
4.4.5	V.K. PUMPS INDUSTRIES PVT. LTD	INDIA		
4.4.6	METAPOW ENGINEERS PVT. LTD.	INDIA		
4.4.8	MILTON ROY INDIA PVT LTD	INDIA		
<b>4.5</b>	<b>PRU (Propylene Recovery Unit) DRYER</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
<b>4.6</b>	<b>PNEUMATIC CONVEYING PACKAGE(FLUID START PIPE)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.6.1	COPERION IDEAL PVT LTD	INDIA		
<b>4.7</b>	<b>EXTRUDER / PELLETIZER PACKAGE</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
<b>4.8</b>	<b>CATALYST, ADDITIVES UNLOADING PACKAGE</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
<b>4.9</b>	<b>LOSS-IN WEIGHT FEEDER PACKAGE / SCREW CONVEYOR</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
<b>4.10</b>	<b>ROTARY FEEDER</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
<b>4.11</b>	<b>BAGGING PLANT</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
<b>4.12</b>	<b>VACUUM CLEANING SYSTEMS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
<b>4.13</b>	<b>DRIER-AIR/GAS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.13.1	CICB-CHEMICON PVT.LTD.	INDIA		
4.13.2	DELAIR INDIA PVT LTD	INDIA		
4.13.3	GAS PROCESSING EQUIPMENT PVT. LTD	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
4.13.4	INDCON PROJECTS & EQUIPMENTS LTD	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
4.13.5	LLOYDS STEELS INDUSTRIES LTD.	INDIA		
4.13.6	PURIFLAIR INDIA PVT LIMITED	INDIA		
4.13.7	SUMMITS HYGRONICS PVT.LTD	INDIA		
4.13.8	TRIDENT PNEUMATIC PVT LTD	INDIA		
4.13.9	ULTRAFILTER (INDIA) PVT. LTD	INDIA		
4.13.10	UTTAM VALUE STEELS LTD	INDIA		
4.13.11	CLEAN AIR	INDIA		
4.13.12	GASO ENERGY SYSTEMS INDIA PVT LTD	INDIA		
4.13.13	KILBURN ENGINEERING	INDIA		
4.13.14	PROCESS EQUIPMENT ENGINEERING	INDIA		
4.13.15	ADVANCED COMPAIR SYSTEM, INDIA	INDIA		
4.13.16	AIROX NIGEN EQUIPMENTS PVT LTD	INDIA		
<b>4.14</b>	<b>FILTER BAG TYPE</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.14.1	BATLIBOI ENVIRONMENTAL ENGG.LIMITED	INDIA		
4.14.2	COPERION IDEAL PVT. LTD.	INDIA		
4.14.3	F.HARLEY & CO. PVT.LTD.	INDIA		
4.14.4	THERMAX LIMITED	INDIA		
4.14.5	PALL	INDIA		
<b>4.15</b>	<b>PLANT &amp; INSTRUMENT AIR COMPRESSOR PACKAGE</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.15.1	KIRLOSKAR PNEUMATIC CO. LTD	INDIA		
4.15.2	BHARAT HEAVY ENGINEERING LIMITED (BHEL)	INDIA		
<b>4.16</b>	<b>COOLING TOWER</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.16.1	ADVANCE COOLING TOWERS PVT.LTD.	INDIA		
4.16.2	BGR ENERGY SYSTEMS LIMITED	INDIA		
4.16.3	GACTEL TURNKEY PROJECTS	INDIA		
4.16.4	PAHARPUR COOLING TOWERS LTD	INDIA		
4.16.5	HAMON SHRIRAM COTRELL PVT LTD	India		
<b>4.17</b>	<b>NITROGEN PLANT (CRYOGENIC)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.17.1	AIR LIQUIDE GLOBAL E&C SOLUTIONS INDIA PRIVATE LIMITED	INDIA		
4.17.2	AIR LIQUIDE ENGINEERING INDIA PRIVATE LTD (ALEI)	INDIA		
4.17.3	BHARAT HEAVY ELECTRICALS LTD - HPVP	INDIA		
4.17.4	CRYOGAS EQUIPMENT PRIVATE LIMITED	INDIA		
4.17.5	GARDNER DENVER ENGINEERED PRODUCTS INDIA PVT LTD	INDIA		
4.17.6	INOX AIR PRODUCTS LTD.	INDIA		
4.17.7	NIRMAL INDUSTRIAL CONTROLS PVT. LTD.	INDIA		
4.17.8	LINDE	INDIA		
4.17.9	INOX INDIA PVT. LTD.	INDIA		
<b>4.18</b>	<b>DM WATER &amp; CONDENSATE POLISHING UNIT</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
4.18.1	AQUATECH SYSTEMS (ASIA) PVT. LTD	INDIA		
4.18.2	ION EXCHANGE (INDIA) LTD	INDIA		
4.18.3	VA TECH WABAG LTD	INDIA		
4.18.4	WIPRO WATER	INDIA		
<b>4.19</b>	<b>EFFLUENT TREATMENT PACKAGE</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.19.1	BIOTECH SERVICES	INDIA		
4.19.2	CAMERON MANUFACTURING (INDIA) PVT.LIMITED (Group of Schlumberger Ltd)	INDIA		
4.19.3	DOSHION VEOLIA WATER SOLUTIONS PVT LTD	INDIA		
4.19.4	ECOTECH LABS	INDIA		
4.19.5	ENPRO ENVIROTECH AND ENGINEERS PVT LTD.	INDIA		
4.19.6	GEO MILLER & CO. PVT. LTD.	INDIA		
4.19.7	ION EXCHANGE (INDIA) LTD	INDIA		
4.19.8	ROCHEM SEPARATION SYSTEMS	INDIA		
4.19.9	VA TECH WABAG LTD	INDIA		
4.19.10	SUEZ WATER TECHNOLOGIES & SOLUTIONS INDIA	INDIA		
4.19.11	TOSHIBA WATER SOLUTIONS PVT. LTD. INDIA	INDIA		
<b>4.20</b>	<b>EMERGENCY DIESEL GENERATOR</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.20.1	BHEL	INDIA		
4.20.2	FUJI ELECTRIC INDIA PVT LTD	INDIA		
4.20.3	KIRLOSKAR OIL ENGINES LTD	INDIA		
4.20.4	STERLING AND WILSON POWERGEN PVT. LTD	INDIA		
4.20.5	JAKSONS	INDIA		
4.20.6	WARTSILA	INDIA		
<b>4.21</b>	<b>CRANE-H.O.T / E.O.T / ELECTRIC HOISTS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.21.1	ANUPAM INDUSTRIES LIMITED (ANAND)	INDIA		
4.21.2	ARMSEL MHE PVT LTD	INDIA		
4.21.3	AVON CRANES PVT. LTD. INDIA	INDIA		
4.21.4	BOMBAY POWERLIFT E.H. PVT. LTD. INDIA	INDIA		
4.21.5	BRAITHWAITE & CO. LTD. INDIA	INDIA		
4.21.6	CONSOLIDATED HOISTS PVT LTD.	INDIA		
4.21.7	EDDY CRANES ENGRS (P) LTD	INDIA		
4.21.8	ELECTROMECH MATERIAL HANDLING SYSTEMS	INDIA		
4.21.9	FURNACE AND FOUNDRY EQUIPMENT CO.	INDIA		
4.21.10	GRIP ENGINEERS PVT.LTD	INDIA		
4.21.11	HEAVY ENGINEERING CORPORATION LTD	INDIA		
4.21.12	HERCULES HOISTS LTD	INDIA		
4.21.13	HINDUSTAN MOTORS LTD. INDIA	INDIA		
4.21.14	JESSOP & CO. LTD. INDIA	INDIA		
4.21.15	KALINGA ENGINEERS LTD. INDIA	INDIA		
4.21.16	LIFTING EQUIPMENT & ACCESSORIES INDIA	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
4.21.17	MEEKA MACHINERY PVT LTD	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
4.21.18	MUKAND LIMITED	INDIA		
4.21.19	RHS CRANES & COMPONENTS	INDIA		
4.21.20	SAFEX ELECTROMECH PVT LTD	INDIA		
4.21.21	SAFEX ENERGY PVT LTD	INDIA		
4.21.22	SAVY ENGINEERING CORPORATION LTD. INDIA	INDIA		
4.21.23	SOUTHERN STRUCTURALS LTD. INDIA	INDIA		
4.21.24	TATA STEEL GROWTH SHOP	INDIA		
4.21.25	TECHNO INDUSTRIES	INDIA		
4.21.26	TRACTEL TIRFOR (I) PVT. LTD.	INDIA		
4.21.27	TUNGABHADRA STEEL PRODUCTS LTD. INDIA	INDIA		
4.21.28	UNIQUE INDUSTRIAL HANDLERS PVT. LTD.	INDIA		
4.21.29	W.H.BRADY & CO.LTD	INDIA		
4.21.30	WMI KONECRANES INDIA LTD.	INDIA		
<b>4.22</b>	<b>REFRIGERATION SYSTEM- VAPOUR ABSORPTION</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.22.1	ALFA LAVAL	INDIA		
4.22.2	ETA ENGINEERING PVT. LTD.	INDIA		
4.22.3	KIRLOSKAR PNEUMATIC CO. LTD.	INDIA		
4.22.4	THERMAX LIMITED	INDIA		
4.22.5	VOLTAS LIMITED	INDIA		
<b>4.23</b>	<b>VENTILATION &amp; PRESSURISATION SYSTEM</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.23.1	ADVANCE VENTILATION PVT. LTD	INDIA		
4.23.2	BLUE STAR LTD	INDIA		
4.23.3	C DOCTOR INDIA PVT LTD	INDIA		
4.23.4	CARRIER CORPORATION	INDIA		
4.23.5	DUSTVEN PVT LTD	INDIA		
4.23.6	EMERSON NETWORK POWER (I) PVT LTD	INDIA		
4.23.7	ENGINEERS FABRICATORS	INDIA		
4.23.8	KPC	INDIA		
4.23.9	ROOTS COOLING SYSTEMS PVT LTD	INDIA		
4.23.10	S K SYSTEMS PVT LTD	INDIA		
4.23.11	VERTIV ENERGY PRIVATE LIMITED	INDIA		
4.23.12	VOLTAS LIMITED	INDIA		
<b>4.24</b>	<b>AIR CONDITIONING SYSTEM - PACKAGE UNIT</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.24.1	ADVANCE VENTILATION PVT. LTD	INDIA		
4.24.2	AIR PERFECTION	INDIA		
4.24.3	BLUE STAR LTD	INDIA		
4.24.4	EMERSON NETWORK POWER (I) PVT LTD ( VERTIV INDIA )	INDIA		
4.24.5	ETA ENGINEERING PVT. LTD.	INDIA		
4.24.6	ROOTS COOLING SYSTEMS PVT LTD	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
4.24.7	VOLTAS LIMITED	INDIA		
<b>4.25</b>	<b>AIR CONDITIONING SYSTEM - CENTRAL</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.25.1	ABB LTD.	INDIA		
4.25.2	ADVANCE VENTILATION PVT LTD	INDIA		
4.25.3	BATLIBOI	INDIA		
4.25.4	BLUE STAR LTD	INDIA		
4.25.5	CARRIER	INDIA		
4.25.6	KIRLOSKAR PNEUMATIC.CO. LTD.	INDIA		
4.25.7	ROOTS COOLING SYSTEMS PVT LTD	INDIA		
4.25.8	VOLTAS LTD	INDIA		
<b>4.26</b>	<b>CHILLER PACKAGE /CONDENSING UNIT</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.26.1	BLUESTAR	INDIA		
4.26.2	CARRIER	INDIA		
4.26.3	DAIKIN	INDIA		
4.26.4	HITACHI	INDIA		
4.26.5	KIRLOSKAR	INDIA		
4.26.6	LG	INDIA		
4.26.7	TRANE	INDIA		
4.26.8	VOLTAS	INDIA		
4.26.9	YORK	INDIA		
<b>4.27</b>	<b>AIR HANDLING UNIT</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.27.1	BLUESTAR	INDIA		
4.27.2	CARYAIRE	INDIA		
4.27.3	EDGETECH	INDIA		
4.27.4	SUVIDHA(SAVEAIR)	INDIA		
4.27.5	VOLTAS	INDIA		
4.27.6	ZECO	INDIA		
4.27.7	CARRIER	INDIA		
4.27.8	TRANE	INDIA		
4.27.9	YORK	INDIA		
4.27.10	ABB	INDIA		
4.27.11	FLAKT	INDIA		
<b>4.28</b>	<b>CHEMICAL FILTER (HVAC)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.28.1	BRY AIR	INDIA		
4.28.2	CAMFIL	INDIA		
4.28.3	CARYAIRE	INDIA		
4.28.4	PURAFIL	INDIA		
<b>4.29</b>	<b>CENTRIFUGAL FAN (HVAC)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
4.29.1	ADVANCE VENTILATION	INDIA		
4.29.2	AIR CONTROL	INDIA		
4.29.3	FLAKT (INDIA)	INDIA		
4.29.4	KRIGER	INDIA		



MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
4.29.5	LTD			
4.29.6	NICOTRA	INDIA		
4.29.7	S.K.SYSTEM	INDIA		
<b>4.30</b>	<b>EXHAUST AXIAL FAN (HVAC)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.30.1	GE POWER INDIA LIMITED	INDIA		
4.30.2	CROMPTON GREAVES LTD.	INDIA		
4.30.3	PATEL AIRFLOW LTD	INDIA		
<b>4.31</b>	<b>SPLIT / WINDOW AC</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.31.1	BLUESTAR	INDIA		
4.31.2	CARRIER	INDIA		
4.31.3	DAIKIN	INDIA		
4.31.4	HITACHI	INDIA		
4.31.5	MITSHUBISHI	INDIA		
4.31.6	PANASONIC	INDIA		
4.31.7	SHARP	INDIA		
4.31.8	VOLTAS	INDIA		
4.31.9	LG	INDIA		
4.31.10	LYODS	INDIA		
4.31.11	VEDIOCON	INDIA		
<b>4.32</b>	<b>AIR FILTERS (HVAC)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.32.1	AIRTECH	INDIA		
4.32.2	ANFILCO	INDIA		
4.32.3	DYNA	INDIA		
4.32.4	TENACITY	INDIA		
4.32.5	THERMADYNE	INDIA		
<b>4.33</b>	<b>3 WAY MODULATING VALVE FOR HVAC APPLICATION</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.33.1	DANFOSS	INDIA		
4.33.2	HONEYWELL	INDIA		
4.33.3	JHONSON CONTROLS	INDIA		
4.33.4	PSL LTD	INDIA		
4.33.5	SIEMENS	INDIA		
<b>4.34</b>	<b>FIRE DAMPER</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.34.1	CARYAIRE	INDIA		
4.34.2	GEORGE RAO & CO	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
4.34.3	RAVISTAR	INDIA		
4.34.4	TSC INSTRUMENTS	INDIA		
4.34.5	RUSKIN	INDIA		
4.34.6	ACTION AIR	INDIA		
<b>4.35</b>	<b>VOLUME CONTROL DAMPERS / LOUVERS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.35.1	ADVANCE VENTILATION	INDIA		
4.35.2	AIR MASTER	INDIA		
4.35.3	CARRYAIRE	INDIA		
4.35.4	DYNACRAFT	INDIA		
4.35.5	RAVISTAR	INDIA		
4.35.6	S.K.SYSTEMS	INDIA		
<b>4.36</b>	<b>GRILL / DIFFUSER FOR AIR CONDITIONING SYSTEM</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.36.1	AIR MASTER	INDIA		
4.36.2	CARRYAIRE	INDIA		
4.36.3	DYNACRAFT	INDIA		
4.36.4	RAVISTAR	INDIA		
4.36.5	TITUS	INDIA		
4.36.6	TROX	INDIA		
4.36.7	METAL AIRE	INDIA		
4.36.8	WATERLOO	INDIA		
<b>4.37</b>	<b>DAMPER ACTUATOR</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.37.1	BELIMO	INDIA		
4.37.2	DANFOSS	INDIA		
4.37.3	HONEYWELL	INDIA		
4.37.4	SIEMENS	INDIA		
<b>4.38</b>	<b>MODULATING DAMPER ACTUATOR</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.38.1	HONEYWELL	INDIA		
4.38.2	INDFOSS	INDIA		
4.38.3	JHONSON CONTROLS	INDIA		
4.38.4	PENN	INDIA		
4.38.5	SIEMENS	INDIA		
<b>4.39</b>	<b>G.I SHEETS (HVAC DUCTING)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.39.1	JINDAL	INDIA		
4.39.2	SAIL	INDIA		
4.39.3	TATA	INDIA		
<b>4.40</b>	<b>REFRIGERATION SYSTEM - PROCESS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.40.1	ALFA LAVAL INDIA LTD.	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
4.40.2	KIRLOSKAR PNEUMATIC CO LTD- (PUNE)	INDIA		
4.40.3	SYSTEMS & COMPONENTS (INDIA) PVT. LTD.	INDIA		
4.40.4	TRANE	INDIA		
4.40.5	VOLTAS LIMITED	INDIA		
4.40.6	YORK INDIA LTD (A JOHNSON CONTROLS CO.)	INDIA		
<b>4.41</b>	<b>ELECTRONIC WEIGH SCALE</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
4.41.1	AVERY INDIA LTD	INDIA		
4.41.2	BLUE STAR LTD	INDIA		
4.41.3	HYDERABAD TULAMAN LTD	INDIA		
4.41.4	IPA PVT LTD.	INDIA		
4.41.5	PRECIA MOLEN INDIA PVT. LTD.	INDIA		
<b>4.42</b>	<b>PSA HYDROGEN PLANT</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.42.1	UOP INDIA PVT LTD	INDIA		
4.42.2	UOP LLC	INDIA		
<b>4.43</b>	<b>STATIC MIXER</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.43.1	MIXRITE MIXING SYSTEMS	INDIA		
4.43.2	RATHI MIXERS PVT LTD(FRM RL MPL)	INDIA		
4.43.3	REMI PROCESS PLANT & MACHINERY LTD.	INDIA		
4.43.4	STANDARD ENGINEERS	INDIA		
4.43.5	SUDARSHAN CHEMICAL INDUSTRIES LTD (FORMERLY DIV. KNOWN AS RATHI VESSELS & SYSTEMS PVT LTD.)	INDIA		
4.43.6	SULZER INDIA LIMITED	INDIA		
4.43.7	SULZER BROTHERS LTD	INDIA		
<b>4.44</b>	<b>COALESCER - FILTER</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.44.1	GRAND PRIX ENGINEERING PVT LTD.	INDIA		
4.44.2	LARSEN & TOUBRO LTD.	INDIA		
4.44.3	MULTITEX FILTRATION ENGINEERS LTD.	INDIA		
4.44.4	PALL INDIA PVT LTD	INDIA		
4.44.5	PETROMAR ENGINEERED SOLN. P LTD	INDIA		
4.44.6	PALL PHARMA LAB.	INDIA		
<b>4.45</b>	<b>FEED FLTR AUTO BACK WASH HYD.CRAKR DHDT</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.45.1	EATON INDUSTRIES PTE LIMITED	INDIA		
4.45.2	PALL INDIA PVT LTD	INDIA		
<b>4.46</b>	<b>FILTER- ROTARY</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.46.1	EIMCO KCP LIMITED (THE)	INDIA		
<b>4.47</b>	<b>FILTER-VACUUM</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
<b>4.48</b>	<b>QUICK OPENING CLOSURE(FILTER/SEPARATOR)</b>			
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.48.1	FLASH POINT EQUIPMENTS PVT. LTD.	INDIA		
4.48.2	MULTITEX FILTRATION ENGINEERS LTD.	INDIA		
4.48.3	PALL	INDIA		
<b>4.49</b>	<b>LIFTS (PASSENGER &amp; GOODS)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.49.1	AILMAK	INDIA		
4.49.2	OTIS ELEVATOR COMPANY (I) LTD.	INDIA		
4.49.3	SCHINDLER INDIA PVT LTD	INDIA		
4.49.4	KONE ELEVATOR INDIA PVT LTD	INDIA		
4.49.5	THYSSENKRUPP ELEVATOR (INDIA) PVT. LTD.	INDIA		
<b>4.50</b>	<b>DEMISTER-VANE TYPE</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.50.1	FINEPAC STRUCTURES PVT LTD	INDIA		
4.50.2	GRANDPRIX ENGINEERING PVT LTD	INDIA		
4.50.3	KEVIN ENTERPRISES PVT LTD	INDIA		
4.50.4	KOCH CHEMICAL TECH. GROUP INDIA PVT LTD	INDIA		
4.50.5	SULZER INDIA PVT LTD	INDIA		
<b>4.51</b>	<b>TOWER PACKING CARBON</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.51.1	BLAST CARBOBLOCKS PVT LTD	INDIA		
1.51.2	CARBON PRODUCTS PVT LTD	INDIA		
1.51.3	SUGUNA INTERNATIONAL	INDIA		
<b>4.52</b>	<b>TOWER PACKINGS:PVC&amp;PP(NON-PROPRIETRY)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.52.1	HI-PACK MASS TRANSFER PRODUCTS	INDIA		
4.52.2	KEVIN ENTERPRISES PVT LTD	INDIA		
4.52.3	MASS TRANSFER PRODUCT INDUSTRIES	INDIA		
<b>4.53</b>	<b>SPIRAL HEAT EXCHNAGER</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.53.1	TEMA INDIA	INDIA		
4.53.2	ALFA LAVAL	INDIA		
<b>4.54</b>	<b>HASTOLLOY SOLID REACTORS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.54.1	LARSEN AND TOUBRO	INDIA		
4.54.2	ISGEC	INDIA		
4.54.3	GODREJ AND BOYCE MFG CO LTD	INDIA		
<b>4.55</b>	<b>DUPLEX SOLID REACTORS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.55.1	LARSEN AND TOUBRO	INDIA		
4.55.2	ISGEC	INDIA		
4.55.3	GODREJ AND BOYCE MFG CO LTD	INDIA		
<b>4.56</b>	<b>DEHYDRATION PACKAGE</b>			
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.56.1	URIEL	INDIA		
4.56.2	KILBURN ENGINEERING LIMITED	INDIA		
4.56.3	GAS PROCESSING EQUIPMENTS PVT. LTD.	INDIA		
4.56.4	MOJJ ENGINEERING SYSTEMS LTD.	INDIA		
4.56.5	PRAJ INDUSTRIES LTD.	INDIA		
4.56.6	NARAN LALA PVT. LTD.	INDIA		
<b>4.57</b>	<b>BIOMASS SEPARATION PACKAGE</b>			

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.57.1	KILBURN ENGINEERING LIMITED	INDIA		
4.57.2	PENNWALT INDIA LTD.	INDIA		
4.57.3	ISGEC HEAVY ENGINEERING LTD.	INDIA		
4.57.4	SPAN HYDROTECH PVT. LTD.	INDIA		
<b>4.58</b>	<b>FALLING FILM EVAPORATOR</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.58.1	SULZER INDIA PVT. LTD.	INDIA		
4.58.2	SPRAY ENGINEERING DEVICES LTD.	INDIA		
4.58.3	URIEL	INDIA		
4.58.4	GRAND PRIX ENGINEERING PVT. LTD.	INDIA		
4.58.5	MULTITEX FILTRATION ENGINEERS LIMITED	INDIA		
<b>4.59</b>	<b>INOCULATOR FEED GAS CONDITIONING PACKAGE</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
4.59.1	KILBURN ENGINEERING LIMITED	INDIA		
<b>1.1</b>	<b>NON STANDARD FORGINGS-CARBON STEEL</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.1.1	BAY FORGE (FORMERLY KNOWN - FOMAS INDIA)	INDIA		
1.1.2	BHARAT FORGE LTD.	INDIA		
1.1.3	BRITEX ENGINEERING WORKS	INDIA		
1.1.4	CD ENGINEERING CO.	INDIA		
1.1.5	CD INDUSTRIES	INDIA		
1.1.6	CHW FORGE PVT LTD (FR. CHAUDHRY HAMMER)	INDIA		
1.1.7	ECHJAY INDUSTRIES PVT LTD. (RAJKOT)	INDIA		
1.1.8	EMPEE ENGINEERING CORPORATION	INDIA		
1.1.9	GOOD LUCK ENGINEERING CO.	INDIA		
1.1.10	HEAVY ENGINEERING CORPORATION LTD	INDIA		
1.1.11	JAV FORGINGS (P) LTD	INDIA		
1.1.12	KISAAN STEEL (P) LTD	INDIA		
1.1.13	KUNJ FORGINGS PVT LTD	INDIA		
1.1.14	L&T SPECIAL STEELS AND HEAVY FORGINGS	INDIA		
1.1.15	LAL METAL FORGE LTD	INDIA		
1.1.16	MACKEIL ISPAT & FORGING LTD	INDIA		
1.1.17	METAL FORGINGS PVT LTD	INDIA		
1.1.18	PALLAVI INDUSTRIES	INDIA		
1.1.19	PARAMOUNT FORGE	INDIA		
1.1.20	R D FORGE	INDIA		
1.1.21	SANGHVI FORGINGS & ENGINEERING LTD	INDIA		
1.1.22	SE FORGE LIMITED	INDIA		
1.1.23	TRIVENI REFRACTORIES PVT LTD	INDIA		
1.1.24	WONIL F&T CO. LTD	INDIA		
<b>1.2</b>	<b>NON STANDARD FORGINGS-ALLOY STEEL</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.2.1	BAY FORGE (FORMERLY KNOWN - FOMAS INDIA)	INDIA		
1.2.2	BHARAT FORGE LTD.	INDIA		
1.2.3	CD ENGINEERING CO.	INDIA		
1.2.4	CHW FORGE PVT LTD (FR. CHAUDHRY HAMMER)	INDIA		
1.2.5	ECHJAY INDUSTRIES PVT LTD. (RAJKOT)	INDIA		
1.2.6	GOOD LUCK ENGINEERING CO.	INDIA		
1.2.7	JAV FORGINGS (P) LTD	INDIA		
1.2.8	KUNJ FORGINGS PVT LTD	INDIA		
1.2.9	L&T SPECIAL STEELS AND HEAVY FORGINGS	INDIA		
1.2.10	MACKEIL ISPAT & FORGING LTD	INDIA		
1.2.11	METAL FORGINGS PVT LTD	INDIA		
1.2.12	R D FORGE	INDIA		
1.2.13	SANGHVI FORGINGS & ENGINEERING LTD	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
1.2.14	SE FORGE LIMITED	INDIA		
1.2.15	WONIL F&T CO. LTD	INDIA		
<b>1.3</b>	<b>NON STANDARD FORGINGS- STAINLESS STEEL</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.3.1	BAY FORGE (FORMERLY KNOWN - FOMAS INDIA)	INDIA		
1.3.2	BHARAT FORGE LTD.	INDIA		
1.3.3	BRITEX ENGINEERING WORKS	INDIA		
1.3.4	CD ENGINEERING CO.	INDIA		
1.3.5	CD INDUSTRIES	INDIA		
1.3.6	CHW FORGE PVT LTD (FR. CHAUDHRY HAMMER)	INDIA		
1.3.7	ECHJAY INDUSTRIES PVT LTD. (RAJKOT)	INDIA		
1.3.8	EMPEE ENGINEERING CORPORATION	INDIA		
1.3.9	GOOD LUCK ENGINEERING CO.	INDIA		
1.3.10	JAV FORGINGS (P) LTD	INDIA		
1.3.11	L&T SPECIAL STEELS AND HEAVY FORGINGS	INDIA		
1.3.12	METAL FORGINGS PVT LTD	INDIA		
1.3.13	PALLAVI INDUSTRIES	INDIA		
1.3.14	PARAMOUNT FORGE	INDIA		
1.3.15	R D FORGE	INDIA		
1.3.16	SANGHVI FORGINGS & ENGINEERING LTD	INDIA		
1.3.17	SE FORGE LIMITED	INDIA		
1.3.18	WONIL F&T CO. LTD	INDIA		
<b>1.4</b>	<b>LINING (RUBBER)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.4.1	ARUL RUBBER PVT LTD	INDIA		
1.4.2	CORI ENGINEERS PVT LTD	INDIA		
1.4.3	JASMINO POLYMERTech PVT.LTD.	INDIA		
1.4.4	LATHIA RUBBER MFG CO	INDIA		
1.4.5	LEBRACS RUBBER LININGS PVT LTD	INDIA		
1.4.6	MIL INDUSTRIES LIMITED	INDIA		
1.4.7	POLY RUBBER PRODUCTS	INDIA		
1.4.8	SHRI RAM RUBTECH PVT LIMITED	INDIA		
1.4.9	SRM EXOFLEX PVT. LTD.	INDIA		
1.4.10	TEGA INDUSTRIES LTD	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
<b>1.5</b>	<b>LINING-FRP(TANKS &amp; VESSELS)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.5.1	CARBORUNDUM UNIVERSAL LTD-PRODORITE DIVN	INDIA		
1.5.2	CHEMICAL PROCESS EQPTS. PVT. LTD.	INDIA		
1.5.3	DOLF INDUSTRIES	INDIA		
1.5.4	EPP COMPOSITE PVT LTD	INDIA		
1.5.5	GANDHI & ASSOCIATES	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
1.5.6	INDUSTRIAL SERVICES	INDIA		
1.5.7	JASMINO POLYMERTECH PVT.LTD.	INDIA		
1.5.8	MUNDOZ CORPORATION	INDIA		
1.5.9	POLY PLAST CHEMI-PLANT (I) LTD.	INDIA		
1.5.10	RUJA CHEMICALS P. LTD.	INDIA		
1.5.11	SUNRISE INDUSTRIES (INDIA) LTD	INDIA		
<b>1.6</b>	<b>PVDF/FRP EQUIPMENTS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.6.1	CARBORUNDUM UNIVERSAL LTD-PRODORITE DIVN	INDIA		
1.6.2	DOLF INDUSTRIES	INDIA		
1.6.3	GANDHI & ASSOCIATES	INDIA		
1.6.4	INDUSTRIAL SERVICES	INDIA		
1.6.5	PRAVEEN REINFORCED PLASTICS PVT LTD	INDIA		
1.6.6	RUJA CHEMICALS P. LTD.	INDIA		
1.6.7	STRATEGIC ENGINEERING (P) LTD	INDIA		
1.6.8	SUNRISE INDUSTRIES (INDIA) LTD	INDIA		
<b>1.7</b>	<b>ROCK WOOL INSULATION PRODUCTS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.7.1	GOENKA ROCKWOOL (INDIA)PVT.LTD.	INDIA		
1.7.2	JAMSHEDPUR MINERALWOOL MFG.CO. (P) LTD.	INDIA		
1.7.3	LAPINUS ROCKWOOL PVT LTD	INDIA		
1.7.4	LLOYD ROCK FIBRES LTD	INDIA		
1.7.5	MINWOOL ROCK FIBRES LTD	INDIA		
1.7.6	NGP INDUSTRIES LTD (UNIT- ROCKWOOL INDST)	INDIA		
1.7.7	NGP INDUSTRIES LTD- (UNIT PUNJ STAR)	INDIA		
1.7.8	POLYBOND INSULATION PVT LTD	INDIA		
1.7.9	ROCKWOOL INDIA LTD	INDIA		
1.7.10	SHREERAM EQUITECH PRIVATE LTD	INDIA		
1.7.11	THERMOCARE ROCKWOOL (I)PVT.LTD.	INDIA		
1.7.12	ROCKWOOL INDIA PVT. LTD.	INDIA		
1.7.13	HI-TECH ROCK FIBER PVT LTD	INDIA		
1.7.14	ROXUL ROCKWOOL INSULATION INIA PVT LTD	INDIA		
<b>1.8</b>	<b>GLASS WOOL INSULATION PRODUCTS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.8.1	UP TWIGA FIBRE GLASS LTD	INDIA		
<b>1.9</b>	<b>CALCIUM SILICATE PRODUCTS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.9.1	HYDERABAD INDUSTRIES LTD (DHARUHERA)	INDIA		
1.9.2	NEWKEM INDUSTRIES	INDIA		
<b>1.10</b>	<b>PU FOAM &amp; POLYISOCYANURATE FOAM</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
1.10.1	ISOLLOYD ENGG. TECHNOLOGIES LTD	INDIA		
1.10.2	LLOYD INSULATIONS (INDIA) LTD	INDIA		
1.10.3	MALANPUR ENTECH PVT LTD	INDIA		
<b>1.11</b>	<b>LINE PIPES (HELICAL SAW)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.11.1	ESSAR STEEL INDIA LIMITED	INDIA		
1.11.2	JINDAL SAW LTD	INDIA		
1.11.3	MAN INDUSTRIES (INDIA) LTD	INDIA		
1.11.4	RATNAMANI METALS AND TUBES LTD	INDIA		
1.11.5	SUMITOMO METAL IND.LTD	INDIA		
1.11.6	TOPWORTH PIPES & TUBES PVT. LTD.	INDIA		
1.11.7	WELSPUN CORP LIMITED	INDIA		
<b>1.12</b>	<b>LINE PIPES ERW</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.12.1	BHANDARI FOILS & TUBES LTD	INDIA		
1.12.2	HYUNDAI PIPE CO.LTD (ENQ.-HYUNDAI CORPN)	INDIA		
1.12.3	JINDAL (INDIA) LIMITED	INDIA		
1.12.4	JINDAL INDUSTRIES LTD	INDIA		
1.12.5	MAHARASHTRA SEAMLESS LTD.	INDIA		
1.12.6	MITTAL PRECISION HITECH STEELS	INDIA		
1.12.7	RATNAMANI METALS AND TUBES LTD	INDIA		
1.12.8	REMI EDELSTAHL TUBES LTD	INDIA		
1.12.9	SHUBHALAXMI METALS & TUBES PVT LTD	INDIA		
1.12.10	SUMITOMO METAL IND.LTD	INDIA		
1.12.11	SURYA ROSHNI LTD	INDIA		
1.12.12	WELSPUN CORP LIMITED	INDIA		
1.12.13	BHUSHAN STEEL LIMITED	INDIA		
<b>1.13</b>	<b>LINE PIPES SEAMLESS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.13.1	JINDAL SAW LTD (NASHIK WORKS)	INDIA		
1.13.2	MAHARASHTRA SEAMLESS LTD.	INDIA		
1.13.5	SUMITOMO METAL IND.LTD	INDIA		
<b>1.14</b>	<b>LONG RADIUS BENDS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.14.1	JINDAL SAW LTD - SAMAGOGHA	INDIA		
1.14.2	WELSPUN CORP LIMITED	INDIA		
<b>1.15</b>	<b>FLANGE- CARBON STEEL</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.15.1	ABASI ENGINEERING WORKS	INDIA		
1.15.2	ANANDMAYEE FORGINGS PVT LTD	INDIA		
1.15.3	BHARAT FORGE LTD.	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
1.15.4	BRITEX ENGINEERING WORKS	INDIA		
1.15.5	CD ENGINEERING CO.	INDIA		
1.15.6	CD INDUSTRIES	INDIA		
1.15.7	CHW FORGE PVT LTD (FR. CHAUDHRY HAMMER)	INDIA		
1.15.8	ECHJAY INDUSTRIES PVT LTD. (RAJKOT)	INDIA		
1.15.9	FIVEBROS FORGINGS PVT.LTD.	INDIA		
1.15.10	GOOD LUCK ENGINEERING CO.	INDIA		
1.15.11	HILTON METAL FORGING LIMITED	INDIA		
1.15.12	JAI AUTO PVT LTD	INDIA		
1.15.13	JAV FORGINGS (P) LTD	INDIA		
1.15.14	KISAAN DIETECH PVT LTD	INDIA		
1.15.15	KISAAN STEEL (P) LTD	INDIA		
1.15.16	KUNJ FORGINGS PVT LTD	INDIA		
1.15.17	LAL METAL FORGE LTD	INDIA		
1.15.18	M.S. FITTINGS MFG. CO PVT LTD	INDIA		
1.15.19	MAASS FLANGE INDIA PVT. LTD	INDIA		
1.15.20	METAL FORGINGS PVT LTD	INDIA		
1.15.21	P.K.TUBES & FITTINGS PVT.LTD.	INDIA		
1.15.22	PARAMOUNT FORGE	INDIA		
1.15.23	PRADEEP METAL LIMITED	INDIA		
1.15.24	R D FORGE	INDIA		
1.15.25	R.N.GUPTA & CO. LTD	INDIA		
1.15.26	SANGHVI FORGINGS & ENGINEERING LTD	INDIA		
1.15.27	STEEL AIDS ENTERPRISE PVT LTD	INDIA		
1.15.28	UTSAH ENGINEERING PVT LTD(A CD ENGG COMP	INDIA		
1.15.29	TRIVENI REFRACTORIES PVT LTD	INDIA		
1.15.30	MAXELL FORGE INDUSTRIES	INDIA		
1.15.31	GAYATRI FORGE PVT LTD	INDIA		
1.15.32	K S PIPE FITTINGS PRIVATE LIMITED	INDIA		
<b>1.16</b>	<b>FLANGE-ALLOY STEEL</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.16.1	ANANDMAYEE FORGINGS PVT LTD	INDIA		
1.16.2	BHARAT FORGE LTD.	INDIA		
1.16.3	CD ENGINEERING CO.	INDIA		
1.16.4	CHW FORGE PVT LTD (FR. CHAUDHRY HAMMER)	INDIA		
1.16.5	ECHJAY INDUSTRIES PVT LTD. (RAJKOT)	INDIA		
1.16.6	FIVEBROS FORGINGS PVT.LTD.	INDIA		
1.16.7	GOOD LUCK ENGINEERING CO.	INDIA		
1.16.8	JAV FORGINGS (P) LTD	INDIA		
1.16.9	KUNJ FORGINGS PVT LTD	INDIA		
1.16.10	LAL METAL FORGE LTD	INDIA		
1.16.11	M.S. FITTINGS MFG. CO PVT LTD	INDIA		
1.16.12	METAL FORGINGS PVT LTD	INDIA		
1.16.13	P.K.TUBES & FITTINGS PVT.LTD.	INDIA		
1.16.14	PARAMOUNT FORGE	INDIA		
1.16.15	R D FORGE	INDIA		
1.16.16	SANGHVI FORGINGS & ENGINEERING LTD	INDIA		
1.16.17	UTSAH ENGINEERING PVT LTD(A CD ENGG COMP	INDIA		
1.16.18	MAXELL FORGE INDUSTRIES	INDIA		
1.16.19	GAYATRI FORGE PVT LTD	INDIA		
1.16.20	K S PIPE FITTINGS PRIVATE LIMITED	INDIA		
<b>1.17</b>	<b>FLANGE-STAINLESS STEEL</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.17.1	ANANDMAYEE FORGINGS PVT LTD	INDIA		
1.17.2	BHARAT FORGE LTD.	INDIA		
1.17.3	BRITEX ENGINEERING WORKS	INDIA		
1.17.4	CD ENGINEERING CO.	INDIA		
1.17.5	CD INDUSTRIES	INDIA		
1.17.6	CHANDAN STEEL LTD	INDIA		
1.17.7	CHW FORGE PVT LTD (FR. CHAUDHRY HAMMER)	INDIA		
1.17.8	ECHJAY INDUSTRIES PVT LTD. (RAJKOT)	INDIA		
1.17.9	FIVEBROS FORGINGS PVT.LTD.	INDIA		
1.17.10	GOOD LUCK ENGINEERING CO.	INDIA		
1.17.11	HILTON METAL FORGING LIMITED	INDIA		
1.17.12	JAV FORGINGS (P) LTD	INDIA		
1.17.13	KUNJ FORGINGS PVT LTD	INDIA		
1.17.14	LAL METAL FORGE LTD	INDIA		
1.17.15	METAL FORGINGS PVT LTD	INDIA		
1.17.16	P.K.TUBES & FITTINGS PVT.LTD.	INDIA		
1.17.17	PARAMOUNT FORGE	INDIA		
1.17.18	PRADEEP METAL LIMITED	INDIA		
1.17.19	R D FORGE	INDIA		
1.17.20	SANGHVI FORGINGS & ENGINEERING LTD	INDIA		
1.17.21	UTSAH ENGINEERING PVT LTD(A CD ENGG COMP	INDIA		
1.17.22	VIRAJ PROFILES LIMITED	INDIA		
1.17.23	MAXELL FORGE INDUSTRIES	INDIA		
1.17.24	GAYATRI FORGE PVT LTD	INDIA		
1.17.25	MAASS FLANGE INDIA PVT. LTD	INDIA		
1.17.26	K S PIPE FITTINGS PRIVATE LIMITED	INDIA		
<b>1.18</b>	<b>FLANGES-EXOTIC</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.18.1	BRITEX ENGINEERING WORKS	INDIA		
<b>1.19</b>	<b>COMPACT FLANGE</b>			
<b>1.20</b>	<b>CLAMP CONNECTOR</b>			
<b>1.21</b>	<b>SIGHT FLOW INDICATORS (SIGHT GLASSES)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.21.1	BLISS ANAND PVT LTD	INDIA		
1.21.2	LEVCON INSTRUMENTS PVT LTD	INDIA		
1.21.3	PRATOLINA INSTRUMENTS PVT LTD	INDIA		
1.21.4	SIGMA INSTRUMENTS CO	INDIA		
1.21.5	AMARAMA ENGINEERS	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
1.21.6	CHEMTROLS	INDIA		
1.21.7	C-TRU PROCESS EQUIPMENTS	INDIA		
1.21.8	TELFLO INSTRUMENT AND CONTROLS	INDIA		
<b>1.22</b>	<b>PIPE-CARBON STEEL TO INDIAN STANDARDS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.22.1	A.S.T. PIPES PVT. LTD.(AST GROUP)	INDIA		
1.22.2	ASIAN MILLS PVT LTD	INDIA		
1.22.3	ASIAN TUBES LTD.	INDIA		
1.22.4	ASRANI TUBES LIMITED	INDIA		
1.22.5	DADU PIPES (P) LTD	INDIA		
1.22.6	GOODLUCK STEEL TUBES LTD	INDIA		
1.22.7	INDUS TUBE LIMITED	INDIA		
1.22.8	JCO GAS PIPE LIMITED	INDIA		
1.22.9	JINDAL (INDIA) LIMITED	INDIA		
1.22.10	JINDAL INDUSTRIES LTD	INDIA		
1.22.11	JINDAL PIPES LTD	INDIA		
1.22.12	JINDAL SAW LTD (KOSI WORKS)	INDIA		
1.22.13	LAL BABA SEAMLESS TUBES PVT. LTD	INDIA		
1.22.14	LALIT PIPES & PIPES LTD	INDIA		
1.22.15	MAHARASHTRA SEAMLESS LTD.	INDIA		
1.22.16	MAN INDUSTRIES (INDIA) LTD	INDIA		
1.22.17	MUKUT TANKS & VESSELS PVT ITD	INDIA		
1.22.18	NEZONE TUBES LIMITED	INDIA		
1.22.19	NORTH EASTERN TUBES LIMITED	INDIA		
1.22.20	P S STEEL TUBES LTD	INDIA		
1.22.21	PRATIBHA INDUSTRIES LIMITED	INDIA		
1.22.22	RAMA STEEL TUBES LTD.	INDIA		
1.22.23	RATNAMANI METALS AND TUBES LTD	INDIA		
1.22.24	RAVINDRA TUBES LIMITED	INDIA		
1.22.25	SAMSHI PIPE INDUSTRIES LIMITED	INDIA		
1.22.26	SURYA ROSHNI LTD	INDIA		
1.22.27	SWASTIK PIPES LTD	INDIA		
1.22.28	UTKARSH TUBES & PIPES LTD ( FORMLY. BMW)	INDIA		
1.22.29	WELSPUN CORP LIMITED	INDIA		
1.22.30	ZENITH BIRLA (INDIA) LIMITED	INDIA		
1.22.31	ADVANCED STEEL TUBE LTD	INDIA		
1.22.32	APL APOLLO TUBE LTD	INDIA		
1.22.33	CAPACITY STRUCTURES LTD	INDIA		
1.22.34	ESSAR STEEL INDIA LIMITED	INDIA		
1.22.35	ZENITH FIRE SERVICE INDIA PVT LTD	INDIA		
<b>1.23</b>	<b>PIPES &amp; TUBULARS TO A.P.I.STANDARDS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.23.1	BHEL	INDIA		
1.23.2	ESSAR STEEL INDIA LIMITED	INDIA		
1.23.3	ISMT LTD	INDIA		
1.23.4	JCO GAS PIPE LIMITED	INDIA		
1.23.5	JINDAL PIPES LTD	INDIA		
1.23.6	JINDAL SAW LTD (KOSI WORKS)	INDIA		
1.23.7	JINDAL SAW LTD (NASHIK WORKS)	INDIA		
1.23.8	LALIT PIPES & PIPES LTD	INDIA		
1.23.9	MAHARASHTRA SEAMLESS LTD.	INDIA		
1.23.10	MUKUT TANKS & VESSELS PVT ITD	INDIA		
1.23.11	PRATIBHA INDUSTRIES LIMITED	INDIA		
1.23.12	RATNAMANI METALS AND TUBES LTD	INDIA		
1.23.13	SUMITOMO METAL IND.LTD	INDIA		
1.23.14	SURYA ROSHNI LTD	INDIA		
1.23.15	SWASTIK PIPES LTD	INDIA		
1.23.16	WELSPUN CORP LIMITED	INDIA		
1.23.17	YANGZHOU LONTRIN STEEL TUBE CO.,LTD.	INDIA		
<b>1.24</b>	<b>PIPE/TUBE-C S (SEAMLESS)TO ASTM STDS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.24.1	ANAND SEAMLESS TUBES PVT. LTD	INDIA		
1.24.2	AVON TUBETECH PVT LTD	INDIA		
1.24.3	BHEL	INDIA		
1.24.4	HEAVY METALS & TUBES LIMITED(MEHSANA)	INDIA		
1.24.5	ISMT LTD-AHMEDNDR	INDIA		
1.24.6	JINDAL SAW LTD (NASHIK WORKS)	INDIA		
1.24.7	JR SEAMLESS PVT.LTD	INDIA		
1.24.8	LAL BABA SEAMLESS TUBES PVT. LTD	INDIA		
1.24.9	MAHALAXMI SEAMLESS LIMITED	INDIA		
1.24.10	MAHARASHTRA SEAMLESS LTD.	INDIA		
1.24.11	PATELS AIRFLOW LTD.	INDIA		
1.24.12	RATNADEEP METAL TUBES LTD.	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
1.24.13	SAINEST TUBES PVT LTD	INDIA		
1.24.14	SN TUBES PRIVATE LIMITED	INDIA		
1.24.15	SUMITOMO METAL IND.LTD	INDIA		
1.24.16	YANGZHOU LONTRIN STEEL TUBE CO.,LTD.	INDIA		
<b>1.25</b>	<b>PIPE-CARBON STEEL(WELDED)TO ASTM STDS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.25.1	ESSAR STEEL INDIA LIMITED	INDIA		
1.25.2	JINDAL SAW LTD (KOSI WORKS)	INDIA		
1.25.3	LALIT PIPES & PIPES LTD	INDIA		
1.25.4	MAN INDUSTRIES (INDIA) LTD	INDIA		
1.25.5	MUKUT TANKS & VESSELS PVT ITD	INDIA		
1.25.6	RATNAMANI METALS AND TUBES LTD	INDIA		
1.25.7	SUMITOMO METAL IND.LTD	INDIA		
<b>1.26</b>	<b>PIPE/TUBE- A S (SEAMLESS)TO ASTM STDS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.26.1	ANAND SEAMLESS TUBES PVT. LTD	INDIA		
1.26.2	BHEL	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
1.26.3	HEAVY METALS & TUBES LIMITED(MEHSANA)	INDIA		
1.26.4	ISMT LTD-AHMEDNGR	INDIA		
1.26.5	ISMT LTD	INDIA		
1.26.6	JINDAL SAW LTD (NASHIK WORKS)	INDIA		
1.26.7	JR SEAMLESS PVT.LTD	INDIA		
1.26.8	MAHALAXMI SEAMLESS LIMITED	INDIA		
1.26.9	MAHARASHTRA SEAMLESS LTD.	INDIA		
1.26.10	PATELS AIRFLOW LTD.	INDIA		
1.26.11	RATNADEEP METAL TUBES LTD.	INDIA		
1.26.12	SAINEST TUBES PVT LTD	INDIA		
1.26.13	SUMITOMO METAL IND.LTD	INDIA		
1.26.14	YANGZHOU LONTRIN STEEL TUBE CO.,LTD.	INDIA		
<b>1.27</b>	<b>PIPE/TUBE-SS(S.LESS &amp; WELDED)TO ASTM STD</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.27.1	APEX TUBES PVT LTD	INDIA		
1.27.2	HUADI STEEL GROUP CO. LTD.	INDIA		
1.27.3	IBF S P A	INDIA		
1.27.4	INOX TECH. SPA	INDIA		
1.27.5	JIANGSU WUJIN STAINLESS STEEL PIPE GROUP	INDIA		
1.27.6	JINDAL SAW LTD (NASHIK WORKS)	INDIA		
1.27.7	KRYSTAL STEEL MFG.PVT.LTD.	INDIA		
1.27.8	MAHALAXMI SEAMLESS LIMITED	INDIA		
1.27.9	MAXIM TUBES COMPANY PVT LTD	INDIA		
1.27.10	MBM TUBES PVT LTD	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
1.27.11	PRODUCTOS TUBULARES S.A.U.	INDIA		
1.27.12	RATNADEEP METAL TUBES LTD.	INDIA		
1.27.13	RATNAMANI METALS AND TUBES LTD	INDIA		
1.27.14	SALZGITTER MANNESMANN ST DEUTSCHLANDGMBH	INDIA		
1.27.15	SANDVIK AB	INDIA		
1.27.16	SANDVIK ASIA PVT. LIMITED (AHMEDABAD)	INDIA		
1.27.17	SANDVIK MATERIALS TECHNOLOGY (CHINA),CO.	INDIA		
1.27.18	SCHOELLER-BLECKMANN EDELSTAHLROHR	INDIA		
1.27.19	SCODA TUBES LTD	INDIA		
1.27.21	SEAH STEEL CORPORATION	INDIA		
1.27.22	SHALCO INDUSTRIES PVT LTD.	INDIA		
1.27.23	SHUBHLAXMI METALS AND TUBES PVT. LTD	INDIA		
1.27.24	SOSTA GMBH	INDIA		
1.27.25	STEAMLINE INDUSTRIES Ltd	INDIA		
1.27.26	ARVIND PIPES & FITTINGS IND PVT LTD	INDIA		
1.27.27	BHANDARI FOILS AND TUBES	INDIA		
1.27.28	CHANDAN STEEL	INDIA		
1.27.29	DIVINE TUBES	INDIA		
1.27.30	HEAVY METALS AND TUBS LIMITED	INDIA		
1.27.31	HELIOS TUBE ALLOYS PVT LTD	INDIA		
1.27.32	SLS TUBES PVT LTD	INDIA		
1.27.33	SUMITOMO METAL INDIA LTD	INDIA		
1.27.34	SURAJ LIMITED	INDIA		
1.27.35	TUBACEX PRAKASH INDIA PVT LTD	INDIA		
1.27.36	TUBACEX TUBOS INOXIDABLE SAU	INDIA		
<b>1.28</b>	<b>PIPE/TUBE-S.LESS(DUPLEX/SUPER DUPLEX SS)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.28.1	RATNADEEP METAL TUBES LTD.	INDIA		
1.28.2	RATNAMANI METALS AND TUBES LTD	INDIA		
1.28.3	SANDVIK ASIA PVT. LIMITED (AHMEDABAD)	INDIA		
1.28.4	SANDVIK MATERIALS TECHNOLOGY (CHINA),CO.	INDIA		
1.28.5	TUBACEX TUBOS INOXIDABLES SAU	INDIA		
<b>1.29</b>	<b>PIPE / FITTINGS -PTFE LINED</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.29.1	D.V.POLYMERS INDIA (P) LTD	INDIA		
1.29.2	DIP-FLOX ENGINEERING & CO.	INDIA		
1.29.3	HORIZON POLYMER ENGG. LTD.	INDIA		
1.29.4	MIL INDUSTRIES LIMITED	INDIA		
1.29.5	PLASTRULON PROCESSORS LTD	INDIA		
1.29.6	SUPER INDUSTRIAL LINING PVT LTD	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
<b>1.30</b>	<b>PIPES -SS WELDED TO A 358</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.30.1	OUTOKUMPU STAINLESS TUBULAR P.AB	INDIA		
1.30.2	RATNAMANI METALS AND TUBES LTD	INDIA		
1.30.3	SCORODITE STAINLESS (INDIA) PVT. LTD	INDIA		
1.30.4	SUMITOMO METAL IND.LTD	INDIA		
1.30.5	TUBACEX PRAKASH INDIA PVT. LTD.	INDIA		
1.30.6	REMI EDELSTAHL TUBULARS LTD	INDIA		
<b>1.31</b>	<b>DUPLEX/SUPER DUPLEX SS WELDED PIPES</b>			
<b>1.32</b>	<b>PIPES- INDIAN STOCKIST</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.32.1	BHARAT ENTERPRISES	INDIA		
1.32.2	EVERGREEN SEAMLESS PIPES & TUBES PVT. LT	INDIA		
1.32.3	GREEN LINE PIPE AND FITTINGS	INDIA		
1.32.4	HI TECH METAL AND TUBES	INDIA		
1.32.5	INDUSTRIAL METAL CORPORATION	INDIA		
1.32.6	KWALITY TUBES	INDIA		
1.32.7	MOKSHI INDUSTRIES PVT. LTD	INDIA		
1.32.8	MOTILAL LAXMICHAND SANGHVI	INDIA		
1.32.9	N-PIPE SOLUTION INC	INDIA		
1.32.10	PIPES AND FLOW PRODUCTS	INDIA		
1.32.11	PK FORGE & FITTINGS INDUSTRIES	INDIA		
1.32.12	RAJENDRA PIPING & FITTINGS	INDIA		
1.32.13	SADAF TRADING COMPANY	INDIA		
1.32.14	STAR METAL AND TUBES	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
1.32.15	STATE PIPE & SUPPLY CO	INDIA		
1.32.16	VENUS TRADING COMPANY	INDIA		
1.32.17	VINAYAK PIPES & TUBES PVT LTD	INDIA		
1.32.18	S SEVENTILAL & COMPANY	INDIA		
1.32.19	SEVENTILAL & SONS PVT. LTDD	INDIA		
1.32.20	MUKESH METAL INDUSTRIES	INDIA		
1.32.21	CHAMPAK STEEL	INDIA		
1.32.22	MAHALAXMI METAL CORPORATION	INDIA		
1.33	PIPE-CLADDED			
1.34	PIPE-WELDED ALLOY STEEL			
A	INDIAN BIDDERS			
1.34.1	LALIT PIPES & PIPES LTD	INDIA		
1.34.2	RATNAMANI METALS AND TUBES LTD	INDIA		
1.35	PIPE-PVDF/FRP			
A	INDIAN BIDDERS			
1.35.1	GANDHI & ASSOCIATES	INDIA		
Sr.No	VENDOR NAME	COUNTRY		
1.35.2	PRAVEEN REINFORCED PLASTICS PVT LTD	INDIA		
1.35.3	SUNRISE INDUSTRIES (INDIA) LTD	INDIA		
1.36	PIPE-FRP			
A	INDIAN BIDDERS			
1.36.1	CARBON EVERFLOW LTD.	INDIA		
1.36.2	CARBORUNDUM UNIVERSAL LTD-PRODORITE DIVN	INDIA		
1.36.3	CHEMICAL PROCESS EQPTS. PVT. LTD.	INDIA		
1.36.4	DOLF INDUSTRIES	INDIA		
1.36.5	EPP COMPOSITE PVT LTD	INDIA		
1.36.6	GANDHI & ASSOCIATES	INDIA		
1.36.7	INDUSTRIAL SERVICES	INDIA		
1.36.8	POLY PLAST CHEMI-PLANT (I) LTD.	INDIA		
1.36.9	PRAVEEN REINFORCED PLASTICS PVT LTD	INDIA		
1.36.10	RUJA CHEMICALS P. LTD.	INDIA		
1.36.11	STRATEGIC ENGINEERING (P) LTD	INDIA		
1.36.12	SUNRISE INDUSTRIES (INDIA) LTD	INDIA		
1.37	PIPE-GRE			
A	INDIAN BIDDERS			
1.38	PIPE-TITANIUM (HS CODE - 8108)			
A	INDIAN BIDDERS			
1.39	PIPING SYSTEM-CLAD(SHOP FABRICATED)			
A	INDIAN BIDDERS			
1.39.1	BHEL	INDIA		
1.39.2	CRYSTAL INDUSTRIAL SYNDICATE PVT LTD.	INDIA		
1.39.3	GR ENGINEERNG PRIVATE LTD (TARAPORE)	INDIA		
1.39.4	INDUS PROJECTS LIMITED	INDIA		
1.39.5	ISGEC HEAVY ENGINEERING LTD	INDIA		
1.39.6	LARSEN & TOUBRO LTD	INDIA		
1.39.7	TECHNO PROCESS EQUIPMENTS (INDIA) PV LTD	INDIA		
1.40	PRE-FABRICATED PIPING SPOOL			
A	INDIAN BIDDERS			
1.40.1	BHARAT HEAVY ELECTRICAL LTD.	INDIA		
1.40.2	DEE DEVELOPMENT ENGINEERS LIMITED	INDIA		
1.40.3	GUJRAT INFRAPIPES PVT. LIMITED	INDIA		
1.40.4	LARSEN & TOUBRO LTD.	INDIA		
1.40.5	ISGEC HEAVY ENGINEERING LTD	INDIA		
1.41	PIPING SYSTEM-GRE/GRP			
A	INDIAN BIDDERS			
1.41.1	EPP COMPOSITE PVT LTD	INDIA		
1.42	TUBE-WELDED CARBON STEEL			
A	INDIAN BIDDERS			
Sr.No	VENDOR NAME	COUNTRY		
1.42.1	SUMITOMO METAL IND.LTD	INDIA		
1.43	TUBE-WELDED ALLOY STEEL			
A	INDIAN BIDDERS			
1.43.1	SUMITOMO METAL IND.LTD	INDIA		
1.44	TUBE-TITANIUM (HS CODE - 8108)			
A	INDIAN BIDDERS			
1.44.1	SUMITOMO METAL IND.LTD	INDIA		
1.45	TUBE COPPER AND ALLOYS			
A	INDIAN BIDDERS			
1.45.1	ACCENT METALS PVT.LTD.	INDIA		
1.45.2	CUBEX TUBING PVT LTD	INDIA		
1.45.3	INDUSTRIAL TUBES MANUFACTURERS PVT. LTD.	INDIA		
1.45.4	MEHTA TUBES LIMITED	INDIA		
1.45.5	METAL ALLOYS CORPORATION	INDIA		
1.45.6	MULTIMETALS LIMITED	INDIA		
1.46	PIPES & FITTINGS-FOREIGN AGENTS/STOCKIST/TRADERS			
A	INDIAN BIDDERS			
1.46.1	STAR METAL AND TUBES	INDIA		
1.47	FITTING BLOCK FORGED-CARBON STEEL			
A	INDIAN BIDDERS			
1.47.1	CSA FITTINGS	INDIA		
1.47.2	EBY FASTENERS	INDIA		
1.47.3	FLASH FORGE PVT LTD	INDIA		
1.47.4	HILTON METAL FORGING LIMITED	INDIA		
1.47.5	LEADER VALVES LTD	INDIA		
1.47.6	M.S. FITTINGS MFG. CO PVT LTD	INDIA		
1.47.7	P.K.TUBES & FITTINGS PVT.LTD.	INDIA		
1.47.8	TUBE BEND (CALCUTTA) PVT LTD	INDIA		
1.47.9	U I PIPE FITTINGS PVT LTD	INDIA		
1.47.10	VIJAY CYCLE & STEEL INDUSTRIES	INDIA		
1.47.11	SIDHARTHA & GAUTAM ENGINEERS	INDIA		
1.47.12	TOPAZ PIPING INDUSTRIES	INDIA		



MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
1.47.13	VAIBHAV FITTING INDIA PVT LTD	INDIA		
1.47.14	MAXELL FORGE INDUSTRIES	INDIA		
1.47.15	GAYATRI FORGE PVT LTD	INDIA		
1.47.16	K S PIPE FITTINGS PRIVATE LIMITED	INDIA		
<b>1.48</b>	<b>FITTING BLOCK FORGED-ALLOY STEEL</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.48.1	CSA FITTINGS	INDIA		
1.48.2	EBY FASTENERS	INDIA		
1.48.3	FLASH FORGE PVT LTD	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
1.48.4	LEADER VALVES LTD	INDIA		
1.48.5	M.S. FITTINGS MFG. CO PVT LTD	INDIA		
1.48.6	SIDHARTHA & GAUTAM ENGINEERS	INDIA		
1.48.7	TOPAZ PIPING INDUSTRIES	INDIA		
1.48.8	VAIBHAV FITTING INDIA PVT LTD	INDIA		
1.48.9	MAXELL FORGE INDUSTRIES	INDIA		
1.48.10	GAYATRI FORGE PVT LTD	INDIA		
1.48.11	K S PIPE FITTINGS PRIVATE LIMITED	INDIA		
<b>1.49</b>	<b>FITTING BLOCK FORGED-STAINLESS STEEL</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.49.1	CSA FITTINGS	INDIA		
1.49.2	EBY FASTENERS	INDIA		
1.49.3	FLASH FORGE PVT LTD	INDIA		
1.49.4	HILTON METAL FORGING LIMITED	INDIA		
1.49.5	LEADER VALVES LTD	INDIA		
1.49.6	M.S. FITTINGS MFG. CO PVT LTD	INDIA		
1.49.7	VIJAY CYCLE & STEEL INDUSTRIES	INDIA		
1.49.8	SIDHARTHA & GAUTAM ENGINEERS	INDIA		
1.49.9	TOPAZ PIPING INDUSTRIES	INDIA		
1.49.10	VAIBHAV FITTING INDIA PVT LTD	INDIA		
1.49.11	MAXELL FORGE INDUSTRIES	INDIA		
1.49.12	GAYATRI FORGE PVT LTD	INDIA		
1.49.13	K S PIPE FITTINGS PRIVATE LIMITED	INDIA		
<b>1.50</b>	<b>WELDOLETS/SOCKOLETS/ELBOWLET</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.50.1	CSA FITTINGS	INDIA		
1.50.2	EBY FASTENERS	INDIA		
1.50.3	FLASH FORGE PVT LTD	INDIA		
1.50.4	M.S. FITTINGS MFG. CO PVT LTD	INDIA		
1.50.5	SIDHARTHA & GAUTAM ENGINEERS	INDIA		
1.50.6	TOPAZ PIPING INDUSTRIES	INDIA		
1.50.7	TUBE TURN INDIA PVT LTD	INDIA		
1.50.8	CD ENGG CO	INDIA		
1.50.9	SAWAN ENGINEERS PVT LTD	INDIA		
1.50.10	P.K.TUBES & FITTINGS PVT.LTD.	INDIA		
1.50.11	VAIBHAV FITTING INDIA PVT LTD	INDIA		
<b>1.51</b>	<b>FITTINGS BLOCK FORGED-EXOTIC MATLS. (HS CODE - 8108)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.51.1	SAWAN ENGINEERS PVT LTD	INDIA		
1.51.2	ALLIED INTERNATIONAL	INDIA		
<b>1.52</b>	<b>FITTINGS FROM SEAMLESS PIPE-CARBON STEEL</b>			
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.52.1	ALLIED INTERNATIONAL S.R.L.	INDIA		
1.52.2	CSA FITTINGS	INDIA		
1.52.3	DEE DEVELOPMENT ENGINEERS LIMITED	INDIA		
1.52.4	FITTECH INDUSTRIES PVT LTD	INDIA		
1.52.5	GAYATRI FORGE PVT LTD	INDIA		
1.52.6	GUJARAT INFRAPIPES PVT. LIMITED	INDIA		
1.52.7	INTERTECH FITTINGS INDIA PVT LTD	INDIA		
1.52.8	K S PIPE FITTINGS PRIVATE LIMITED	INDIA		
1.52.9	K.S.PIPE FITTINGS (P) LTD	INDIA		
1.52.10	M.S. FITTINGS MFG. CO PVT LTD	INDIA		
1.52.11	MAXELL FORGE INDUSTRIES	INDIA		
1.52.12	P.K.TUBES & FITTINGS PVT.LTD.	INDIA		
1.52.13	PARAS ENGINEERING WORKS (MUMBAI) PVT LTD	INDIA		
1.52.14	PATTECH FITWELL TUBE COMPONENTS	INDIA		
1.52.15	PETRO CHEM INDUSTRIES	INDIA		
1.52.16	SAWAN ENGINEERS PVT LTD	INDIA		
1.52.17	SIDHARTH & GAUTAM ENGINEERS	INDIA		
1.52.18	TEEKAY TUBES PVT LTD	INDIA		
1.52.19	TOPAZ PIPING INDUSTRIES	INDIA		
1.52.20	TUBE BEND (CALCUTTA) PVT LTD	INDIA		
1.52.21	TUBE INNOVATIVE (INDIA)	INDIA		
1.52.22	TUBES INDIA	INDIA		
1.52.23	TUBE TURN (INDIA) PVT LTD	INDIA		
1.52.24	U I PIPE FITTINGS PVT LTD	INDIA		
<b>1.53</b>	<b>FITTINGS FROM SEAMLESS PIPE- ALLOY STEEL</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.53.1	ALLIED INTERNATIONAL S.R.L.	INDIA		
1.53.2	CSA FITTINGS	INDIA		
1.53.3	DEE DEVELOPMENT ENGINEERS LIMITED	INDIA		
1.53.4	FITTECH INDUSTRIES PVT LTD	INDIA		
1.53.5	GUJARAT INFRAPIPES PVT. LIMITED (The vendor is on IOCL Holiday list Upto 27.06.2021)	INDIA		
1.53.6	INTERTECH FITTINGS INDIA PVT LTD	INDIA		
1.53.7	P.K.TUBES & FITTINGS PVT.LTD.	INDIA		
1.53.8	PARAS ENGINEERING WORKS (MUMBAI) PVT LTD	INDIA		
1.53.9	SAWAN ENGINEERS PVT LTD	INDIA		
1.53.10	TEEKAY TUBES PVT LTD	INDIA		
1.53.11	TOPAZ PIPING INDUSTRIES	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
1.53.12	SIDHARTH & GAUTAM ENGINEERS	INDIA		
1.53.13	MAXELL FORGE INDUSTRIES	INDIA		
1.53.14	GAYATRI FORGE PVT LTD	INDIA		
1.53.15	K S PIPE FITTINGS PRIVATE LIMITED	INDIA		
1.53.16	TUBE INNOVATIVE (INDIA)	INDIA		
1.53.17	TUBES INDIA	INDIA		
1.53.18	TUBE TURN (INDIA) PVT LTD	INDIA		
<b>1.54</b>	<b>FITTINGS FROM SEAMLESS PIPE- S.S.</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.54.1	ALLIED INTERNATIONAL S.R.L.	INDIA		
1.54.2	CSA FITTINGS	INDIA		
1.54.3	DEE DEVELOPMENT ENGINEERS LIMITED	INDIA		
1.54.4	FITTECH INDUSTRIES PVT LTD	INDIA		
1.54.5	GUJARAT INFRAPIPES PVT. LIMITED (The vendor is on IOCL Holiday list Upto 27.06.2021)	INDIA		
1.54.6	INTERTECH FITTINGS INDIA PVT LTD	INDIA		
1.54.7	K.S.PIPE FITTINGS (P) LTD	INDIA		
1.54.8	M.S. FITTINGS MFG. CO PVT LTD	INDIA		
1.54.9	P.K.TUBES & FITTINGS PVT.LTD.	INDIA		
1.54.10	PARAS ENGINEERING WORKS (MUMBAI) PVT LTD	INDIA		
1.54.11	PETRO CHEM INDUSTRIES	INDIA		
1.54.12	SAWAN ENGINEERS PVT LTD	INDIA		
1.54.13	TEEKAY TUBES PVT LTD	INDIA		
1.54.14	TOPAZ PIPING INDUSTRIES	INDIA		
1.54.15	SIDHARTH & GAUTAM ENGINEERS	INDIA		
1.54.16	MAXELL FORGE INDUSTRIES	INDIA		
1.54.17	GAYATRI FORGE PVT LTD	INDIA		
1.54.18	K S PIPE FITTINGS PRIVATE LIMITED	INDIA		
1.54.19	TUBE INNOVATIVE (INDIA)	INDIA		
1.54.20	TUBES INDIA	INDIA		
1.54.21	TUBE TURN (INDIA) PVT LTD	INDIA		
<b>1.55</b>	<b>FITTINGS FROM S/LESS PIPES-EXOTIC MATLS (HS CODE - 8108)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.55.1	ALLIED INTERNATIONAL S.R.L.	INDIA		
1.55.2	SAWAN ENGINEERS PVT LTD	INDIA		
1.55.3	SIDHARTH & GAUTAM ENGINEERS	INDIA		
1.55.4	TOPAZ PIPING INDUSTRIES	INDIA		
<b>1.56</b>	<b>FITTINGS CROSS-FROM SEAMLESS PIPES</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.56.1	GUJRAT INFRAPIPES PVT. LIMITED	INDIA		
1.56.2	M.S. FITTINGS MFG. CO PVT LTD	INDIA		
<b>1.57</b>	<b>FITTING-GRE</b>			
<b>1.58</b>	<b>FITTINGS TO IS-1239</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.58.1	CSA FITTINGS	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
1.58.2	M.S. FITTINGS MFG. CO PVT LTD	INDIA		
1.58.3	NAVKAR PIPE FITTINGS & FORGINGS PVT LTD	INDIA		
1.58.4	VIJAY CYCLE & STEEL INDUSTRIES	INDIA		
1.58.5	PARAS ENGINEERING WORKS (MUMBAI) PVT LTD	INDIA		
1.58.6	TUBE INNOVATIVE (INDIA)	INDIA		
1.58.7	TUBES INDIA	INDIA		
1.58.8	TUBE TURN (INDIA) PVT LTD	INDIA		
<b>1.59</b>	<b>FITTINGS FABRICATED FROM PLATE - C.S.</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.59.1	ALLIED INTERNATIONAL S.R.L.	INDIA		
1.59.2	DEE DEVELOPMENT ENGINEERS LIMITED	INDIA		
1.59.3	GUJARAT INFRAPIPES PVT. LIMITED	INDIA		
1.59.4	NAVKAR PIPE FITTINGS & FORGINGS PVT LTD	INDIA		
1.59.5	P.K.TUBES & FITTINGS PVT.LTD.	INDIA		
1.59.6	PARAS ENGINEERING WORKS (MUMBAI) PVT LTD	INDIA		
1.59.7	PETRO CHEM INDUSTRIES	INDIA		
1.59.8	SAWAN ENGINEERS PVT LTD	INDIA		
1.59.9	SIDHARTH & GAUTAM ENGINEERS	INDIA		
1.59.10	TEEKAY TUBES PVT LTD	INDIA		
1.59.11	TOPAZ PIPING INDUSTRIES	INDIA		
1.59.12	TOPAZ PIPING INDUSTRIES	INDIA		
1.59.13	TUBE BEND (CALCUTTA) PVT LTD	INDIA		
1.59.14	TUBE INNOVATIVE (INDIA)	INDIA		
1.59.15	TUBES INDIA	INDIA		
1.59.16	TUBE TURN (INDIA) PVT LTD	INDIA		
<b>1.60</b>	<b>FITTINGS FABRICATED FROM PLATE - A.S.</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.60.1	ALLIED INTERNATIONAL S.R.L.	INDIA		
1.60.2	DEE DEVELOPMENT ENGINEERS LIMITED	INDIA		
1.60.3	GUJARAT INFRAPIPES PVT. LIMITED	INDIA		
1.60.4	NAVKAR PIPE FITTINGS & FORGINGS PVT LTD	INDIA		
1.60.5	P.K.TUBES & FITTINGS PVT.LTD.	INDIA		
1.60.6	PARAS ENGINEERING WORKS (MUMBAI) PVT LTD	INDIA		
1.60.7	SAWAN ENGINEERS PVT LTD	INDIA		
1.60.8	TEEKAY TUBES PVT LTD	INDIA		
1.60.9	SIDHARTH & GAUTAM ENGINEERS	INDIA		
1.60.10	TOPAZ PIPING INDUSTRIES	INDIA		
1.60.11	TUBE INNOVATIVE (INDIA)	INDIA		
1.60.12	TUBES INDIA	INDIA		
1.60.13	TUBE TURN (INDIA) PVT LTD	INDIA		
<b>1.61</b>	<b>FITTINGS FABRICATED FROM PLATE - S.S.</b>			
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.61.1	ALLIED INTERNATIONAL S.R.L.	INDIA		
1.61.2	DEE DEVELOPMENT ENGINEERS LIMITED	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
1.61.3	GUJARAT INFRAPIPES PVT. LIMITED	INDIA		
1.61.4	NAVKAR PIPE FITTINGS & FORGINGS PVT LTD	INDIA		
1.61.5	P.K.TUBES & FITTINGS PVT.LTD.	INDIA		
1.61.6	PARAS ENGINEERING WORKS (MUMBAI) PVT LTD	INDIA		
1.61.7	SAWAN ENGINEERS PVT LTD	INDIA		
1.61.8	TEEKAY TUBES PVT LTD	INDIA		
1.61.9	SIDHARTH & GAUTAM ENGINEERS	INDIA		
1.61.10	TOPAZ PIPING INDUSTRIES	INDIA		
1.61.11	TUBE INNOVATIVE (INDIA)	INDIA		
1.61.12	TUBES INDIA	INDIA		
1.61.13	TUBE TURN (INDIA) PVT LTD	INDIA		
<b>1.62</b>	<b>FITTINGS FAB. FROM PLATES-EXOTIC MATLS. (HA CODE - 8108)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.62.1	ALLIED INTERNATIONAL S.R.L.	INDIA		
1.62.2	SAWAN ENGINEERS PVT LTD	INDIA		
<b>1.63</b>	<b>FITTINGS PIPE CAP (C S)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.63.1	ALLIED INTERNATIONAL S.R.L.	INDIA		
1.63.2	CSA FITTINGS	INDIA		
1.63.3	DEE DEVELOPMENT ENGINEERS LIMITED	INDIA		
1.63.4	GUJARAT INFRAPIPES PVT. LIMITED	INDIA		
1.63.5	K.S.PIPE FITTINGS (P) LTD	INDIA		
1.63.6	M.S. FITTINGS MFG. CO PVT LTD	INDIA		
1.63.7	NAVKAR PIPE FITTINGS & FORGINGS PVT LTD	INDIA		
1.63.8	P.K.TUBES & FITTINGS PVT.LTD.	INDIA		
1.63.9	PARAS ENGINEERING WORKS (MUMBAI) PVT LTD	INDIA		
1.63.10	PATTECH FITWELL TUBE COMPONENTS	INDIA		
1.63.11	PETRO CHEM INDUSTRIES	INDIA		
1.63.12	SAWAN ENGINEERS PVT LTD	INDIA		
1.63.13	TEEKAY TUBES PVT LTD	INDIA		
1.63.14	TUBE BEND (CALCUTTA) PVT LTD	INDIA		
1.63.15	SIDHARTH & GAUTAM ENGINEERS	INDIA		
1.63.16	TOPAZ PIPING INDUSTRIES	INDIA		
1.63.17	TUBE INNOVATIVE (INDIA)	INDIA		
1.63.18	TUBES INDIA	INDIA		
1.63.19	TUBE TURN (INDIA) PVT LTD	INDIA		
<b>1.64</b>	<b>FITTINGS PIPE CAP (A S)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
1.64.1	ALLIED INTERNATIONAL S.R.L.	INDIA		
1.64.2	CSA FITTINGS	INDIA		
1.64.3	DEE DEVELOPMENT ENGINEERS LIMITED	INDIA		
1.64.4	GUJARAT INFRAPIPES PVT. LIMITED	INDIA		
1.64.5	NAVKAR PIPE FITTINGS & FORGINGS PVT LTD	INDIA		
1.64.6	P.K.TUBES & FITTINGS PVT.LTD.	INDIA		
1.64.7	PARAS ENGINEERING WORKS (MUMBAI) PVT LTD	INDIA		
1.64.8	SAWAN ENGINEERS PVT LTD	INDIA		
1.64.9	TEEKAY TUBES PVT LTD	INDIA		
1.64.10	SIDHARTH & GAUTAM ENGINEERS	INDIA		
1.64.11	TOPAZ PIPING INDUSTRIES	INDIA		
1.64.12	TUBE INNOVATIVE (INDIA)	INDIA		
1.64.13	TUBES INDIA	INDIA		
1.64.14	TUBE TURN (INDIA) PVT LTD	INDIA		
<b>1.65</b>	<b>FITTINGS PIPE CAP (S S)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.65.1	ALLIED INTERNATIONAL S.R.L.	INDIA		
1.65.2	CSA FITTINGS	INDIA		
1.65.3	DEE DEVELOPMENT ENGINEERS LIMITED	INDIA		
1.65.4	GUJARAT INFRAPIPES PVT. LIMITED	INDIA		
1.65.5	K.S.PIPE FITTINGS (P) LTD	INDIA		
1.65.6	NAVKAR PIPE FITTINGS & FORGINGS PVT LTD	INDIA		
1.65.7	P.K.TUBES & FITTINGS PVT.LTD.	INDIA		
1.65.8	PARAS ENGINEERING WORKS (MUMBAI) PVT LTD	INDIA		
1.65.9	PETRO CHEM INDUSTRIES	INDIA		
1.65.10	SAWAN ENGINEERS PVT LTD	INDIA		
1.65.11	TEEKAY TUBES PVT LTD	INDIA		
1.65.12	SIDHARTH & GAUTAM ENGINEERS	INDIA		
1.65.13	TOPAZ PIPING INDUSTRIES	INDIA		
1.65.14	TUBE INNOVATIVE (INDIA)	INDIA		
1.65.15	TUBES INDIA	INDIA		
1.65.16	TUBE TURN (INDIA) PVT LTD	INDIA		
<b>1.66</b>	<b>FITTINGS PIPE CAP (EXOTIC) (HS CODE - 8108)</b>			
<b>1.67</b>	<b>GASKET (IMPORTED)</b>			
<b>1.68</b>	<b>GASKET NON-ASBESTOS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.68.1	CHAMPION JOINTINGS PVT LTD.	INDIA		
1.68.2	DAVE ENGINEERS PVT.LTD	INDIA		
1.68.3	GOODRICH GASKET PVT LTD	INDIA		
1.68.4	IGP ENGINEERS PVT. LIMITED	INDIA		
1.68.5	JAMES WALKER INMARCO INDUSTREIS PVT. LTD	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
1.68.6	MADRAS INDUSTRIAL PRODUCTS	INDIA		
1.68.7	NEOSEAL ENGINEERING PRIVATE LIMITED	INDIA		
1.68.8	SEALANT AND GASKET INDIA PVT LTD	INDIA		
1.68.9	STARFLEX SEALING INDIA PVT LTD	INDIA		
1.68.10	UNI KLINGER LTD	INDIA		
<b>1.69</b>	<b>GASKET METALLIC &amp; SOFT IRON</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.69.1	GOODRICH GASKET PVT LTD	INDIA		
1.69.2	IGP ENGINEERS PVT. LIMITED	INDIA		
1.69.3	MADRAS INDUSTRIAL PRODUCTS	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
1.69.4	MICRO PRECISION PRODUCTS PVT LTD	INDIA		
1.69.5	STARFLEX SEALING INDIA PVT LTD	INDIA		
1.69.6	TEADIT PACKING AND GASKETS PVT LTD	INDIA		
<b>1.70</b>	<b>GASKET METAL JACKETED</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.70.1	DAVE ENGINEERS PVT.LTD	INDIA		
1.70.2	GOODRICH GASKET PVT LTD	INDIA		
1.70.3	IGP ENGINEERS PVT. LIMITED	INDIA		
1.70.4	MADRAS INDUSTRIAL PRODUCTS	INDIA		
1.70.5	STARFLEX SEALING INDIA PVT LTD	INDIA		
1.70.6	TEEKAY FLOWFLEX PVT. LTD.	INDIA		
1.70.7	UNI KLINGER LTD	INDIA		
<b>1.71</b>	<b>GASKET SPIRAL WOUND</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.71.1	BOMBAY CHEMICAL EQUIPMENTS	INDIA		
1.71.2	CHAMPION JOINTINGS PVT LTD.	INDIA		
1.71.3	DAVE ENGINEERS PVT.LTD	INDIA		
1.71.4	GOODRICH GASKET PVT LTD	INDIA		
1.71.5	IGP ENGINEERS PVT. LIMITED	INDIA		
1.71.6	JAMES WALKER INMARCO INDUSTREIS PVT. LTD	INDIA		
1.71.7	MADRAS INDUSTRIAL PRODUCTS	INDIA		
1.71.8	NEOSEAL ENGINEERING PRIVATE LIMITED	INDIA		
1.71.9	STARFLEX SEALING INDIA PVT LTD	INDIA		
1.71.10	TEADIT PACKING AND GASKETS PVT LTD	INDIA		
1.71.11	TEEKAY FLOWFLEX PVT. LTD.	INDIA		
1.71.12	UNI KLINGER LTD	INDIA		
<b>1.72</b>	<b>HOSE- RUBBER (STEAM/GAS/AIR/WATER/CHEM.)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.72.1	DEWAS HYDROQUIP PVT LTD	INDIA		
1.72.2	GAYTRI INDUSTRIAL CORPORATION	INDIA		
1.72.3	HELIFLEX HYDRAULICS & ENGG.CO.	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
1.72.4	INSAP ENGINEERS PVT. LTD	INDIA		
1.72.5	PIX TRANSMISSIONS LIMITED	INDIA		
1.72.6	RM APPLIED ENGINEERS	INDIA		
1.72.7	SRIDHAR ENGG. & RUBER PRODUCTS PVT LTD.	INDIA		
1.72.8	SWAGELOK CO.	INDIA		
1.72.9	RIYAL INDIA CORP	INDIA		
<b>1.73</b>	<b>HOSE METALLIC FLEXIBLE SS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.73.1	BENGAL INDUSTRIES PVT LTD	INDIA		
1.73.2	DEWAS HYDROQUIP PVT LTD	INDIA		
1.73.3	GAYTRI INDUSTRIAL CORPORATION	INDIA		
1.73.4	HELIFLEX HYDRAULICS & ENGG.CO.	INDIA		
1.73.5	INDIA FLEX INDUSTRIES PVT.LTD.	INDIA		
1.73.6	INSAP ENGINEERS PVT. LTD	INDIA		
1.73.7	RM APPLIED ENGINEERS	INDIA		
1.73.8	SENIOR INDIA PRIVATE LIMITED	INDIA		
1.73.9	SWAGELOK CO.	INDIA		
1.73.10	INSAP FLEXIBLE AND ENGINEERS PVT LTD	INDIA		
<b>1.74</b>	<b>FASTENERS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.74.1	AEP COMPANY	INDIA		
1.74.2	DEEPAK FASTENERS LIMITED (DORAHA UNIT)	INDIA		
1.74.3	FASTENERS & ALLIED PRODUCTS PVT LTD.	INDIA		
1.74.4	FIX FIT FASTENERS MFG. PVT.LTD.	INDIA		
1.74.5	HARDWIN FASTENERS PVT LTD.	INDIA		
1.74.6	HEM INDUSTRIES	INDIA		
1.74.7	INDUSTRIAL ENGINEERING CORP.	INDIA		
1.74.8	KUNDAN INDUSTRIES LTD.	INDIA		
1.74.9	LAKSHMI PRECISION SCREWS LTD	INDIA		
1.74.10	MEGA ENGINEERING PVT. LTD.	INDIA		
1.74.11	MULTI FASTENERS PVT LTD	INDIA		
1.74.12	NITIN FASTNERS PVT LTD	INDIA		
1.74.13	PANKAJ INTERNATIONAL	INDIA		
1.74.14	PIONEER NUTS & BOLTS PVT LTD	INDIA		
1.74.15	PRECISION AUTO ENGINEERS	INDIA		
1.74.16	PRECISION ENGG. INDUSTRIES	INDIA		
1.74.17	PRESIDENT ENGINEERING WORKS	INDIA		
1.74.18	PROCYON TCHNOLOGY	INDIA		
1.74.19	SAVETA ENGINEERING CO.PVT.LTD.	INDIA		
1.74.20	SOUVENIR INTERNATIONAL	INDIA		
1.74.21	SYNDICATE ENGINEERING INDUSTRIES	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
1.74.22	UDEHRA FASTNERS LTD	INDIA		
1.74.23	UDEHRA MECHANICAL WORKS	INDIA		
<b>1.75</b>	<b>FASTENERS:HIGH TEMPERATURE TO A 453</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.75.1	FASTENERS & ALLIED PRODUCTS PVT LTD.	INDIA		
1.75.2	PRESIDENT ENGINEERING WORKS	INDIA		
1.75.3	SYNDICATE ENGINEERING INDUSTRIES	INDIA		
<b>1.76</b>	<b>EXPANSION JOINTS (RUBBER)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.76.1	CORI ENGINEERS PVT LTD	INDIA		
1.76.2	MIL INDUSTRIES LIMITED	INDIA		
1.76.3	RM APPLIED ENGINEERS	INDIA		
1.76.4	SRM EXOFLEX PVT. LTD.	INDIA		
1.76.5	FLEXOCON ENGINEERS PVT LTD	INDIA		
1.76.6	RRD DECORS PVT LTD	INDIA		
<b>1.77</b>	<b>SPRING SUPPORTS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
1.77.1	AAA SUPPORTS PVT. LTD.,VADODARA	INDIA		
1.77.2	ACME PROCESS SYSTEMS PVT LTD.	INDIA		
1.77.3	PIPE HANGERS & SUPPORTS PVT LTD	INDIA		
1.77.4	PIPE SUPPORTS CO	INDIA		
1.77.5	PIPING & ENERGY PRODUCTS ( P ) LTD	INDIA		
1.77.6	PROCYON TECHNO INDUSTRY	INDIA		
1.77.7	SARATHI ENGINEERING ENTERPRISES PVT LTD.	INDIA		
1.77.8	SPRING SUPPORTS MFG CO	INDIA		
1.77.9	TECHNO INDUSTRY	INDIA		
1.77.10	TECHNO SPRINGS INDIA PVT LTD	INDIA		
<b>1.78</b>	<b>STRAINERS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
<b>1.79</b>	<b>STRAINERS (FAB/CAST/FORGED)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.79.1	BOMBAY CHEMICAL EQUIPMENTS	INDIA		
1.79.2	ESCO STEAMCON PVT. LTD.	INDIA		
1.79.3	FORBES MARSHALL STEAM SYSTEMS PVT. LTD.	INDIA		
1.79.4	GRAND PRIX ENGINEERING PVT LTD.	INDIA		
1.79.5	GUJARAT OTOFILT	INDIA		
1.79.6	LEADER VALVES LTD	INDIA		
1.79.7	MULTITEX FILTRATION ENGINEERS LTD.	INDIA		
1.79.8	PENNANT ENGINEERING PVT LTD	INDIA		
1.79.9	SUNGOV ENGINEERING PVT LTD	INDIA		
<b>1.80</b>	<b>STEAM TRAPS-BUCKET/TH.DYN/TH.STAT/FLOAT</b>			
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.80.1	ARMSTRONG INTERNATIONAL PVT LTD.	INDIA		
1.80.2	ESCO STEAMCON PVT. LTD.	INDIA		
1.80.3	FORBES MARSHALL STEAM SYSTEMS PVT. LTD.	INDIA		
1.80.4	GESTRA AG (FLOWSERVE GROUP)	INDIA		
1.80.5	LEADER VALVES LTD	INDIA		
1.80.6	PENNANT ENGINEERING PVT LTD	INDIA		
1.80.7	UNI KLINGER LTD	INDIA		
<b>1.81</b>	<b>COMPACT STEAM TRAPING ASSY+SS/CR MANFOLD</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.81.1	ARMSTRONG INTERNATIONAL PVT LTD.	INDIA		
1.81.2	FORBES MARSHALL STEAM SYSTEMS PVT. LTD.	INDIA		
1.81.3	UNI KLINGER LTD	INDIA		
<b>1.82</b>	<b>STEAM TRAPS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.82.1	ARMSTRONG INTERNATIONAL PVT LTD.	INDIA		
1.82.2	SPX Flow Technology INDIA Pvt Ltd (Former PLENTY STEAM TRAPS, PLENTY LIMITED)	INDIA		
1.82.3	YARWAY CORPORATION	INDIA		
1.82.4	SPIRAX MARSHALL	INDIA		
1.82.5	GUJARAT OTOFILT	INDIA		
1.82.6	THERMAX C&H DIVISION - SERVICES SBU	INDIA		
<b>1.83</b>	<b>STEAM SUPPLY / COND. RECOVERY MANIFOLD</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.83.1	ARMSTRONG INTERNATIONAL PVT LTD.	INDIA		
1.83.2	FORBES MARSHALL STEAM SYSTEMS PVT. LTD.	INDIA		
1.83.3	UNI KLINGER LTD	INDIA		
<b>1.84</b>	<b>VALVE GATE (THRU CONDUIT) (AP16D)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.84.1	PENTAIR VALVES & CONTROLS INDIA PVT LTD	INDIA		
<b>1.85</b>	<b>VALVE GATE-(FOREIGN SUPPLIERS)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.85.1	CESARE BONNETTI S.P.A.	INDIA		
1.85.2	FLOWSERVE PTE(MFR. EDWARD)	INDIA		
1.85.3	FRIULCO SPA	INDIA		
1.85.4	PENTAIR VALVES	INDIA		
1.85.5	VELAN INC	INDIA		
<b>1.86</b>	<b>VALVE GATE CAST</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.86.1	AMPO VALVES INDIA PVT LTD	INDIA		
1.86.2	AMPO, S.COOP (POYAM VALVES)	INDIA		
1.86.3	ASSOCIATED TOOLING	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
1.86.4	AV VALVES LIMITED	INDIA		
1.86.5	BHEL	INDIA		
1.86.6	BOTELI VALVE GROUP CO.	INDIA		
1.86.7	CESARE BONNETTI S.P.A.	INDIA		
1.86.8	CRI PUMPS PVT LTD (UNIT-VALVES)	INDIA		
1.86.9	EXPERT ENGINEERING ENTERPRISES	INDIA		
1.86.10	FLOWSERVE PTE(MFR. EDWARD)	INDIA		
1.86.11	FLUIDLINE VALVES CO.PVT LTD	INDIA		
1.86.12	FORWARD ALLOYS & CASTINGS	INDIA		
1.86.13	FOURESS ENGG (I) LTD. (AURANGABAD)	INDIA		
1.86.14	GM ENGINEERING PVT. LTD.	INDIA		
1.86.15	HAWA ENGINEERS LTD	INDIA		
1.86.16	INTERVALVE POONAWALLA LIMITED	INDIA		
1.86.17	KSB PUMPS LTD (COIMBATTORE)	INDIA		
1.86.18	L & T VALVES LIMITED	INDIA		
1.86.19	LEADER VALVES LTD	INDIA		
1.86.20	MH VALVES PVT LTD.	INDIA		
1.86.21	MICON ENGINEERS (HUBLI) PVT LTD	INDIA		
1.86.22	NILON VALVES PRIVATE LIMITED	INDIA		
1.86.23	NITON VALVE INDUSTRIES PRIVATE LTD .	INDIA		
1.86.24	NSSL PVT. LTD. (NECO SCHUBERT & SALZER)	INDIA		
1.86.25	OSWAL INDUSTRIES LTD	INDIA		
1.86.26	PANCHVATI VALVES & FLANGES PVT LTD	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
1.86.27	PEE INDUSTRIAL VALVES PVT. LTD.	INDIA		
1.86.28	SAKHI ENGINEERS PVT. LTD.	INDIA		
1.86.29	SHALIMAR VALVES PVT LTD	INDIA		
1.86.30	SHAYBURG VALVES PVT LTD	INDIA		
1.86.31	STEEL STRONG VALVES INDIA PVT LTD	INDIA		
1.86.32	T.S. PUMPS AND VALVES PVT LTD	INDIA		
1.86.33	VALTECH INDUSTRIES	INDIA		
1.86.34	VELAN VALVES INDIA PVT LTD	INDIA		
1.86.35	WEIR BDK VALVES-A UNIT OF WEIR INDIA PVT LTD	INDIA		
1.86.36	XOMOX SANMAR LTD-PACIFIC VALVES DIVISION	INDIA		
1.86.37	NUTECH CONTROLS	INDIA		
<b>1.87</b>	<b>VALVE GATE CRYOGENIC CAST</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.87.1	AMPO, S.COOP (POYAM VALVES)	INDIA		
1.87.2	BOTELI VALVE GROUP CO.	INDIA		
1.87.3	L & T VALVES LIMITED	INDIA		
1.87.4	LEADER VALVES LTD	INDIA		
1.87.5	NITON VALVE INDUSTRIES PRIVATE LTD .	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
1.87.6	NSSL PVT. LTD. (NECO SCHUBERT & SALZER)	INDIA		
1.87.7	OSWAL INDUSTRIES LTD	INDIA		
1.87.8	PANCHVATI VALVES & FLANGES PVT LTD	INDIA		
1.87.9	STEEL STRONG VALVES INDIA PVT LTD	INDIA		
1.87.10	VELAN INC	INDIA		
1.87.11	WEIR BDK VALVES-A UNIT OF WEIR INDIA PVT	INDIA		
<b>1.88</b>	<b>VALVE GATE FORGED</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.88.1	ASSOCIATED TOOLINGS INDIA PVT LTD	INDIA		
1.88.2	AUTOCAP INDUSTRIES	INDIA		
1.88.3	AV VALVES LIMITED	INDIA		
1.88.4	BHEL	INDIA		
1.88.5	BOTELI VALVE GROUP CO.	INDIA		
1.88.6	FLUIDLINE VALVES CO.PVT LTD	INDIA		
1.88.7	GM ENGINEERING PVT. LTD.	INDIA		
1.88.8	HAWA ENGINEERS LTD	INDIA		
1.88.9	INTERVALVE POONAWALLA LIMITED	INDIA		
1.88.10	KSB PUMPS LTD	INDIA		
1.88.11	L & T VALVES LIMITED	INDIA		
1.88.12	LEADER VALVES LTD	INDIA		
1.88.13	MH VALVES PVT LTD.	INDIA		
1.88.14	MICON ENGINEERS (HUBLI) PVT LTD	INDIA		
1.88.15	NITON VALVE INDUSTRIES PRIVATE LTD.	INDIA		
1.88.16	NSSL LTD	INDIA		
1.88.17	OSWAL INDUSTRIES LTD	INDIA		
1.88.18	PANCHVATI VALVES & FLANGES PVT LTD	INDIA		
1.88.19	PEE INDUSTRIAL VALVES PVT. LTD.	INDIA		
1.88.20	SHALIMAR VALVES PVT LTD	INDIA		
1.88.21	SHAYBURG VALVES PVT LTD	INDIA		
1.88.22	STEEL STRONG VALVES INDIA PVT LTD	INDIA		
1.88.23	VEE TECH VALVES PRIVATE LIMITED	INDIA		
1.88.24	VELAN VALVES INDIA PVT LTD	INDIA		
1.88.25	WEIR BDK VALVES	INDIA		
1.88.26	RASAI FLOW LINES PVT LTD.	INDIA		
1.88.27	JMD ENGINEERING	INDIA		
1.88.28	NUTECH CONTROLS	INDIA		
<b>1.89</b>	<b>VALVE GATE CRYOGENIC FORGED</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.89.1	ASSOCIATED TOOLINGS INDIA PVT LTD	INDIA		
1.89.2	BOTELI VALVE GROUP CO.	INDIA		
1.89.3	L & T VALVES LIMITED	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
1.89.4	LEADER VALVES LTD	INDIA		
1.89.5	NITON VALVE INDUSTRIES PRIVATE LTD .	INDIA		
1.89.6	OSWAL INDUSTRIES LTD	INDIA		
1.89.7	PANCHVATI VALVES & FLANGES PVT LTD	INDIA		
1.89.8	STEEL STRONG VALVES INDIA PVT LTD	INDIA		
1.89.9	VELAN VALVES INDIA PVT LTD	INDIA		
1.89.10	WEIR BDK VALVES-A UNIT OF WEIR INDIA PVT LTD	INDIA		
<b>1.90</b>	<b>VALVE GATE GUNMETAL/BRASS/BRONZE</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.90.1	AV VALVES LIMITED	INDIA		
1.90.2	H. SARKER & COMPANY	INDIA		
1.90.3	LEADER VALVES LTD	INDIA		
1.90.4	SANT VALVES PVT LTD	INDIA		
1.90.5	ZOLOTO INDUSTRIES	INDIA		
<b>1.91</b>	<b>VALVE GATE (MOTOR OPERATED)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.91.1	AMPO VALVES INDIA PVT LTD	INDIA		
1.91.2	AMPO, S.COOP (POYAM VALVES)	INDIA		
1.91.3	BHEL	INDIA		
1.91.4	BOTELI VALVE GROUP CO.	INDIA		
1.91.5	CESARE BONNETTI S.P.A.	INDIA		
1.91.6	FLOWSERVE PTE(MFR. EDWARD)	INDIA		
1.91.7	FLUIDLINE VALVES CO.PVT LTD	INDIA		
1.91.8	GM ENGINEERING PVT. LTD.	INDIA		
1.91.9	INTERVALVE POONAWALLA LIMITED	INDIA		
1.91.10	KSB PUMPS LTD (COIMBATTORE)	INDIA		
1.91.11	L & T VALVES LIMITED	INDIA		
1.91.12	LEADER VALVES LTD	INDIA		
1.91.13	NITON VALVE INDUSTRIES PRIVATE LTD .	INDIA		
1.91.14	NSSL. LTD ( NECO SCHUBERT & SALZER LTD)	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
1.91.15	OSWAL INDUSTRIES LTD	INDIA		
1.91.16	STEEL STRONG VALVES INDIA PVT LTD	INDIA		
1.91.17	VELAN VALVES INDIA PVT LTD	INDIA		
1.91.18	WEIR BDK VALVES-A UNIT OF WEIR INDIA PVT	INDIA		
1.91.19	XOMOX SANMAR LTD-PACIFIC VALVES DIVISION	INDIA		
<b>1.92</b>	<b>VALVE KNIFE GATE</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.92.1	BRAY CONTROLS INDIA PVT. LTD.	INDIA		
1.92.2	EXPERT ENGINEERING ENTERPRISES	INDIA		
1.92.3	JASH ENGINEERING LTD.	INDIA		
1.92.4	MICROFINISH VALVES PVT LIMITED	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
1.92.5	VAAS INDUSTRIES PVT LTD	INDIA		
<b>1.93</b>	<b>VALVE GLOBE-(FOREIGN SUPPLIERS)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.93.1	FLOWSERVE PTE(MFR. EDWARD)	INDIA		
1.93.2	FRIULCO SPA	INDIA		
1.93.3	PENTAIR VALVES	INDIA		
1.93.4	VELAN INC	INDIA		
<b>1.94</b>	<b>VALVE GLOBE CAST</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.94.1	AMPO VALVES INDIA PVT LTD	INDIA		
1.94.2	AMPO, S.COOP (POYAM VALVES)	INDIA		
1.94.3	AV VALVES LIMITED	INDIA		
1.94.4	BHEL	INDIA		
1.94.5	BOTELI VALVE GROUP CO.	INDIA		
1.94.6	CRI PUMPS PVT LTD (UNIT-VALVES)	INDIA		
1.94.7	EXPERT ENGINEERING ENTERPRISES	INDIA		
1.94.8	FLUIDLINE VALVES CO.PVT LTD	INDIA		
1.94.9	FORWARD ALLOYS & CASTINGS	INDIA		
1.94.10	FOURESS ENGG (I) LTD. (AURANGABAD)	INDIA		
1.94.11	GM ENGINEERING PVT. LTD.	INDIA		
1.94.12	HAWA ENGINEERS LTD	INDIA		
1.94.13	INTERVALVE POONAWALLA LIMITED	INDIA		
1.94.14	KSB PUMPS LTD (COIMBATTORE)	INDIA		
1.94.15	L & T VALVES LIMITED	INDIA		
1.94.16	LEADER VALVES LTD	INDIA		
1.94.17	MH VALVES PVT LTD.	INDIA		
1.94.18	MICON ENGINEERS (HUBLI) PVT LTD	INDIA		
1.94.19	NILON VALVES PRIVATE LIMITED	INDIA		
1.94.20	NITON VALVE INDUSTRIES PRIVATE LTD .	INDIA		
1.94.21	NSSL PVT. LTD. (NECO SCHUBERT & SALZER)	INDIA		
1.94.22	OSWAL INDUSTRIES LTD	INDIA		
1.94.23	PANCHVATI VALVES & FLANGES PVT LTD	INDIA		
1.94.24	PEE INDUSTRIAL VALVES PVT. LTD.	INDIA		
1.94.25	SAKHI ENGINEERS PVT. LTD.	INDIA		
1.94.26	SHALIMAR VALVES PVT LTD	INDIA		
1.94.27	SHAYBURG VALVES PVT LTD	INDIA		
1.94.28	STEEL STRONG VALVES INDIA PVT LTD	INDIA		
1.94.29	WEIR BDK VALVES-A UNIT OF WEIR INDIA PVT	INDIA		
1.94.30	XOMOX SANMAR LTD-PACIFIC VALVES DIVISION	INDIA		
1.94.31	NUTECH CONTROLS	INDIA		
<b>1.95</b>	<b>VALVE GLOBE CRYOGENIC CAST</b>			
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.95.1	AMPO, S.COOP (POYAM VALVES)	INDIA		
1.95.2	BOTELI VALVE GROUP CO.	INDIA		
1.95.3	L & T VALVES LIMITED	INDIA		
1.95.4	LEADER VALVES LTD	INDIA		
1.95.5	NITON VALVE INDUSTRIES PRIVATE LTD.	INDIA		
1.95.6	NSSL PVT. LTD. (NECO SCHUBERT & SALZER)	INDIA		
1.95.7	OSWAL INDUSTRIES LTD	INDIA		
1.95.8	PANCHVATI VALVES & FLANGES PVT LTD	INDIA		
1.95.9	STEEL STRONG VALVES INDIA PVT LTD	INDIA		
1.95.10	VELAN INC	INDIA		
1.95.11	WEIR BDK VALVES-A UNIT OF WEIR INDIA PVT	INDIA		
<b>1.96</b>	<b>VALVE GLOBE FORGED</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.96.1	ASSOCIATED TOOLINGS INDIA PVT LTD	INDIA		
1.96.2	AUTOCAP INDUSTRIES	INDIA		
1.96.3	AV VALVES LIMITED	INDIA		
1.96.4	BHEL	INDIA		
1.96.5	BOTELI VALVE GROUP CO.	INDIA		
1.96.6	FLOWSERVE PTE(MFR. EDWARD)	INDIA		
1.96.7	FLUIDLINE VALVES CO.PVT LTD	INDIA		
1.96.8	GM ENGINEERING PVT. LTD.	INDIA		
1.96.9	HAWA ENGINEERS LTD	INDIA		
1.96.10	INTERVALVE POONAWALLA LIMITED	INDIA		
1.96.11	KSB PUMPS LTD (COIMBATTORE)	INDIA		
1.96.12	L & T VALVES LIMITED	INDIA		
1.96.13	LEADER VALVES LTD	INDIA		
1.96.14	MICON ENGINEERS (HUBLI) PVT LTD	INDIA		
1.96.15	NITON VALVE INDUSTRIES PRIVATE LTD.	INDIA		
1.96.16	OSWAL INDUSTRIES LTD	INDIA		
1.96.17	PANCHVATI VALVES & FLANGES PVT LTD	INDIA		
1.96.18	PEE INDUSTRIAL VALVES PVT. LTD.	INDIA		
1.96.19	SEMPELL VALVES PVT LTD	INDIA		
1.96.20	SHALIMAR VALVES PVT LTD	INDIA		
1.96.21	SHAYBURG VALVES PVT LTD	INDIA		
1.96.22	STEEL STRONG VALVES INDIA PVT LTD	INDIA		
1.96.23	VEE TECH VALVES PRIVATE LIMITED	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
1.96.24	VELAN VALVES INDIA PVT LTD	INDIA		
1.96.25	WEIR BDK VALVES-A UNIT OF WEIR INDIA PVT	INDIA		
1.96.26	NUTECH CONTROLS	INDIA		
1.96.27	JMD ENGINEERS	INDIA		
Sr.No	VENDOR NAME	COUNTRY		
1.97	VALVE GLOBE CRYOGENIC FORGED			
A	INDIAN BIDDERS			
1.97.1	ASSOCIATED TOOLINGS INDIA PVT LTD	INDIA		
1.97.2	BOTELI VALVE GROUP CO.	INDIA		
1.97.3	L & T VALVES LIMITED	INDIA		
1.97.4	LEADER VALVES LTD	INDIA		
1.97.5	NITON VALVE INDUSTRIES PRIVATE LTD.	INDIA		
1.97.6	OSWAL INDUSTRIES LTD	INDIA		
1.97.7	STEEL STRONG VALVES INDIA PVT LTD	INDIA		
1.97.8	WEIR BDK VALVES-A UNIT OF WEIR INDIA PVT LTD	INDIA		
1.98	VALVE GLOBE GUNMETAL/BRASS/BRONZE			
A	INDIAN BIDDERS			
1.98.1	AV VALVES LIMITED	INDIA		
1.98.2	H. SARKER & COMPANY	INDIA		
1.98.3	LEADER VALVES LTD	INDIA		
1.98.4	SANT VALVES PVT LTD	INDIA		
1.99	Y TYPE GLOBE & STOP CHECK VALVES			
A	INDIAN BIDDERS			
1.99.1	ADAMS ARMATUREN GMBH	INDIA		
1.99.2	AMPO VALVES INDIA PVT LTD	INDIA		
1.99.3	AMPO, S.COOP (POYAM VALVES)	INDIA		
1.99.4	BOTELI VALVE GROUP CO.	INDIA		
1.99.5	CESARE BONNETTI S.P.A.	INDIA		
1.99.6	FLOWSERVE PTE(MFR. EDWARD)	INDIA		
1.99.7	L & T VALVES LIMITED	INDIA		
1.99.8	NITON VALVE INDUSTRIES PRIVATE LTD.	INDIA		
1.99.9	SchuF Speciality valves INDIA Pvt Ltd	INDIA		
1.99.10	VELAN INC	INDIA		
1.99.11	VELAN VALVES INDIA PVT LTD	INDIA		
1.100	VALVE- BLOWDOWN (Straight/Angle Pattern)			
A	INDIAN BIDDERS			
1.100.1	BHEL	INDIA		
1.100.2	CESARE BONNETTI S.P.A.	INDIA		
1.100.3	GESTRA AG (FLOWSERVE GROUP)	INDIA		
1.100.4	INSTRUMENTATION LTD. (PALGHAT)	INDIA		
1.100.5	PENTAIR VALVES & CONTROLS INDIA PVT LTD	INDIA		
1.100.6	SCHUF SPECIALITY VALVES INDIA PVT LTD	INDIA		
1.100.7	SEMPELL VALVES PVT LTD	INDIA		
1.100.8	YARWAY CORPORATION	INDIA		
1.101	VALVE CHECK- (FOREIGN SUPPLIERS)			
A	INDIAN BIDDERS			
Sr.No	VENDOR NAME	COUNTRY		
1.101.1	CESARE BONNETTI S.P.A.	INDIA		
1.101.2	FLOWSERVE PTE(MFR. EDWARD)	INDIA		
1.101.3	FRIULCO SPA	INDIA		
1.101.4	PENTAIR VALVES	INDIA		
1.101.5	VELAN INC	INDIA		
1.102	VALVE CHECK CAST			
A	INDIAN BIDDERS			
1.102.1	AMPO VALVES INDIA PVT LTD	INDIA		
1.102.2	AMPO, S.COOP (POYAM VALVES)	INDIA		
1.102.3	AV VALVES LIMITED	INDIA		
1.102.4	BHEL	INDIA		
1.102.5	BOTELI VALVE GROUP CO.	INDIA		
1.102.6	CESARE BONNETTI S.P.A.	INDIA		
1.102.7	CRI PUMPS PVT LTD (UNIT-VALVES)	INDIA		
1.102.8	FLUIDLINE VALVES CO.PVT LTD	INDIA		
1.102.9	FORWARD ALLOYS & CASTINGS	INDIA		
1.102.10	FOURESS ENGG (I) LTD. (AURANGABAD)	INDIA		
1.102.11	GESTRA AG (FLOWSERVE GROUP)	INDIA		
1.102.12	GM ENGINEERING PVT. LTD.	INDIA		
1.102.13	HAWA ENGINEERS LTD	INDIA		
1.102.14	INTERVALVE POONAWALLA LIMITED	INDIA		
1.102.15	KSB PUMPS LTD (COIMBATTORE)	INDIA		
1.102.16	L & T VALVES LIMITED	INDIA		
1.102.17	LEADER VALVES LTD	INDIA		
1.102.18	MH VALVES PVT LTD.	INDIA		
1.102.19	MICON ENGINEERS (HUBLI) PVT LTD	INDIA		
1.102.20	NILON VALVES PRIVATE LIMITED	INDIA		
1.102.21	NITON VALVE INDUSTRIES PRIVATE LTD .	INDIA		
1.102.22	NSSL PVT. LTD. (NECO SCHUBERT & SALZER)	INDIA		
1.102.23	OMKAR VAVES PVT LTD	INDIA		
1.102.24	OSWAL INDUSTRIES LTD	INDIA		
1.102.25	PANCHVATI VALVES & FLANGES PVT LTD	INDIA		
1.102.26	PEE INDUSTRIAL VALVES PVT. LTD.	INDIA		
1.102.27	SAKHI ENGINEERS PVT. LTD.	INDIA		
1.102.28	SHALIMAR VALVES PVT LTD	INDIA		
1.102.29	SHAYBURG VALVES PVT LTD	INDIA		
1.102.30	STEEL STRONG VALVES INDIA PVT LTD	INDIA		
1.102.31	T.S. PUMPS AND VALVES PVT.LTD	INDIA		
1.102.32	VELAN VALVES INDIA PVT LTD	INDIA		
1.102.33	WEIR BDK VALVES-A UNIT OF WEIR INDIA PVT	INDIA		
1.102.34	XOMOX SANMAR LTD-PACIFIC VALVES DIVISION	INDIA		
Sr.No	VENDOR NAME	COUNTRY		
1.102.35	NUTECH CONTROLS	INDIA		
1.103	VALVE CHECK CRYOGENIC CAST			



MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.103.1	AMPO, S.COOP (POYAM VALVES)	INDIA		
1.103.2	BOTELI VALVE GROUP CO.	INDIA		
1.103.3	L & T VALVES LIMITED	INDIA		
1.103.4	NITON VALVE INDUSTRIES PRIVATE LTD .	INDIA		
1.103.5	NSSL PVT. LTD. (NECO SCHUBERT & SALZER)	INDIA		
1.103.6	OSWAL INDUSTRIES LTD	INDIA		
1.103.7	PANCHVATI VALVES & FLANGES PVT LTD	INDIA		
1.103.8	STEEL STRONG VALVES INDIA PVT LTD	INDIA		
1.103.9	VELAN INC	INDIA		
1.103.10	LEADER VALVES	INDIA		
<b>1.104</b>	<b>VALVE CHECK FORGED</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.104.1	ASSOCIATED TOOLINGS INDIA PVT LTD	INDIA		
1.104.2	AUTOCAP INDUSTRIES	INDIA		
1.104.3	AV VALVES LIMITED	INDIA		
1.104.4	BHEL	INDIA		
1.104.5	BOTELI VALVE GROUP CO.	INDIA		
1.104.6	FLOWSERVE PTE(MFR. EDWARD)	INDIA		
1.104.7	FLUIDLINE VALVES CO.PVT LTD	INDIA		
1.104.8	GM ENGINEERING PVT. LTD.	INDIA		
1.104.9	HAWA ENGINEERS LTD	INDIA		
1.104.10	INTERVALVE POONAWALLA LIMITED	INDIA		
1.104.11	KSB PUMPS LTD (COIMBATTORE)	INDIA		
1.104.12	L & T VALVES LIMITED	INDIA		
1.104.13	LEADER VALVES LTD	INDIA		
1.104.14	MICON ENGINEERS (HUBLI) PVT LTD	INDIA		
1.104.15	NITON VALVE INDUSTRIES PRIVATE LTD.	INDIA		
1.104.16	NSSL LTD	INDIA		
1.104.17	OMKAR VAVES PVT LTD	INDIA		
1.104.18	OSWAL INDUSTRIES LTD	INDIA		
1.104.19	PANCHVATI VALVES & FLANGES PVT LTD	INDIA		
1.104.20	PEE INDUSTRIAL VALVES PVT. LTD.	INDIA		
1.104.21	SHALIMAR VALVES PVT LTD	INDIA		
1.104.22	SHAYBURG VALVES PVT LTD	INDIA		
1.104.23	STEEL STRONG VALVES INDIA PVT LTD	INDIA		
1.104.24	VEE TECH VALVES PRIVATE LIMITED	INDIA		
1.104.25	VELAN VALVES INDIA PVT LTD	INDIA		
1.104.26	WEIR BDK VALVES-A UNIT OF WEIR INDIA PVT	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
1.104.27	NUTECH CONTROLS	INDIA		
1.104.28	JMD ENGINEERS	INDIA		
<b>1.105</b>	<b>VALVE CHECK CRYOGENIC FORGED</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.105.1	ASSOCIATED TOOLINGS INDIA PVT LTD	INDIA		
1.105.2	BOTELI VALVE GROUP CO.	INDIA		
1.105.3	LEADER VALVES LTD	INDIA		
1.105.4	OSWAL INDUSTRIES LTD	INDIA		
1.105.5	STEEL STRONG VALVES INDIA PVT LTD	INDIA		
<b>1.106</b>	<b>VALVE CHECK GUNMETAL/BRASS/BRONZE</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.106.1	AV VALVES LIMITED	INDIA		
7.106.2	H. SARKER & COMPANY	INDIA		
7.106.3	LEADER VALVES LTD	INDIA		
7.106.4	SANT VALVES PVT LTD	INDIA		
7.106.5	ATAM VALVES PVT LTD	INDIA		
7.106.6	ZOLOTO INDUSTRIES	INDIA		
<b>1.107</b>	<b>VALVE CHECK (DUAL PLATE TYPE)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.107.1	ADVANCE VALVES PVT LTD.	INDIA		
1.107.2	CRANE STOCKHAM VALVE LTD	INDIA		
1.107.3	FLOVEL VALVES PVT.LTD.	INDIA		
1.107.4	GESTRA AG (FLOWSERVE GROUP)	INDIA		
1.107.5	LEADER VALVES LTD	INDIA		
1.107.6	NITON VALVE INDUSTRIES PRIVATE LTD .	INDIA		
1.107.7	OMKAR VAVES PVT LTD	INDIA		
1.107.8	SHALIMAR VALVES PVT LTD	INDIA		
1.107.9	WEIR BDK VALVES-A UNIT OF WEIR INDIA PVT	INDIA		
<b>1.108</b>	<b>VALVE CHECK EXCESS FLOW</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.108.1	CHANDRA ENGG. & MECH PVT LTD.	INDIA		
<b>1.109</b>	<b>VALVE-NON SLAM CHECK (NOZZLE)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.109.1	CRANE STOCKHAM VALVE LTD	INDIA		
1.109.2	FLOVEL VALVES PVT.LTD.	INDIA		
<b>1.110</b>	<b>VALVE BALL-(FOREIGN SUPPLIERS)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.110.1	FRANZ SCHUCK GMBH (FORMERLY BORSIG)	INDIA		
1.110.2	FRIULCO SPA	INDIA		
1.110.3	KITAMURA VALVE MANUFACTURING CO LTD	INDIA		
1.110.4	METSO FLOW CONTROL OY	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
1.110.5	PENTAIR VALVES	INDIA		
1.110.6	CAMERON LTD. (Group of Schlumberger Ltd)	INDIA		
<b>1.111</b>	<b>VALVE BALL CRYOGENIC</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.111.1	AMPO, S.COOP (POYAM VALVES)	INDIA		
1.111.2	BELGAUM AQUA VALVES PVT. LTD.	INDIA		
1.111.3	MICROFINISH VALVES PVT LIMITED	INDIA		
1.111.4	WEIR BDK VALVES-A UNIT OF WEIR INDIA PVT LTD	INDIA		
<b>1.112</b>	<b>VALVE BALL NON FIRE SAFE-CCS</b>			

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.112.1	AMPO, S.COOP (POYAM VALVES)	INDIA		
1.112.2	ANAND TEKNOV AIDS ENGINEERING INDIA LTD	INDIA		
1.112.3	AQUA CONTROL VAVES PVT LTD	INDIA		
1.112.4	BELGAUM AQUA VALVES PVT. LTD.	INDIA		
1.112.5	BOTELI VALVE GROUP CO.	INDIA		
1.112.6	BRAY CONTROLS INDIA PVT LTD	INDIA		
1.112.7	DELVAL FLOW CONTROLS PRIVATE LIMITED	INDIA		
1.112.8	DEMBLA VALVES LTD.	INDIA		
1.112.9	FLOW CHEM INDUSTRIES	INDIA		
1.112.10	FLOWJET VAVES PVT LTD	INDIA		
1.112.11	FLUIDLINE VALVES CO.PVT LTD	INDIA		
1.112.12	FRANZ SCHUCK GMBH (FORMERLY BORSIG- B506)	INDIA		
1.112.13	GM ENGINEERING PVT. LTD.	INDIA		
1.112.14	HAWA ENGINEERS LTD	INDIA		
1.112.15	INTERVALVE POONAWALLA LIMITED	INDIA		
1.112.16	KITAMURA VALVE MANUFACTURING CO LTD	INDIA		
1.112.17	L & T VALVES LIMITED	INDIA		
1.112.18	LEADER VALVES LTD	INDIA		
1.112.19	METSO FLOW CONTROL OY	INDIA		
1.112.20	MEVADA ENGG.WORKS PVT LTD	INDIA		
1.112.21	MICON ENGINEERS (HUBLI) PVT LTD	INDIA		
1.112.22	MICROFINISH VALVES PVT LIMITED	INDIA		
1.112.23	NITON VALVE INDUSTRIES PRIVATE LTD.	INDIA		
1.112.24	NSSL ITALIA	INDIA		
1.112.25	OSWAL INDUSTRIES LTD	INDIA		
1.112.26	RAPPID VALVES INDIA PVT LTD	INDIA		
1.112.27	REYNOLD VALVES LTD	INDIA		
1.112.28	SHALIMAR VALVES PVT LTD	INDIA		
1.112.29	SHAYBURG VALVES PVT LTD	INDIA		
1.112.30	VAAS AUTOMATION PVT LTD	INDIA		
1.112.31	VIRGO VALVES & CONTROLS PVT LTD.	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
1.112.32	WEIR BDK VALVES-A UNIT OF WEIR INDIA PVT	INDIA		
1.112.33	DEMBLA VALVES LIMITED	INDIA		
1.112.34	ANAND TEKNOV AIDS ENGINEERING INDIA LTD.	INDIA		
<b>1.113</b>	<b>VALVE BALL NON FIRE SAFE-CSS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.113.1	AMPO, S.COOP (POYAM VALVES)	INDIA		
1.113.2	ANAND TEKNOV AIDS ENGINEERING INDIA LTD	INDIA		
1.113.3	ANAND TEKNOV AIDS ENGINEERING INDIA LTD.	INDIA		
1.113.4	AQUA CONTROL VAVES PVT LTD	INDIA		
1.113.5	BELGAUM AQUA VALVES PVT. LTD.	INDIA		
1.113.6	BOTELI VALVE GROUP CO.	INDIA		
1.113.7	BRAY CONTROLS INDIA PVT LTD	INDIA		
1.113.8	DELVAL FLOW CONTROLS PRIVATE LIMITED	INDIA		
1.113.9	DEMBLA VALVES LIMITED	INDIA		
1.113.10	FLOW CHEM INDUSTRIES	INDIA		
1.113.11	FLOWJET VAVES PVT LTD	INDIA		
1.113.12	GM ENGINEERING PVT. LTD.	INDIA		
1.113.13	HAWA ENGINEERS LTD	INDIA		
1.113.14	INTERVALVE POONAWALLA LIMITED	INDIA		
1.113.15	KITAMURA VALVE MANUFACTURING CO LTD	INDIA		
1.113.16	L & T VALVES LIMITED	INDIA		
1.113.17	LEADER VALVES LTD	INDIA		
1.113.18	METSO FLOW CONTROL OY	INDIA		
1.113.19	MEVADA ENGG.WORKS PVT LTD	INDIA		
1.113.20	MICON ENGINEERS (HUBLI) PVT LTD	INDIA		
1.113.21	MICROFINISH VALVES PVT LIMITED	INDIA		
1.113.22	NITON VALVE INDUSTRIES PRIVATE LTD.	INDIA		
1.113.23	NSSL ITALIA	INDIA		
1.113.24	OSWAL INDUSTRIES LTD	INDIA		
1.113.25	RAPPID VALVES INDIA PVT LTD	INDIA		
1.113.26	REYNOLD VALVES LTD	INDIA		
1.113.27	SHAYBURG VALVES PVT LTD	INDIA		
1.113.28	VAAS AUTOMATION PVT LTD	INDIA		
1.113.29	VIRGO VALVES & CONTROLS PVT LTD.	INDIA		
1.113.30	VIRGO VALVES & CONTROLS PVT LTD.	INDIA		
<b>1.114</b>	<b>VALVE BALL FIRE SAFE-CCS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.114.1	AMPO, S.COOP (POYAM VALVES)	INDIA		
1.114.2	ANAND TEKNOV AIDS ENGINEERING INDIA LTD	INDIA		
1.114.3	ANAND TEKNOV AIDS ENGINEERING INDIA LTD.	INDIA		
1.114.4	AQUA CONTROL VAVES PVT LTD	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
1.114.5	BELGAUM AQUA VALVES PVT. LTD.	INDIA		
1.114.6	BOTELI VALVE GROUP CO.	INDIA		
1.114.7	BRAY CONTROLS INDIA PVT LTD	INDIA		
1.114.8	DEMBLA VALVES LIMITED	INDIA		
1.114.9	FLOW CHEM INDUSTRIES	INDIA		
1.114.10	FLOWJET VAVES PVT LTD	INDIA		
1.114.11	GM ENGINEERING PVT. LTD.	INDIA		
1.114.12	HAWA ENGINEERS LTD	INDIA		
1.114.13	INTERVALVE POONAWALLA LIMITED	INDIA		
1.114.14	L & T VALVES LIMITED	INDIA		
1.114.15	LEADER VALVES LTD	INDIA		
1.114.16	METSO FLOW CONTROL OY	INDIA		
1.114.17	MICON ENGINEERS (HUBLI) PVT LTD	INDIA		
1.114.18	MICROFINISH VALVES PVT LIMITED	INDIA		
1.114.19	NITON VALVE INDUSTRIES PRIVATE LTD.	INDIA		
1.114.20	NSSL ITALIA	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
1.114.21	OSWAL INDUSTRIES LTD	INDIA		
1.114.22	RAPPID VALVES INDIA PVT LTD	INDIA		
1.114.23	REYNOLD VALVES LTD	INDIA		
1.114.24	SHAYBURG VALVES PVT LTD	INDIA		
1.114.25	VAAS AUTOMATION PVT LTD	INDIA		
1.114.26	VIRGO VALVES & CONTROLS PVT LTD.	INDIA		
1.114.27	WEIR BDK VALVES-A UNIT OF WEIR INDIA PVT	INDIA		
<b>1.115</b>	<b>VALVE BALL FIRE SAFE-CSS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.115.1	AMPO, S.COOP (POYAM VALVES)	INDIA		
1.115.2	ANAND TEKNOV AIDS ENGINEERING INDIA LTD.	INDIA		
1.115.3	BELGAUM AQUA VALVES PVT. LTD.	INDIA		
1.115.4	BOTELI VALVE GROUP CO.	INDIA		
1.115.5	CRANE PROCESS FLOW TECHNOLOGES (I) LTD	INDIA		
1.115.6	DELVAL FLOW CONTRLS PVT LTD	INDIA		
1.115.7	FLOW CHEM INDUSTRIES	INDIA		
1.115.8	GM ENGINEERING PVT. LTD.	INDIA		
1.115.9	INTERVALVE POONAWALLA LIMITED	INDIA		
1.115.10	L & T VALVES LIMITED	INDIA		
1.115.11	LEADER VALVES LTD	INDIA		
1.115.12	METSO FLOW CONTROL OY	INDIA		
1.115.13	MICON ENGINEERS (HUBLI) PVT LTD	INDIA		
1.115.14	MICROFINISH VALVES PVT LIMITED	INDIA		
1.115.15	NITON VALVE INDUSTRIES PRIVATE LTD .	INDIA		
1.115.16	NSSL ITALIA	INDIA		
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
1.115.17	OMKAR VALVES PVT LTD	INDIA		
1.115.18	REYNOLD VALVES LTD	INDIA		
1.115.19	VAAS AUTOMATION PVT LTD	INDIA		
1.115.20	VIRGO VALVES & CONTROLS PVT LTD.	INDIA		
1.115.21	WEIR BDK VALVES-A UNIT OF WEIR INDIA PVT	INDIA		
<b>1.116</b>	<b>VALVE BALL - FIRE SAFE (FORGED)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.116.1	ANAND TEKNOV AIDS ENGINEERING INDIA LTD.	INDIA		
1.116.2	BELGAUM AQUA VALVES PVT. LTD.	INDIA		
1.116.3	CRANE PROCESS FLOW TECHNOLOGES (I) LTD	INDIA		
1.116.4	DELVAL FLOW CONTRLS PVT LTD	INDIA		
1.116.5	INTERVALVE POONAWALLA LIMITED	INDIA		
1.116.6	MICON ENGINEERS (HUBLI) PVT LTD	INDIA		
1.116.7	MICROFINISH VALVES PVT LIMITED	INDIA		
1.116.8	OMKAR VALVES PVT LTD	INDIA		
1.116.9	SHAYBURG VALVES PVT LTD	INDIA		
1.116.10	WEIR BDK VALVES-A UNIT OF WEIR INDIA PVT LTD	INDIA		
<b>1.117</b>	<b>VALVE BALL NON FIRE SAFE-FCS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.117.1	BELGAUM AQUA VALVES PVT. LTD.	INDIA		
1.117.2	CRANE PROCESS FLOW TECHNOLOGES (I) LTD	INDIA		
1.117.3	DELVAL FLOW CONTRLS PVT LTD	INDIA		
1.117.4	FLOW CHEM INDUSTRIES	INDIA		
1.117.5	HAWA ENGINEERS LTD	INDIA		
1.117.6	INTERVALVE POONAWALLA LIMITED	INDIA		
1.117.7	LEADER VALVES LTD	INDIA		
1.117.8	MEVADA ENGG.WORKS PVT LTD	INDIA		
1.117.9	MICROFINISH VALVES PVT LIMITED	INDIA		
1.117.10	NITON VALVE INDUSTRIES PRIVATE LTD.	INDIA		
1.117.11	OMKAR VALVES PVT LTD	INDIA		
1.117.12	SHAYBURG VALVES PVT LTD	INDIA		
1.117.13	ANAND TEKNOV AIDS ENGINEERING INDIA LTD.	INDIA		
<b>1.118</b>	<b>VALVE BALL NON FIRE SAFE-FSS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.118.1	BELGAUM AQUA VALVES PVT. LTD.	INDIA		
1.118.2	CRANE PROCESS FLOW TECHNOLOGES (I) LTD	INDIA		
1.118.3	DELVAL FLOW CONTRLS PVT LTD	INDIA		
1.118.4	FLOW CHEM INDUSTRIES	INDIA		
1.118.5	HAWA ENGINEERS LTD	INDIA		
1.118.6	INTERVALVE POONAWALLA LIMITED	INDIA		
1.118.7	LEADER VALVES LTD	INDIA		
1.118.8	MEVADA ENGG.WORKS PVT LTD	INDIA		
1.118.9	MICROFINISH VALVES PVT LIMITED	INDIA		
1.118.10	NITON VALVE INDUSTRIES PRIVATE LTD .	INDIA		
1.118.11	OMKAR VALVES PVT LTD	INDIA		
1.118.12	SHAYBURG VALVES PVT LTD	INDIA		
1.118.13	ANAND TEKNOV AIDS ENGINEERING INDIA LTD.	INDIA		
<b>1.119</b>	<b>VALVE BALL JACKETED - NON FIRE SAFE</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.119.1	BELGAUM AQUA VALVES PVT. LTD.	INDIA		
1.119.2	MICROFINISH VALVES PVT LIMITED	INDIA		
<b>1.120</b>	<b>VALVE BALL MULTIPORT NON FIRE SAFE</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.120.1	BELGAUM AQUA VALVES PVT. LTD.	INDIA		
1.120.2	MICROFINISH VALVES PVT LIMITED	INDIA		
<b>1.121</b>	<b>VALVE BUTTERFLY-(FOREIGN SUPPLIERS)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.121.1	PENTAIR VALVES & CONTROLS INDIA LTD	INDIA		
<b>1.122</b>	<b>VALVE BUTTERFLY - CCS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.122.1	ADVANCE VALVES PVT LTD.	INDIA		
1.122.2	BRAY CONTROLS	INDIA		
1.122.3	CRANE PROCESS FLOW TECHNOLOGIES IND. LTD	INDIA		
1.122.4	DELVAL FLOW CONTRLS PVT LTD	INDIA		
1.122.5	DEMBLA VALVES LTD.	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
1.122.6	FLOWSERVE INDIA CONTROLS PVT LTD-MMN			
1.122.7	FLUIDLINE VALVES CO.PVT LTD	INDIA		
1.122.8	FOURESS ENGG.(INDIA) LTD.(BLR.WORK )	INDIA		
1.122.9	GM ENGINEERING PVT. LTD.	INDIA		
1.122.10	HAWA ENGINEERS LTD	INDIA		
1.122.11	INSTRUMENTATION LTD. (PALGHAT)	INDIA		
1.122.12	INTERVALVE POONAWALLA LIMITED	INDIA		
1.122.13	L & T VALVES LIMITED	INDIA		
1.122.14	LEADER VALVES LTD	INDIA		
1.122.15	MASCOT VALVES PVT LIMITED (FMLY VALFLO)	INDIA		
1.122.16	METSO FLOW CONTROL OY	INDIA		
1.122.17	OMKAR VALVES PVT LTD	INDIA		
1.122.18	PENTAIR VALVES & CONTROLS INDIA PVT LTD	INDIA		
1.122.19	STAFFORD CONTROLS LIMITED	INDIA		
1.122.20	WEIR BDK VALVES-A UNIT OF WEIR INDIA PVT LTD	INDIA		
1.122.21	BRAY CONTROLS INDIA PVT LTD.	INDIA		
1.122.22	DEMBLA VALVES LIMITED	INDIA		
<b>1.123</b>	<b>VALVE BUTTERFLY -CSS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.123.1	ADVANCE VALVES PVT LTD.	INDIA		
1.123.2	BRAY CONTROLS INDIA PVT LTD.	INDIA		
1.123.3	CRANE PROCESS FLOW TECHNOLOGIES IND. LTD	INDIA		
1.123.4	DELVAL FLOW CONTRLS PVT LTD	INDIA		
1.123.5	FLOWSERVE INDIA CONTROLS PVT LTD-MMN	INDIA		
1.123.6	FLUIDLINE VALVES CO.PVT LTD	INDIA		
1.123.7	FOURESS ENGG.(INDIA) LTD.(BLR.WORK )	INDIA		
1.123.8	INSTRUMENTATION LTD. (PALGHAT)	INDIA		
1.123.9	INTERVALVE POONAWALLA LIMITED	INDIA		
1.123.10	L & T VALVES LIMITED	INDIA		
1.123.11	LEADER VALVES LTD	INDIA		
1.123.12	MASCOT VALVES PVT LIMITED (FMLY VALFLO)	INDIA		
1.123.13	METSO FLOW CONTROL OY	INDIA		
1.123.14	OMKAR VALVES PVT LTD	INDIA		
1.123.15	PENTAIR VALVES & CONTROLS INDIA PVT LTD	INDIA		
1.123.16	STAFFORD CONTROLS LIMITED	INDIA		
1.123.17	WEIR BDK VALVES-A UNIT OF WEIR INDIA PVT LTD	INDIA		
1.123.18	DEMBALA VALVES LIMITED	INDIA		
<b>1.124</b>	<b>VALVE BUTTERFLY -CAS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.124.1	BRAY CONTROLS INDIA PVT LTD.	INDIA		
1.124.2	CRANE PROCESS FLOW TECHNOLOGIES IND. LTD	INDIA		
1.124.3	DELVAL FLOW CONTRLS PVT LTD	INDIA		
1.124.4	LEADER VALVES LTD	INDIA		
1.124.5	OMKAR VALVES PVT LTD	INDIA		
<b>1.125</b>	<b>VALVE BUTTERFLY (PTFE SEATED)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.125.1	BRAY CONTROLS INDIA PVT LTD.	INDIA		
1.125.2	CRANE PROCESS FLOW TECHNOLOGIES IND. LTD	INDIA		
1.125.3	DELVAL FLOW CONTROLS PRIVATE LIMITED	INDIA		
1.125.4	DEMBLA VALVES LIMITED	INDIA		
1.125.5	EMERSON (TYCO VALVES & CONTROLS-PANTAIR)	INDIA		
1.125.6	GM ENGINEERING PVT. LTD.	INDIA		
1.125.7	HI TECH BUTTERFLY VALVES INDIA PVT LTD.	INDIA		
1.125.8	INTERVALVE POONAWALLA LIMITED	INDIA		
1.125.9	WEIR BDK VALVES-A UNIT OF WEIR INDIA PVT	INDIA		
<b>1.126</b>	<b>VALVE BELLOW SEALED</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.126.1	BELL-O-SEAL VALVES PVT LTD	INDIA		
1.126.2	BOTELI VALVE GROUP CO.	INDIA		
1.126.3	CESARE BONNETTI S.P.A.	INDIA		
1.126.4	L & T VALVES LIMITED	INDIA		
1.126.5	MICROFINISH VALVES PVT LIMITED	INDIA		
1.126.6	UNI KLINGER LTD	INDIA		
1.126.7	VELAN INC	INDIA		
1.126.8	VELAN VALVES INDIA PVT LTD	INDIA		
<b>1.127</b>	<b>VALVE-BUTTERFLY (TRIPLE OFFSET)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.127.1	ADAMS ARMATUREN GMBH	INDIA		
1.127.2	ADVANCE VALVES PVT LTD.	INDIA		
1.127.3	BRAY CONTROLS	INDIA		
1.127.4	DELVAL FLOW CONTROLS PRIVATE LIMITED	INDIA		
1.127.5	DEMBLA VALVES LIMITED	INDIA		
1.127.6	INTERVALVE POONAWALLA LIMITED	INDIA		
1.127.7	L & T VALVES LIMITED	INDIA		
1.127.8	PENTAIR VALVES & CONTROLS INDIA PVT LTD	INDIA		
1.127.9	VIRGO VALVES & CONTROLS PVT LTD.	INDIA		
<b>1.128</b>	<b>VALVE DIAPHRAGM-(FOREIGN SUPPLIERS)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.128.1	KITAMURA VALVE MANUFACTURING CO LTD	INDIA		
<b>1.129</b>	<b>VALVE DIAPHRAGM CAST CARBON STEEL</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.129.1	CRANE PROCESS FLOW TECHNOLOGIES IND. LTD	INDIA		
1.129.2	PROCON ENGINEERS	INDIA		
1.129.3	WEIR BDK VALVES-A UNIT OF WEIR INDIA PVT LTD	INDIA		
<b>1.130</b>	<b>VALVE DIAPHRAGM CAST STAINLESS STEEL</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.130.1	CRANE PROCESS FLOW TECHNOLOGIES IND. LTD	INDIA		
1.130.2	PROCON ENGINEERS	INDIA		
1.130.3	WEIR BDK VALVES-A UNIT OF WEIR INDIA PVT LTD	INDIA		
<b>1.131</b>	<b>VALVE PLUG-(FOREIGN SUPPLIERS)</b>			
<b>1.132</b>	<b>VALVE PLUG CONCENTRIC- CCS (F.S &amp; N.F.S)</b>			

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.132.1	CHEMTROLS SAMIL (INDIA) PVT LTD	INDIA		
1.132.2	FLOWSERVE INDIA CONTROLS PVT LTD-MMN	INDIA		
1.132.3	FLOWSERVE PTE (MFR. SERCK)	INDIA		
1.132.4	GM ENGINEERING PVT. LTD.	INDIA		
1.132.5	RASAI FLOW LINES PVT LTD.	INDIA		
1.132.6	WEIR BDK VALVES-A UNIT OF WEIR INDIA PVT	INDIA		
1.132.7	XOMOX SANMAR LIMITED	INDIA		
1.132.8	ZHEJIANG FLOWTECH MACHINERY CO.LTD	INDIA		
1.132.9	SOUDARSHINI VALVE PRIVATE LIMITED	INDIA		
<b>1.133</b>	<b>VALVE PLUG CONCENTRIC -CSS (F.S &amp; N.F.S)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.133.1	CHEMTROLS SAMIL (INDIA) PVT LTD	INDIA		
1.133.2	FLOWSERVE INDIA CONTROLS PVT LTD-MMN	INDIA		
1.133.3	FLOWSERVE PTE (MFR. SERCK)	INDIA		
1.133.4	RASAI FLOW LINES PVT LTD.	INDIA		
1.133.5	WEIR BDK VALVES-A UNIT OF WEIR INDIA PVT	INDIA		
1.133.6	XOMOX SANMAR LIMITED	INDIA		
<b>1.134</b>	<b>VALVE PLUG CONCENTRIC-CAS(F.S. &amp; N.F.S.)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.134.1	FLOWSERVE PTE (MFR. SERCK)	INDIA		
1.134.2	XOMOX SANMAR LIMITED	INDIA		
<b>1.135</b>	<b>VALVE PISTON (GLANDLESS)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.135.1	ARMSTRONG INTERNATIONAL PVT LTD.	INDIA		
1.135.2	CESARE BONNETTI S.P.A.	INDIA		
1.135.3	FORBES MARSHALL	INDIA		
1.135.4	UNI KLINGER LTD	INDIA		
<b>1.136</b>	<b>VALVE PLUG DBB EXPANDING TYPE</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.136.1	GHATGE PATIL INDUSTRIES LIMITED	INDIA		
<b>1.137</b>	<b>VALVE PLUG MULTIPISTON - NON FIRE SAFE</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.137.1	FLOWSERVE PTE (MFR. SERCK)	INDIA		
1.137.2	XOMOX SANMAR LIMITED	INDIA		
<b>1.138</b>	<b>VALVE NEEDLE</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.138.1	ASSOCIATED TOOLINGS INDIA PVT LTD	INDIA		
1.138.2	EXCELSIOR ENGG. WORKS	INDIA		
1.138.3	LEADER VALVES LTD	INDIA		
1.138.4	ASTEC VALVES AND FITTINGS PVT LTD	INDIA		
1.138.5	ATAM VALVES PVT LTD	INDIA		
1.138.6	PACHVATI VALVES AND FLANGES	INDIA		
1.138.7	TECHNOMATIC IDNIA PVT LTD	INDIA		
<b>1.139</b>	<b>VALVE DOUBLE DISC GATE</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.139.1	L & T VALVES LIMITED	INDIA		
<b>1.140</b>	<b>VALVE SLIDE</b>			
<b>1.141</b>	<b>VALVE SHUT DOWN</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.141.1	NITON VALVE INDUSTRIES PRIVATE LTD .	INDIA		
1.141.2	SPX VALVES & CONTROLS (FORMERLY DEZURIK)	INDIA		
<b>1.142</b>	<b>VALVE CRYOGENIC SS/LTCS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.142.1	AMPO, S.COOP (POYAM VALVES)	INDIA		
1.142.2	BOTELI VALVE GROUP CO.	INDIA		
1.142.3	VELAN INC	INDIA		
<b>1.143</b>	<b>VALVE SPECIAL CATEGORY</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.143.1	ADAMS ARMATUREN GMBH	INDIA		
1.143.2	AMPO VALVES INDIA PVT LTD	INDIA		
1.143.3	AMPO, S.COOP (POYAM VALVES)	INDIA		
1.143.4	CESARE BONNETTI S.P.A.	INDIA		
1.143.5	L & T VALVES LIMITED	INDIA		
1.143.6	PENTAIR VALVES & CONTROLS INDIA PVT LTD	INDIA		
1.143.7	SCHUF SPECIALITY VALVES INDIA PVT LTD	INDIA		
<b>1.144</b>	<b>VALVE TANK BOTTOM/FLUSH BOTTOM</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.144.1	MICROFINISH VALVES PVT LIMITED	INDIA		
1.144.2	SCHUF SPECIALITY VALVES INDIA PVT LTD	INDIA		
<b>1.145</b>	<b>HASTELLOY PIPING COMPONENTS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.145.1	TITANIUM TANTALUM PRODUCTS INDIA	INDIA		
1.145.2	SAI TITANIUM PRODUCTS PVT. LTD. INDIA	INDIA		
1.145.3	TITANIUM TECHNIQUES INDIA	INDIA		
1.145.4	D.K. CORPORATION INDIA	INDIA		
1.145.5	SANGHVI BOTHRA ENGG. CO. PVT. LTD. INDIA	INDIA		
1.145.6	LARSEN & TURBO INDIA	INDIA		
1.145.7	TINITA ENGINEERING PRIVATE LIMITED INDIA	INDIA		
1.145.8	JLS INTERNATIONAL INDIA	INDIA		
1.145.9	SHALCO INDUSTRIES PVT LTD INDIA	INDIA		
1.145.10	NEEKA TUBES INDIA	INDIA		
1.145.11	LOTERIOS	INDIA		
<b>1.146</b>	<b>TITANIUM PIPING COMPONENTS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.146.1	TITANIUM TANTALUM PRODUCTS INDIA	INDIA		
1.146.2	SAI TITANIUM PRODUCTS PVT. LTD. INDIA	INDIA		
1.146.3	TITANIUM TECHNIQUES INDIA	INDIA		
1.146.4	D.K. CORPORATION INDIA	INDIA		
1.146.5	SANGHVI BOTHRA ENGG. CO. PVT. LTD. INDIA	INDIA		
1.146.6	LARSEN & TURBO INDIA	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
1.146.7	TINITA ENGINEERING PRIVATE LIMITED INDIA	INDIA		
1.146.8	JLS INTERNATIONAL INDIA	INDIA		
1.146.9	SHALCO INDUSTRIES PVT LTD INDIA	INDIA		
1.146.10	NEEKA TUBES INDIA	INDIA		
1.146.11	LOTERIOS	INDIA		
<b>1.147</b>	<b>LOW PRESSURE DROP BALL CHECK VALVE</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
<b>1.148</b>	<b>EXPANSION JOINT (METAL)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.148.1	METALLIC BELLOWS (ONLY FOR PIPING) INDIA	INDIA		
1.148.2	FLEXICAN BELLOWS (ONLY FOR PIPING) INDIA	INDIA		
1.148.3	LONESTAR INDUSTRIES INDIA	INDIA		
1.148.4	WITZENMANN GMBH INDIA	INDIA		
<b>1.149</b>	<b>EXPANSION JOINT (PRESSURE BALANCE)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.149.1	FLEXICAN BELLOWS & HOSES PVT. LTD.	INDIA		
<b>1.150</b>	<b>BIRD SCREEN</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.150.1	SUNRISE PROCESS EQUIPMENTS	INDIA		
1.150.2	ESFOUR ENGINEERING	INDIA		
1.150.3	NJ TECH ENGINEERING	INDIA		
<b>1.151</b>	<b>EYE WASHER &amp; SAFETY SHOWER</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.151.1	FRANCIS LESLIE & CO INDIA	INDIA		
1.151.2	PRADEEP SAFETY PVT LTD. INDIA	INDIA		
1.151.3	STAR ENGINEERS INDIA	INDIA		
1.151.4	UNICARE EMERGENCY EQUIPMENT INDIA	INDIA		
1.151.5	CREATIVE ENGINEERS INDIA	INDIA		
1.151.6	TYCO FIRE AND INETRATED SOLUTIONS	INDIA		
<b>1.152</b>	<b>INSULATING GASKET</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.152.1	GOODRICH GASKET PRIVATE LIMITED	INDIA		
1.152.2	IGP ENGINEERS PVT LTD	INDIA		
<b>1.153</b>	<b>POST INDICATOR VALVES</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.153.1	L&T VALVES - INDIA	INDIA		
1.153.2	AMPO POYAM- INDIA	INDIA		
1.153.3	TRILLIUM FLOW TECHNOLOGIES INDIA PRIVATE LIMITED- INDIA (FORMERLY WEIR BDK VALVES – A UNIT OF WEIR INDIA PRIVATE LIMITED)	INDIA		
<b>1.154</b>	<b>COPPER TUBING</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
<b>Sr.No</b>	<b>VENDOR NAME</b>	<b>COUNTRY</b>		
1.154.1	ALCOBEX METALS PVT. LTD. INDIA	INDIA		
1.154.2	MULTIMETALS LTD. INDIA	INDIA		
1.154.3	RAJCO METAL INDUSTRIES PVT. LTD. INDIA	INDIA		
1.154.4	INDUSTRIAL TUBES INDIA	INDIA		
1.154.5	KAMANI TUBES INDIA	INDIA		
1.154.6	HINDUSTAN STEEL & METAL WORKS INDIA	INDIA		
1.154.7	RELIANCE ENGINEERS LTD	INDIA		
1.154.8	MEHTA TUBES LIMITED	INDIA		
<b>1.155</b>	<b>3-WAY VALVES</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.155.1	2L Engineers	INDIA		
1.155.2	Rajeev & Company	INDIA		
1.155.3	Flow Chem Industries	INDIA		
1.155.4	General Engineering Consortium	INDIA		
1.155.5	Asian Industrial Valves and Instruments	INDIA		
<b>1.156</b>	<b>LTCS (LOW TEMPERATURE CARBAN STEEL) FLANGE</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
1.156.1	ANANDMAYEE FORGINGS PVT LTD	INDIA		
1.156.2	BHARAT FORGE LTD.	INDIA		
1.156.3	BRITEX ENGINEERING WORKS	INDIA		
1.156.4	CD ENGINEERING CO.	INDIA		
1.156.5	CD INDUSTRIES	INDIA		
1.156.6	CHANDAN STEEL LTD	INDIA		
1.156.7	CHW FORGE PVT LTD (FR. CHAUDHRY HAMMER)	INDIA		
1.156.8	ECHJAY INDUSTRIES PVT LTD. (RAJKOT)	INDIA		
1.156.9	FIVEBROS FORGINGS PVT.LTD.	INDIA		
1.156.10	GOOD LUCK ENGINEERING CO.	INDIA		
1.156.11	HILTON METAL FORGING LIMITED	INDIA		
1.156.12	JAV FORGINGS (P) LTD	INDIA		
1.156.13	KUNJ FORGINGS PVT LTD	INDIA		
1.156.14	LAL METAL FORGE LTD	INDIA		
1.156.15	METAL FORGINGS PVT LTD	INDIA		
1.156.16	P.K.TUBES & FITTINGS PVT.LTD.	INDIA		
1.156.17	PARAMOUNT FORGE	INDIA		
1.156.18	PRADEEP METAL LIMITED	INDIA		
1.156.19	R D FORGE	INDIA		
1.156.20	SANGHVI FORGINGS & ENGINEERING LTD	INDIA		
1.156.21	UTSAH ENGINEERING PVT LTD(A CD ENGG COMP	INDIA		
1.156.22	VIRAJ PROFILES LIMITED	INDIA		
1.156.23	MAXELL FORGE INDUSTRIES	INDIA		
1.156.24	GAYATRI FORGE PVT LTD	INDIA		
1.156.25	MAAASS FLANGE INDIA PVT. LTD	INDIA		
1.156.26	K S PIPE FITTINGS PRIVATE LIMITED	INDIA		
<b>5.1</b>	<b>SWITCHBOARD-HV (Indoor) WITH VCB BREAKER (complete)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.1.1	ABB India Ltd	Nashik, INDIA		
5.1.2	BHEL	INDIA		
5.1.3	CG Power and Industrial Solutions Ltd	INDIA		
5.1.4	Jyoti Limited	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
5.1.5	Larsen & Toubro Ltd	INDIA		
5.1.6	Megawin Switchgear P Ltd	INDIA		
5.1.7	Schneider Electric Infra. Ltd	INDIA		
5.1.8	Siemens Limited	INDIA		
<b>5.2</b>	<b>SWITCHBOARD-MV: MCC/ASB/LDB-FIXED TYP</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.2.1	ABB India Ltd	INDIA		
5.2.2	C & S Electric Ltd	INDIA		
5.2.3	Controls & Schematics Ltd	INDIA		
5.2.4	Larsen & Toubro Ltd	INDIA		
5.2.5	M.K. Engineers & Controls Pvt. Ltd.	INDIA		
5.2.6	Schneider Electric India Pvt Ltd	INDIA		
5.2.7	Siemens Ltd	INDIA		
<b>5.3</b>	<b>SWITCHBOARD-M.V. : MCC/PCC/PMCC-DRAWOUT</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.3.1	ABB India Ltd	INDIA		
5.3.2	C & S Electric Ltd	INDIA		
5.3.3	Controls & Schematics Ltd	INDIA		
5.3.4	Larsen & Toubro Ltd	INDIA		
5.3.5	Schneider Electric India Pvt Ltd	INDIA		
5.3.6	Siemens Ltd	INDIA		
<b>5.4</b>	<b>SWITCHBOARD FIXED TYPE FOR PACKAGE EQUIPTS</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.4.1	Accusonic Controls Pvt Ltd	INDIA		
5.4.2	Dharia Switchgear & Control.	INDIA		
5.4.3	Electro Allied Products	INDIA		
5.4.4	Larsen & Toubro Ltd	INDIA		
5.4.5	M.K. Engineers & Controls Pvt. Ltd.	INDIA		
5.4.6	Maktel Systems	INDIA		
5.4.7	Nitya Electro Controls	INDIA		
5.4.8	Popular Switchgears Pvt Ltd	INDIA		
5.4.9	Positronics Pvt Ltd	INDIA		
5.4.10	Tricolite Electrical Industries Pvt Ltd	INDIA		
5.4.11	Vidhyut Control (India) Pvt Ltd	INDIA		
5.4.12	Zenith Engineering Corp.	INDIA		
<b>5.5</b>	<b>OUTDOOR SWITCHYARD PACKAGE</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.5.1	ABB India Ltd	INDIA		
5.5.2	BGR Energy	INDIA		
5.5.3	Bharat Bijlee Limited	INDIA		
5.5.4	CG Power and Industrial Solutions Ltd	INDIA		
5.5.5	GE T&D India Ltd	INDIA		
5.5.6	Godrej & Boyce Mfg. Co. Ltd	INDIA		
5.5.7	KEC International	INDIA		
5.5.8	L&T	INDIA		
5.5.9	Siemens	INDIA		
5.5.10	Sterling & Wilson India	INDIA		
5.5.11	Toshiba Transmission & Distribution Systems (India) Private Limited	INDIA		
<b>5.6</b>	<b>GIS upto 245kV (Indoor)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.6.1	ABB India Ltd	INDIA		
5.6.2	GE T&D India Ltd	INDIA		
5.6.3	CG Power and Industrial Solutions Ltd (upto 33 kV only)	INDIA		
5.6.4	Schneider Electric India Pvt Ltd	INDIA		
5.6.5	Siemens India	INDIA		
5.6.6	Toshiba Transmission & Distribution Systems (India) Private Limited	INDIA		
<b>5.7</b>	<b>RELAY &amp; CONTROL PANEL</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.7.1	ABB India Ltd	INDIA		
5.7.2	Danish Private Limited	INDIA		
5.7.3	Easun Reyrolle Ltd	INDIA		
5.7.4	Enpro Industrial Automation Pvt Ltd	INDIA		
5.7.5	GE T&D India Limited	INDIA		
5.7.6	Schneider Electric India Pvt Ltd	INDIA		
5.7.7	Siemens Limited	INDIA		
5.7.8	Toshiba Transmission & Distribution Systems (India) Private Limited	INDIA		
<b>5.8</b>	<b>PROTECTION RELAY (NUMERICAL TYPE)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.8.1	ABB India Ltd	INDIA		
5.8.2	Easun Reyrolle Ltd	INDIA		
5.8.3	GE T&D India Limited	INDIA		
5.8.4	L & T	INDIA		
5.8.5	Schneider Electric India Pvt Ltd	INDIA		
5.8.6	Schweitzer Engineering Laboratories	INDIA		
5.8.7	Siemens Ltd.	INDIA		
5.8.8	Toshiba Transmission & Distribution Systems (India) Private Limited	INDIA		
<b>5.9</b>	<b>AUX. RELAYS</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.9.1	ABB India Ltd	INDIA		
5.9.2	C&S Electric Ltd	INDIA		
5.9.3	Easun Reyrolle Ltd	INDIA		
5.9.4	GE T&D India Limited	INDIA		
5.9.5	Jyoti Ltd	INDIA		
5.9.6	L & T	INDIA		
5.9.7	OMRON	INDIA		
5.9.8	Schneider Electric India Pvt. Ltd	INDIA		
5.9.9	Siemens Ltd	INDIA		
<b>5.10</b>	<b>BIMETAL RELAYS</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.10.1	ABB India Ltd	INDIA		
5.10.2	C&S Electric Ltd	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
5.10.3	GE T&D India Limited	INDIA		
5.10.4	L & T	INDIA		
5.10.5	Schneider Electric India Pvt. Ltd	INDIA		
5.10.6	Siemens Ltd	INDIA		
<b>5.11</b>	<b>ELECTRIC CONTROL SYSTEM (ECS) / SCADA / PMS</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.11.1	ABB India Ltd	INDIA		
5.11.2	BHEL	INDIA		
5.11.3	Emerson Process Management India Pvt Ltd	INDIA		
5.11.4	Honeywell Automation India Ltd.	INDIA		
5.11.5	Rockwell Automation India	INDIA		
5.11.6	Schneider Electric Infrastructure Ltd (also known as Invensys)	INDIA		
5.11.7	Schweitzer Engineering Laboratories	INDIA		
5.11.8	Siemens Ltd	INDIA		
<b>5.12</b>	<b>INSTRUMENT TRANSFORMERS – CT &amp; PT (HV)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.12.1	ABB India Ltd	Vadodara, INDIA		
5.12.2	Electrical Controls & Systems	INDIA		
5.12.3	Kalpa Elektrikal Pvt Ltd	INDIA		
5.12.4	Kappa Electricals	INDIA		
5.12.5	Megawin Switchgear P Ltd	INDIA		
5.12.6	Pragati Electricals Pvt. Ltd.	INDIA		
5.12.7	Schneider Electric India Pvt. Ltd	INDIA		
5.12.8	Siemens Ltd	INDIA		
<b>5.13</b>	<b>INSTRUMENT TRANSFORMERS – CT &amp; PT (MV)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.13.1	C&S Electric Limited	INDIA		
5.13.2	Gilbert & Maxwell Electricals Pvt. Ltd	INDIA		
5.13.3	Kalpa Elektrikal Pvt Ltd	INDIA		
5.13.4	Kappa Electricals	INDIA		
5.13.5	L&T Ltd.	INDIA		
5.13.6	Narayan Powertech Pvt. Ltd.	INDIA		
5.13.7	Pragati Electricals Pvt. Ltd.	INDIA		
5.13.8	Precise Electricals	INDIA		
5.13.9	Siikaans Electricals Pvt. Ltd.	INDIA		
<b>5.14</b>	<b>CIRCUIT BREAKER SF-6 /OUT DOOR EHV</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.14.1	ABB India Ltd	INDIA		
5.14.2	BHEL	Bhopal, INDIA		
5.14.3	CG Power and Industrial Solutions Ltd	INDIA		
5.14.4	GE T&D India Ltd	INDIA		
5.14.5	Siemens Ltd	INDIA		
5.14.6	Toshiba Transmission & Distribution Systems (India) Private Limited	INDIA		
<b>5.15</b>	<b>VACCUM CIRCUIT BREAKERS</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.15.1	L & T Ltd (Tamco)	INDIA		
5.15.2	Siemens Ltd	INDIA		
5.15.3	Schneider Electric India Pvt. Ltd	INDIA		
5.15.4	ABB India Ltd	INDIA		
5.15.5	BHEL	INDIA		
5.15.6	CG Power and Industrial Solutions Ltd	INDIA		
5.15.7	Megawin Switchgear P Ltd	INDIA		
5.15.8	Jyoti Ltd	INDIA		
<b>5.16</b>	<b>AIR CIRCUIT BREAKER</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.16.1	ABB Ltd	INDIA		
5.16.2	C&S Electric Limited	INDIA		
5.16.3	GE T&D India Ltd	INDIA		
5.16.4	L & T Ltd	INDIA		
5.16.5	Schneider Electric India Pvt. Ltd	INDIA		
5.16.6	Siemens Ltd	INDIA		
<b>5.17</b>	<b>ISOLATORS / LOAD BREAK SWITCHES (HV INDOOR)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.17.1	Driescher Panickker Switchgear Ltd India	INDIA		
5.17.2	Siemens Ltd	INDIA		
5.17.3	S & S Power Switchgear Ltd	INDIA		
<b>5.18</b>	<b>CONTACTOR</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.18.1	ABB India Ltd	INDIA		
5.18.2	BCH Electric Ltd	INDIA		
5.18.3	C&S Electric Ltd	INDIA		
5.18.4	GE T&D India Limited	INDIA		
5.18.5	L & T	INDIA		
5.18.6	Schneider Electric India Pvt. Ltd	INDIA		
5.18.7	Siemens Ltd	INDIA		
<b>5.19</b>	<b>MCCB</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.19.1	ABB India Ltd	INDIA		
5.19.2	GE T&D India Limited	INDIA		
5.19.3	Havells India Ltd	INDIA		
5.19.4	Larsen & Toubro Ltd	INDIA		
5.19.5	Schneider Electric India Pvt Ltd	INDIA		
5.19.6	Siemens Ltd	INDIA		
<b>5.2</b>	<b>TIMERS</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.20.1	Electronic Automation Pvt Ltd	INDIA		
5.20.2	Honeywell Automation India Limited	INDIA		
5.20.3	ICA Pvt. Limited (Omron)	INDIA		
5.20.4	Larsen & Toubro Ltd	INDIA		
5.20.5	OEN	INDIA		



MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
5.20.6	Siemens Limited	INDIA		
5.20.7	GE T&D India Limited	INDIA		
<b>5.21</b>	<b>PUSH BUTTON &amp; INDICATING LAMPS (Independent supply / Retrofitting / Alteration / Modification work)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.21.1	C & S Electric Ltd	INDIA		
5.21.2	Essen Deinki	INDIA		
5.21.3	Hotline Switchgear & Controls	INDIA		
5.21.4	Larsen & Toubro Ltd	INDIA		
5.21.5	Precifine Products Pvt. Ltd.	INDIA		
5.21.6	Schneider Electric India Pvt Ltd	INDIA		
5.21.7	Shri Tulsi Switchgears Pvt Ltd	INDIA		
5.21.8	Siemens Limited	INDIA		
5.21.9	Teknic Electric (I) Pvt. Ltd.	INDIA		
<b>5.22</b>	<b>MCB (Independent supply / Retrofitting / Alteration / Modification work)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.22.1	ABB India Ltd	INDIA		
5.22.2	C & S Electric Ltd	INDIA		
5.22.3	Havells India Ltd	INDIA		
5.22.4	Novateur Electrical & Digital Systems P	INDIA		
5.22.5	Indiana Current Control Ltd	INDIA		
5.22.6	Legrand (India) Pvt. Ltd	INDIA		
5.22.7	Siemens Limited	INDIA		
5.22.8	Standard Electricals Ltd	INDIA		
5.22.9	Schneider Electric India Pvt Ltd	INDIA		
<b>5.23</b>	<b>HEAVY DUTY SWITCHES (Independent supply / Retrofitting / Alteration / Modification work)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.23.1	C & S Electric Ltd	INDIA		
5.23.2	Larsen & Toubro Ltd	INDIA		
5.23.3	Novateur Electrical & Digital Systems P	INDIA		
5.23.4	Siemens Ltd	INDIA		
<b>5.24</b>	<b>CONTROL SWITCHES FOR BREAKER (Independent supply / Retrofitting / Alteration / Modification work)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.24.1	GE T&D India Limited	INDIA		
5.24.2	Reliable Electronic Components Pvt Ltd	INDIA		
5.24.3	Switron Devices	INDIA		
		INDIA		
5.25	CONTROL SWITCHES / SELECTOR SWITCHES (Independent supply / Retrofitting / Alteration / Modification work)	INDIA		
<b>A</b>	<b>Indian Bidders</b>			
5.25.1	GE T&D India Limited	INDIA		
5.25.2	Hotline Switchgear & Controls	INDIA		
5.25.3	Kaycee Industries Ltd.	INDIA		
5.25.4	Larsen & Toubro Ltd	INDIA		
5.25.5	Reliable Electronic Components Pvt Ltd	INDIA		
5.25.6	Siemens Limited	INDIA		
5.25.7	Switron Devices	INDIA		
<b>5.26</b>	<b>EARTH LEAKAGE CIRCUIT BREAKER (Independent supply / Retrofitting / Alteration / Modification work)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.26.1	ABB India Ltd	INDIA		
5.26.2	GE T&D India Limited	INDIA		
5.26.3	Havells India Ltd	INDIA		
5.26.4	Legrand (India) Pvt. Ltd	INDIA		
5.26.5	Novateur Electrical & Digital Systems P	INDIA		
5.26.6	Schneider Electric India Pvt Ltd	INDIA		
5.26.7	Siemens Ltd	INDIA		
<b>5.27</b>	<b>FUSES (Independent supply / Retrofitting / Alteration / Modification work)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.27.1	Cooper Bussman India Pvt Ltd	INDIA		
5.27.2	GE T&D India Limited	INDIA		
5.27.3	Havells India Ltd	INDIA		
5.27.4	Larsen & Toubro Ltd	INDIA		
5.27.5	Novateur Electrical & Digital Systems P	INDIA		
5.27.6	Siemens Ltd	INDIA		
<b>5.28</b>	<b>TRANSFORMERS-POWER-ABOVE 5MVA</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.28.1	Bharat Bijlee Limited	INDIA		
5.28.2	BHEL	INDIA		
5.28.3	CG Power and Industrial Solutions Ltd (Power Transformers Division T3)	INDIA		
5.28.4	EMCO Limited	INDIA		
5.28.5	GE T&D India Ltd	INDIA		
5.28.6	Kirloskar Electric Co Ltd	INDIA		
5.28.7	Schneider Electric India Pvt Ltd	INDIA		
5.28.8	Toshiba Transmission & Distribution Systems (India) Private Limited	INDIA		
5.28.9	Voltamp Transformers Ltd	INDIA		
<b>5.29</b>	<b>TRANSFORMERS-DISTRIBUTION-UPTO 5MVA</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.29.1	Bharat Bijlee Limited	INDIA		
5.29.2	C/G Power and Industrial Solutions Ltd (Power Transformers Division T3)	INDIA		
5.29.3	EMCO Limited	INDIA		
5.29.4	Kirloskar Electric Co Ltd	INDIA		
5.29.5	Kirloskar Power Equipments Ltd	INDIA		
5.29.6	Pete - Hammond Power Solutions Pvt Ltd.	INDIA		
5.29.7	Raychem RPG Ltd. (Canara Electric Divn)	INDIA		
5.29.8	RIMA Transformers And Conductors Ltd	INDIA		
5.29.9	Schneider Electric India Pvt Ltd	INDIA		
5.29.10	Transformers & Rectifiers (I) Ltd	INDIA		
5.29.11	Vijay Electricals	INDIA		
5.29.12	Voltamp Transformers Ltd	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
<b>5.30</b>	<b>TRANSFORMER-DISTRIBUTION (DRY TYPE)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.30.1	Automatic Electric Ltd	INDIA		
5.30.2	Bharat Bijlee	INDIA		
5.30.3	BHEL	INDIA		
5.30.4	CAHORS (Transfix)	INDIA		
5.30.5	CG Power and Industrial Solutions Ltd (Power Transformers Division T3)	INDIA		
5.30.6	Indcoil Products	INDIA		
5.30.7	Intra Vidyut Pvt Ltd	INDIA		
5.30.8	Kappa Electricals	INDIA		
5.30.9	Megawin Switchgear P Ltd	INDIA		
5.30.10	Pete - Hammond Power Solutions Pvt Ltd.	INDIA		
5.30.11	Raychem Rpg Ltd. (Canara Electric Divn)	INDIA		
5.30.12	Sudhir Intra Vidyut Pvt. Ltd	INDIA		
5.30.13	Transtron Electricals Pvt Ltd	INDIA		
5.30.14	Voltamp Transformers Ltd	INDIA		
<b>5.31</b>	<b>DRY TYPE LIGHTING TRANSFORMER (LV)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.31.1	Automatic Electric	INDIA		
5.31.2	Bharat Bijlee	INDIA		
5.31.3	BHEL	INDIA		
5.31.4	CG Power And Industrial Solutions Ltd	INDIA		
5.31.5	Indcoil Products	INDIA		
5.31.6	Indcoil Transformers	INDIA		
5.31.7	Intra Vidyut Pvt. Ltd	INDIA		
5.31.8	Kappa Electricals	INDIA		
5.31.9	Kirloskar Electric Co. Ltd India	INDIA		
5.31.10	Raychem Rpg India	INDIA		
5.31.11	Sudhir Intra Vidyut Pvt. Ltd	INDIA		
5.31.12	Transtron Electricals Pvt Ltd India	INDIA		
5.31.13	Voltamp Transformers	INDIA		
<b>5.32</b>	<b>Neutral Grounding Resistors/Transformers (NGR / NGT)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.32.1	Iresco Electricals Pvt. Ltd. India	INDIA		
5.32.2	National Switchgears	INDIA		
5.32.3	Resitech Electricals Pvt Ltd	INDIA		
5.32.4	RSI Switchgear Pvt Ltd	INDIA		
5.32.5	S.R. Narkhede Engineering Pvt Ltd	INDIA		
<b>5.33</b>	<b>BUS DUCT (HV)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.33.1	BHEL	Bhopal/Jhansi, INDIA		
5.33.2	C & S Electric Ltd	INDIA		
5.33.3	Elemech	INDIA		
5.33.4	ENPRO Engineering	INDIA		
5.33.5	Globe Electric	INDIA		
5.33.6	Larsen & Toubro Ltd	INDIA		
5.33.7	Narmada Switchgear Pvt. Ltd.	INDIA		
5.33.8	Spearhead Busducts Pvt Ltd	INDIA		
5.33.9	Stardrive Busducts Ltd (formerly KGS Engineering Ltd.)	INDIA		
5.33.10	United Electric Co (Delhi) Pvt Ltd	INDIA		
<b>5.34</b>	<b>BUS DUCT (MV)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.34.1	Adlec Power Pvt. Ltd.	INDIA		
5.34.2	C & S Electric Ltd.	INDIA		
5.34.3	Elemech	INDIA		
5.34.4	Enpro Engineering India	INDIA		
5.34.5	Entraco BKS Busducts Pvt Ltd	INDIA		
5.34.6	Globe Electrical Ind	INDIA		
5.34.7	Intrelec	INDIA		
5.34.8	Jasper Engineers Pvt. Ltd.	INDIA		
5.34.9	M K Engineers & Controls Pvt Ltd	INDIA		
5.34.10	Narmada Switchgear Pvt. Ltd.	INDIA		
5.34.11	Stardrive Busducts Ltd (formerly KGS Engineering Ltd.)	INDIA		
5.34.12	United Electric Co (Delhi) Pvt Ltd	INDIA		
<b>5.35</b>	<b>CAPACITOR BANK (MV/HV) WITH APFC</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.35.1	ABB India Ltd	INDIA		
5.35.2	BHEL	INDIA		
5.35.3	CG Power and Industrial Solutions Ltd	INDIA		
5.35.4	Clariant Power System Ltd	INDIA		
5.35.5	Kapsales Electrical Ltd	INDIA		
5.35.6	Madhav Capacitors Pvt Ltd	INDIA		
5.35.7	Shakti Capacitors	INDIA		
5.35.8	Shreem Capacitors Pvt Ltd	INDIA		
5.35.9	Shreem Electric	INDIA		
5.35.10	Universal Cables Ltd (Unistar)	INDIA		
<b>5.36</b>	<b>BATTERIES-LEAD ACID (FLOODED)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.36.1	Exide Industries Ltd.	INDIA		
5.36.2	HBL Power Systems Ltd	INDIA		
5.36.3	Amron	INDIA		
<b>5.37</b>	<b>BATTERY CHARGERS</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.37.1	Amara Raja Power Systems (P) Ltd	INDIA		
5.37.2	Chhabi Electricals Pvt Limited	INDIA		
5.37.3	Chloride Power Systems & Solutions Ltd	INDIA		
5.37.4	Dubas Engineering Pvt Ltd	INDIA		
5.37.5	HBL Power Systems Ltd	INDIA		
5.37.6	Mass-Tech Controls Pvt Ltd	INDIA		
5.37.7	Universal Instrument Mfg Co Pvt Ltd	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
5.37.8	Borri Power India Pvt Ltd (Subsidiary of Borri SpA, Italy)	INDIA		
<b>5.38</b>	<b>BATTERIES-LEAD ACID (VRLA)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.38.1	Amara Raja Batteries Ltd	INDIA		
5.38.2	Exide Industries Ltd.	INDIA		
5.38.3	HBL Power Systems Ltd	INDIA		
5.38.4	NED Energy Limited	INDIA		
5.38.5	Kirloskar Batteries Ltd	INDIA		
<b>5.39</b>	<b>BATTERIES-NICKLE CADMIUM</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.39.1	Amco Saft India Ltd	INDIA		
5.39.2	HBL Power Systems Ltd	INDIA		
<b>5.40</b>	<b>UPS SYSTEM</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.40.1	Ametek Solid State Controls	INDIA		
5.40.2	Borri Power India Pvt Ltd	INDIA		
5.40.3	Consul Neowatt Power Solutions Pvt Ltd	INDIA		
5.40.4	DB Power Electronics (P) Ltd	INDIA		
5.40.5	Gutor Electronics Ltd	INDIA		
5.40.6	Hitachi Hi-Rel Power Electronics Ltd	INDIA		
5.40.7	Toshiba Mitsubishi-Electric Industrial System Corporation (TMEIC Industrial Systems India Private Limited)	INDIA		
5.40.8	Vertiv Energy Private Limited	INDIA		
<b>5.41</b>	<b>A.C. VARIABLE SPEED DRIVE / VARIABLE FREQUENCY DRIVE (VFD)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.41.1	ABB India Ltd	INDIA		
5.41.2	Alstom Projects India Ltd	INDIA		
5.41.3	APS Power Systems Pvt. Ltd.	INDIA		
5.41.4	Baldor Electric Company	INDIA		
5.41.5	BHEL	Bangalore, INDIA		
5.41.6	Control Technique India Pvt Ltd	INDIA		
5.41.7	Danfoss Industries Pvt Ltd	INDIA		
5.41.8	Eurotherm Del India Limited	INDIA		
5.41.9	GE Energy Power Conversion France SAS	INDIA		
5.41.10	Hitachi Hirel Power Electronics Pvt. Ltd	INDIA		
5.41.11	Larsen & Toubro Ltd	INDIA		
5.41.12	NIDEC Corporation	INDIA		
5.41.13	Rockwell Automation India Pvt Ltd	INDIA		
5.41.14	Schneider Electric India Pvt. Ltd	INDIA		
5.41.15	Siemens Ltd	INDIA		
5.41.16	Spectrum Automation And Controls	INDIA		
5.41.17	Toshiba Mitsubishi-Electric Industrial System Corporation	INDIA		
5.41.18	Vacon Controls And Drives Pvt. Ltd	INDIA		
<b>5.42</b>	<b>LIGHTNING ARRESTORS</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.42.1	ABB India Ltd	INDIA		
5.42.2	CG Power and Industrial Solutions Ltd	INDIA		
5.42.3	Elpro International Ltd	INDIA		
5.42.4	Oblum Electrical Ind Pvt Ltd	INDIA		
5.42.5	Siemens Ltd	INDIA		
5.42.6	W. Insulation of India	INDIA		
<b>5.43</b>	<b>EARTHING &amp; LIGHTNING PROTECTION</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.43.1	Controls & Switchgear Co.Ltd	INDIA		
5.43.2	Metalite Industries India	INDIA		
5.43.3	Premier Power Products Cal Pvt. Ltd	INDIA		
5.43.4	Vatco Elec Power Pvt Ltd	INDIA		
<b>5.44</b>	<b>MOTOR-INDUCTION-HV (INDUSTRIAL. TYPE SAFE AREA, EXD/EXE)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.44.1	ABB India Ltd	INDIA		
5.44.2	BHEL	INDIA		
5.44.3	CG Power and Industrial Solutions Ltd.	INDIA		
5.44.4	Deumont Electric	INDIA		
5.44.5	Fuji Electric India Pvt Ltd	INDIA		
5.44.6	Hitachi Ltd	INDIA		
5.44.7	Kirloskar Electric Co Ltd	INDIA		
5.44.8	Marathon Electric Motor I Ltd	INDIA		
5.44.9	Siemens	INDIA		
5.44.10	TMEIC Industrial Systems India Pvt Ltd	INDIA		
5.44.11	Toshiba Mitsubishi-Electric Industrial System Corporation	INDIA		
5.44.12	WEG	INDIA		
<b>5.45</b>	<b>MOTOR-INDUCTION (HV INCREASED SAFETY ZN2, FLP/PRESSURIZED)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.45.1	ABB India Ltd	INDIA		
5.45.2	Alstom Ltd	INDIA		
5.45.3	BHEL	INDIA		
5.45.4	CG Power and Industrial Solutions Ltd	INDIA		
5.45.5	GE Power India Ltd	INDIA		
5.45.6	Kirloskar Electric Co Ltd	INDIA		
5.45.7	Marathon Electric Motor I Ltd	INDIA		
5.45.8	TMEIC Industrial Systems India Pvt Ltd	INDIA		
<b>5.46</b>	<b>MOTOR INDUCTION-MV (INDL.TYPE SAFE AREA, EXD/EXE)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.46.1	ABB India Ltd	INDIA		
5.46.2	Bharat Bijlee Limited	INDIA		
5.46.3	CG Power & Industrial Solutions Ltd.	INDIA		
5.46.4	Kirloskar Electric Co Ltd	INDIA		
5.46.5	Laxmi Hydraulics Pvt Ltd	INDIA		
5.46.6	Marathon Electric Motor I Ltd	INDIA		
5.46.7	NIDEC (Formerly Ansaldo System Indust/Asirobicon)	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
5.46.8	Siemens Limited	INDIA		
5.46.9	TMEIC Industrial Systems India Pvt Ltd	INDIA		
<b>5.47</b>	<b>MOTOR-INDUCTION- MV (ZONE 2-TYPE E &amp; N, FLP/PRESSURIZED)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.47.1	ABB India Ltd	INDIA		
5.47.2	Bharat Bijlee Limited	INDIA		
5.47.3	CG Power & Industrial Solutions Ltd.	INDIA		
5.47.4	Kirloskar Electric Co Ltd	INDIA		
5.47.5	Laxmi Hydraulics Pvt Ltd	INDIA		
5.47.6	Marathon Electric Motor I Ltd	INDIA		
5.47.7	TMEIC Industrial Systems India Pvt Ltd	INDIA		
5.47.8	WEG Electric India Pvt Ltd	INDIA		
<b>5.48</b>	<b>MOTOR-INDUCTION-MV (FLAME PROOF)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.48.1	ABB India Ltd	INDIA		
5.48.2	Bharat Bijlee Limited	INDIA		
5.48.3	CEMP	INDIA		
5.48.4	CG Power & Industrial Solutions Ltd.	INDIA		
5.48.5	Kirloskar Electric Co Ltd	INDIA		
5.48.6	Laxmi Hydraulics Pvt Ltd	INDIA		
5.48.7	Marathon Electric Motor I Ltd	INDIA		
5.48.8	Siemens Limited	INDIA		
5.48.9	TMEIC Industrial Systems India Pvt Ltd	INDIA		
<b>5.49</b>	<b>SYNCHRONOUS MOTOR</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.49.1	ABB India Ltd	INDIA		
5.49.2	BHEL	INDIA		
5.49.3	GE Energy Power Conversion France SAS	INDIA		
5.49.4	Hitachi Ltd	INDIA		
5.49.5	NIDEC Corporation	INDIA		
5.49.6	Siemens Ltd	INDIA		
5.49.7	Toshiba Mitsubishi-Electric Industrial System Corporation (TMEIC Industrial Systems India Pvt Ltd)	INDIA		
<b>5.50</b>	<b>MOTORS - IMPORTED</b>			
<b>A</b>	<b>Indian Bidders</b>	Nil		
<b>5.51</b>	<b>SYNCHRONOUS GENERATORS (HV)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.51.1	ABB India Ltd	INDIA		
5.51.2	Andritz Hydro Pvt Ltd	INDIA		
5.51.3	AVK Deutschland GmbH & Co. Kg	INDIA		
5.51.4	T D Power Systems Limited	INDIA		
5.51.5	Toshiba Mitsubishi-Electric Industrial System Corporation	INDIA		
<b>5.52</b>	<b>DG SET / EMERGENCY GENERATORS (MV)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.52.1	BHEL	INDIA		
5.52.2	CG Power and Industrial Solutions Ltd	INDIA		
5.52.3	Clarke Energy System	INDIA		
5.52.4	Cummins Generator Technologies I Ltd	INDIA		
5.52.5	Diesel Locomotive Works	INDIA		
5.52.6	Greaves Cotton Ltd.	INDIA		
5.52.7	Jaksons Limited	INDIA		
5.52.8	Jeevan Diesels & Electrical Ltd	INDIA		
5.52.9	Kirloskar Oil Engines Ltd	INDIA		
5.52.10	Man B & W Diesel Ltd	INDIA		
5.52.11	Nishishiba Electric Co. Ltd	INDIA		
5.52.12	Powerica Ltd	INDIA		
5.52.13	Rai Industrial Power Pvt. Ltd.	INDIA		
5.52.14	Sterling Generators Pvt. Ltd.	INDIA		
5.52.15	Sudhir Power Ltd	INDIA		
5.52.16	TIL Limited (Sahibabad Works)	INDIA		
5.52.17	Trading Engineers(International) Ltd	INDIA		
5.52.18	Wartsila India Ltd	INDIA		
<b>5.53</b>	<b>ACTUATORS-MOV</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.53.1	Auma India Private Ltd	INDIA		
5.53.2	Automatic Electric Ltd	INDIA		
5.53.3	Cair Euromatic Automation Pvt Ltd	INDIA		
5.53.4	Caldyne Automatic (P) Ltd	INDIA		
5.53.5	Flowserve Limitorque	INDIA		
5.53.6	Hind Rectifier Ltd	INDIA		
5.53.7	Limitorque India Limited	INDIA		
5.53.8	Marsh Automation Pvt. Ltd.	INDIA		
5.53.9	Rotork Controls (India) Ltd	INDIA		
<b>5.54</b>	<b>CONTROL STATIONS- WEATHERPROOF</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.54.1	Baliga Lighting Equipments (P) Limited	INDIA		
5.54.2	Electrical Equipment Corporation	INDIA		
5.54.3	Ex-Protecta	INDIA		
5.54.4	FCG Flameproof Control Gears P. Ltd	INDIA		
5.54.5	FCG Power Industries Pvt Ltd	INDIA		
5.54.6	Flameproof Equipments Pvt.Ltd	INDIA		
5.54.7	Flexpro Electricals Pvt Ltd	INDIA		
5.54.8	Petroleum Safety Products Ind. Pvt. Ltd.	INDIA		
5.54.9	Prompt Engineering Works	INDIA		
5.54.10	Sudhir Switchgears Pvt Ltd	INDIA		
5.54.11	Victory Luminaires	INDIA		
<b>5.55</b>	<b>CONTROL STATIONS / PANEL-FLAME PROOF</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.55.1	Baliga Lighting Equipments (P) Limited	INDIA		
5.55.2	Cooper Crouse-Hinds	INDIA		
5.55.3	CG Power and Industrial Solutions Ltd	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
5.55.4	FCG Flameproof Control Gears P. Ltd	INDIA		
5.55.5	FCG Power Industries Pvt Ltd	INDIA		
5.55.6	Flameproof Equipments Pvt.Ltd	INDIA		
5.55.7	Flexpro Electricals Pvt Ltd	INDIA		
5.55.8	Govan Industries India Pvt Ltd (Pepperl-Fuchs)	INDIA		
5.55.9	Kaysons Techno Equipment P Ltd.	INDIA		
5.55.10	Petroleum Safety Products Ind. Pvt. Ltd.	INDIA		
5.55.11	Prompt Engineering Works	INDIA		
5.55.12	R Sthal Pvt Ltd.	INDIA		
5.55.13	Sudhir Switchgears Pvt Ltd	INDIA		
5.55.14	Victory Luminaires	INDIA		
<b>5.56</b>	<b>JUNCTION BOXES (FLAME PROOF)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.56.1	Baliga Lighting Equipments (P) Limited	INDIA		
5.56.2	Cooper Crouse-Hinds	INDIA		
5.56.3	FCG Flameproof Control Gears P. Ltd	INDIA		
5.56.4	FCG Power Industries Pvt Ltd	INDIA		
5.56.5	Flameproof Equipments Pvt.Ltd	INDIA		
5.56.6	Flexpro Electricals Pvt Ltd	INDIA		
5.56.7	Govan Industries India Pvt Ltd (Pepperl-Fuchs)	INDIA		
5.56.8	Kaysons Techno Equipment P Ltd.	INDIA		
5.56.9	Petroleum Safety Products Ind. Pvt. Ltd.	INDIA		
5.56.10	Prompt Engineering Works	INDIA		
5.56.11	R Stahl Pvt Ltd.	INDIA		
5.56.12	Sudhir Switchgears Pvt Ltd	INDIA		
<b>5.57</b>	<b>LIGHTING FIXTURE &amp; ACCESSORIES-HAZARDOUS</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.57.1	Bajaj Electricals Ltd	INDIA		
5.57.2	Baliga Lighting Equipments (P) Limited	INDIA		
5.57.3	Cooper Crouse-Hinds	INDIA		
5.57.4	CG Power and Industrial Solutions Ltd	INDIA		
5.57.5	FCG Flameproof Control Gears P. Ltd	INDIA		
5.57.6	FCG Power Industries Pvt Ltd	INDIA		
5.57.7	Flameproof Equipments Pvt.Ltd	INDIA		
5.57.8	Flexpro Electricals Pvt Ltd	INDIA		
5.57.9	Govan Industries India Pvt Ltd (Pepperl-Fuchs)	INDIA		
5.57.10	Kaysons Techno Equipment P Ltd.	INDIA		
5.57.11	Petroleum Safety Products Ind. Pvt. Ltd.	INDIA		
5.57.12	Prompt Engineering Works	INDIA		
5.57.13	R Stahl	INDIA		
5.57.14	Sudhir Switchgears Pvt Ltd	INDIA		
5.57.15	Victor Product PLC	INDIA		
<b>5.58</b>	<b>LIGHTING &amp; POWER PANELS (FLP)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.58.1	Baliga Lighting Equipments (P) Limited	INDIA		
5.58.2	FCG Flameproof Control Gears P. Ltd	INDIA		
5.58.3	FCG Power Industries Pvt Ltd	INDIA		
5.58.4	Flameproof Equipments Pvt.Ltd	INDIA		
5.58.5	Flexpro Electricals Pvt Ltd	INDIA		
5.58.6	Kaysons Techno Equipment P Ltd.	INDIA		
5.58.7	Sudhir Switchgears Pvt Ltd	INDIA		
<b>5.59</b>	<b>PLUGS/SOCKETS/HANDLAMPS (FLAME PROOF)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.59.1	Baliga Lighting Equipments (P) Limited	INDIA		
5.59.2	Cooper Crouse-Hinds	INDIA		
5.59.3	FCG Flameproof Control Gears P. Ltd	INDIA		
5.59.4	FCG Power Industries Pvt Ltd	INDIA		
5.59.5	Flameproof Equipments Pvt.Ltd	INDIA		
5.59.6	Flexpro Electricals Pvt Ltd	INDIA		
5.59.7	Kaysons Techno Equipment P Ltd.	INDIA		
5.59.8	Petroleum Safety Products Ind. Pvt. Ltd.	INDIA		
5.59.9	Sudhir Switchgears Pvt Ltd	INDIA		
<b>5.60</b>	<b>HIGH MAST LIGHTING SYSTEM</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.60.1	Bajaj Electricals Ltd	INDIA		
5.60.2	CG Power and Industrial Solutions Ltd	INDIA		
5.60.3	Philips Electronics India Limited	INDIA		
<b>5.61</b>	<b>LIGHTING FIXTURES (SAFE AREA)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.61.1	Bajaj Electricals	INDIA		
5.61.2	CG Power and Industrial Solutions Ltd	INDIA		
5.61.3	GE Lighting	INDIA		
5.61.4	Havells India	INDIA		
5.61.5	Philips Lighting	INDIA		
5.61.6	Surya Roshni India	INDIA		
5.61.7	Wipro India	INDIA		
<b>5.62</b>	<b>LIGHTING PANEL / POWER PANELS &amp; DISTRIBUTION BOARDS (SAFE AREA)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.62.1	ABB India Ltd	INDIA		
5.62.2	Advance Panels & Switchgear (P) Ltd	INDIA		
5.62.3	C & S Electric	INDIA		
5.62.4	Havells India Ltd	INDIA		
5.62.5	Indo Asian Fusegear	INDIA		
5.62.6	Indo Chem	INDIA		
5.62.7	Industrial Switchgear & Controls (Bombay) Pvt. Ltd	INDIA		
5.62.8	Inrelec	INDIA		
5.62.9	Legrand	INDIA		
5.62.10	M.K Engineers & Controls Pvt. Ltd	INDIA		
5.62.11	Mid Switchgear Ltd	INDIA		
5.62.12	Novateur Electrical & Digital Systems Pvt Ltd	INDIA		
5.62.13	Standard Electricals	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
5.62.14	Zenith Engineering Corporation	INDIA		
<b>5.63</b>	<b>EXTRA HIGH VOLTAGE –XLPE CABLES</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.63.1	Cable Corporation Of India	INDIA		
5.63.2	Finolex Cables Ltd.	INDIA		
5.63.3	KEC International Ltd (formerly KEC-Rpg Cables Ltd)	INDIA		
5.63.4	KEI Industries Limited	INDIA		
5.63.5	Polycab Wires Pvt Ltd	INDIA		
5.63.6	Sterlite Power Transmission Limited (under Sterlite Technologies Limited)	INDIA		
5.63.7	Torrent Cables Ltd	INDIA		
5.63.8	Universal Cables Limited	INDIA		
<b>5.64</b>	<b>CABLES-HIGH VOLTAGE-XLPE (FRLS)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.64.1	APAR Industries Ltd			
5.64.2	Cable Corporation of India	INDIA		
5.64.3	Finolex Cables Ltd.	INDIA		
5.64.4	Gemscab Industries Ltd	INDIA		
5.64.5	Gupta Power Infrastructure	INDIA		
5.64.6	Havells India Ltd	INDIA		
5.64.7	Insucon Cable And Cond Pvt Ltd	INDIA		
5.64.8	KEC International Ltd	Vadodara, INDIA		
5.64.9	KEI Industries Ltd	INDIA		
5.64.10	Polycab Wires Pvt Ltd	INDIA		
5.64.11	Sterlite Technologies Limited	INDIA		
5.64.12	Suraj Cables	INDIA		
5.64.13	Torrent Cables Ltd	INDIA		
5.64.14	Universal Cables Ltd	INDIA		
<b>5.65</b>	<b>MV POWER CABLE - FIRE SURVIVAL (FRLS)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.65.1	Ajanta Electric	INDIA		
5.65.2	Associated Flexibles & Wires [P] Ltd	INDIA		
5.65.3	Cords Cable Industries Ltd	INDIA		
5.65.4	Gupta Power Infrastructure	INDIA		
5.65.5	Havells India Ltd	INDIA		
5.65.6	Insucon Cable And Cond Pvt Ltd	INDIA		
5.65.7	KEI Industries Limited	INDIA		
5.65.8	Polycab Wires Pvt Ltd	INDIA		
5.65.9	Suraj Cables	INDIA		
<b>5.66</b>	<b>CABLES-MEDIUM VOLTAGE-POWER-XLPE &amp; PVC</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.66.1	Ajanta Electric	INDIA		
5.66.2	APAR Industries Ltd	INDIA		
5.66.3	Associated Flexibles & Wires [P] Ltd	INDIA		
5.66.4	Cable Corporation of India	INDIA		
5.66.5	Cords Cable Industries Ltd	INDIA		
5.66.6	Finolex Cables Ltd.	INDIA		
5.66.7	Gemscab Industries Ltd	INDIA		
5.66.8	Gupta Power Infrastructure	INDIA		
5.66.9	Havells India Ltd	INDIA		
5.66.10	Insucon Cable And Cond Pvt Ltd	INDIA		
5.66.11	KEC International Ltd	Silvassa, INDIA		
5.66.12	KEI Industries Limited	INDIA		
5.66.13	Polycab Wires Pvt Ltd	INDIA		
5.66.14	Rallison Electricals Pvt. Ltd.	INDIA		
5.66.15	Ravin Cables Pvt Ltd	INDIA		
5.66.16	Special Cables Pvt Ltd	INDIA		
5.66.17	Sriram Cables Pvt Ltd	INDIA		
5.66.18	Suraj Cables	INDIA		
5.66.19	Torrent Cables Ltd	INDIA		
5.66.20	Uniflex Cables Ltd	INDIA		
5.66.21	Universal Cables Ltd	INDIA		
<b>5.67</b>	<b>CABLES: CONTROL-XLPE &amp; PVC</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.67.1	Ajanta Electric	INDIA		
5.67.2	Associated Cables Pvt Ltd	INDIA		
5.67.3	Associated Flexibles & Wires [P] Ltd	INDIA		
5.67.4	Cables Corporation of India	INDIA		
5.67.5	CMI Limited	INDIA		
5.67.6	Cords Cable Industries Ltd	INDIA		
5.67.7	Delton Cables Limited	INDIA		
5.67.8	Ecko Cables Pvt. Ltd.	INDIA		
5.67.9	Elkay Telelinks Ltd.	INDIA		
5.67.10	Finolex Cables Ltd.	INDIA		
5.67.11	Gemscab Industries Ltd	INDIA		
5.67.12	Havells India Ltd	INDIA		
5.67.13	Icon Cable Ltd.	INDIA		
5.67.14	Insucon Cables And Cond Pvt Ltd	INDIA		
5.67.15	KEC International Ltd	Silvassa, INDIA		
5.67.16	KEI Industries Limited	INDIA		
5.67.17	North Eastern Cables Pvt. Ltd.	INDIA		
5.67.18	Polycab Wires Pvt Ltd	INDIA		
5.67.19	Rallison Electricals Pvt. Ltd.	INDIA		
5.67.20	Ravin Cables Pvt. Ltd.	INDIA		
5.67.21	Reliance Engineers Ltd.	INDIA		
5.67.22	Scot Innovation Wires & Cables Pvt. Ltd.	INDIA		
5.67.23	Special Cables Pvt. Ltd.	INDIA		
5.67.24	Sriram Cables Pvt Ltd	INDIA		
5.67.25	Suraj Cables	INDIA		
5.67.26	Suyog Electricals	INDIA		
5.67.27	Thermo Cables Ltd.	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
5.67.28	Torrent Cables Ltd			INDIA
5.67.29	Universal Cables Ltd			INDIA
<b>5.68</b>	<b>CABLES-FIRE ALARM AND COMMN.</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.68.1	CMI Limited			INDIA
5.68.2	Cords Cable Industries Ltd			INDIA
5.68.3	Delton Cables Limited			INDIA
5.68.4	Elkay Telelinks Ltd.			INDIA
5.68.5	KEI Industries Limited			INDIA
5.68.6	Reliance Engineers Ltd			INDIA
5.68.7	Vindhya Telelinks Ltd			INDIA
<b>5.69</b>	<b>CONTROL CABLE - FIRE SURVIVAL (FRLS)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.69.1	Associated Flexibles & Wires [P] Ltd			INDIA
5.69.2	Cords Cable Industries Ltd			INDIA
5.69.3	Elkay Telelinks Ltd.			INDIA
5.69.4	Havells India Ltd			INDIA
5.69.5	Icon Cable Ltd.			INDIA
5.69.6	KEI Industries Limited			INDIA
5.69.7	Polycab Wires Pvt Ltd			INDIA
5.69.8	Suyog Electricals Ltd			INDIA
5.69.9	Thermo Cables Ltd			INDIA
<b>5.70</b>	<b>CABLES COMMUNICATION (JELLY FIELD)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.70.1	Birla Cable Ltd (formerly Birla Ericsson Optical Ltd)			INDIA
5.70.2	CMI Limited			INDIA
5.70.3	Cords Cable Industries Ltd			INDIA
5.70.4	Delton Cables Ltd			INDIA
5.70.5	Elkay Telelinks Ltd			INDIA
5.70.6	Finolex Cables Ltd			INDIA
5.70.7	KEC International Ltd (formerly RPG Cables Ltd)			INDIA
5.70.8	KEI Industries Limited			INDIA
5.70.9	Usha Beltron Ltd			INDIA
5.70.10	Vindhya Telelinks Ltd			INDIA
<b>5.71</b>	<b>PLANT COMMUNICATION SYSTEM (PA / PAGING)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.71.1	Armtel LLC			INDIA
5.71.2	Siemens Enterprise Communications			INDIA
<b>5.72</b>	<b>TELEPHONE (Instrument / EPABX)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.72.1	AGC			INDIA
5.72.2	Aviva			INDIA
5.72.3	Dee Em Systems			INDIA
5.72.4	Fibcom India Limited			INDIA
5.72.5	Laraon Engineers & Consultants Pvt. Ltd			INDIA
5.72.6	Maxtel (Panasonic)			INDIA
5.72.7	NEC			INDIA
5.72.8	Philips			INDIA
5.72.9	Proglity			INDIA
5.72.10	Siemens (Unify)			INDIA
<b>5.73</b>	<b>TETRA SYSTEM</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.73.1	EADS India Pvt Ltd			INDIA
5.73.2	Rohde & Schwarz India Pvt Ltd			INDIA
5.73.3	Selex Communications			INDIA
5.73.4	Simoco Telecommunications (South Asia) Ltd			INDIA
5.73.5	Motorola			INDIA
<b>5.74</b>	<b>FIRE ALARM SYSTEM</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.74.1	D.D. Electronic Equipment Pvt Ltd (D.D. Systems)			INDIA
5.74.2	Dynamic Engineers Ltd			INDIA
5.74.3	Edward International			INDIA
5.74.4	Honeywell Automation India Ltd.			INDIA
5.74.5	Mather & Platt India Ltd			INDIA
5.74.6	New Fire Engineers (P) Ltd			INDIA
5.74.7	Tyco Fire & Security India Pvt. Ltd			INDIA
5.74.8	Vijay Fire Protection Sytem Ltd			INDIA
<b>5.75</b>	<b>ELECTRICAL HEAT TRACING SYSTEM</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.75.1	Bartec India			INDIA
5.75.2	Pentair Thermal Systems			INDIA
5.75.3	Raychem RPG			INDIA
5.75.4	Thermon Heat Tracing			INDIA
5.75.5	Thermopads Pvt Ltd			INDIA
5.75.6	Tyco India Ltd			INDIA
5.75.7	Xicon			INDIA
5.75.8	Chromalux			INDIA
<b>5.76</b>	<b>CATHODIC PROTECTION SYSTEM</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.76.1	BSS Tech CP India Pvt. Ltd.			INDIA
5.76.2	Cathodic Control Company			INDIA
5.76.3	Consultants – Baroda			INDIA
5.76.4	Consultech Cathodic Protection Engrs & India			INDIA
5.76.5	Corrosion Control Services Pvt. Ltd.			INDIA
5.76.6	Corrosion Technology Services			INDIA
5.76.7	Corrtech International			INDIA
5.76.8	Raychem RPG			INDIA
5.76.9	Sark EPC Projects			INDIA
5.76.10	Scientific Metal Engineers			INDIA
<b>5.77</b>	<b>CABLE TRAYS GI/SS (Perforated /Ladder) &amp; CABLE DUCTS</b>			
<b>A</b>	<b>Indian Bidders</b>			

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
5.77.1	Elcon Cable Trays Pvt Ltd	INDIA		
5.77.2	Globe Elect. Industries Ltd. India	INDIA		
5.77.3	IDS Composites	INDIA		
5.77.4	Indiana Cable Trays	INDIA		
5.77.5	Metalems Bombay Pvt. Ltd.	INDIA		
5.77.6	National Galvaniser	INDIA		
5.77.7	OBO Bettermann India Pvt Ltd	INDIA		
5.77.8	Patny Systems Pvt Ltd	INDIA		
5.77.9	Premier Power Products Cal Pvt. Ltd	INDIA		
5.77.10	Profab Engineers Pvt Ltd	INDIA		
5.77.11	Ratan Projects & Engineering Co. Pvt. Ltd.	INDIA		
5.77.12	Rukmani Electrical & Components	INDIA		
5.77.13	Steelite Engineering Limited	INDIA		
5.77.14	Vatco Elec Power Pvt Ltd	INDIA		
<b>5.78</b>	<b>CABLE TRAYS FRP</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.78.1	Arvind Composites India	INDIA		
5.78.2	Ercon India	INDIA		
5.78.3	Sumip Composites India	INDIA		
5.78.4	Syntex India	INDIA		
<b>5.79</b>	<b>CABLE JOINTS &amp; TERMINATION KITS</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.79.1	3M Electro & Communication India Pvt. Ltd. India	INDIA		
5.79.2	ABB India Ltd	INDIA		
5.79.3	Euromold (Nexans India)	INDIA		
5.79.4	Fischer	INDIA		
5.79.5	Heatshrink Technologies Ltd. India	INDIA		
5.79.6	Nkt	INDIA		
5.79.7	Raychem RPG	INDIA		
<b>5.80</b>	<b>CABLE GLANDS (FOR HAZARDOUS AREA)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.80.1	Baliga Lighting Egpts Ltd	INDIA		
5.80.2	Comet Brass Products	INDIA		
5.80.3	FCG Flameproof Control Gears Pvt. Ltd Comet	INDIA		
5.80.4	FCG Power Ind Pvt Ltd	INDIA		
5.80.5	Flameproof Equipment Pvt. Ltd	INDIA		
5.80.6	Flexpro Electricals Pvt Ltd	INDIA		
5.80.7	Kaysons Techno Equipments P. Ltd.	INDIA		
5.80.8	Sudhir Switchgears Pvt Ltd	INDIA		
5.80.9	R Stahl	INDIA		
5.80.10	Standard Metal Industries	INDIA		
<b>5.81</b>	<b>LIGHTING POLES (GALVANISED)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.81.1	KI Industries	INDIA		
5.81.2	Shah Engg	INDIA		
5.81.3	India Electric Poles Mfg.Co	INDIA		
<b>5.82</b>	<b>NIFPS (NITROGEN INJECTED FIRE PROTECTION SYSTEM)</b>			
<b>A</b>	<b>Indian Bidders</b>			
5.82.1	CTR Manufacturing India Ltd	INDIA		
<b>5.83</b>	<b>DC MOTORS</b>			
<b>A</b>	<b>Indian Bidders</b>		Nii	
<b>6.1</b>	<b>TUBE FITTINGS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.1.1	ARYA CRAFTS & ENGINEERING PVT LTD	INDIA		
6.1.2	ASTEC VALVES & FITTINGS PVT. LTD.	INDIA		
6.1.3	CIRCOR INSTR. TECHNOLOGIES INC-	INDIA		
6.1.4	COMFIT & VALVES PVT. LTD.	INDIA		
6.1.5	EXCEL HYDRO PNEUMATICS PVT LTD	INDIA		
6.1.6	EXCELSIOR ENGG. WORKS	INDIA		
6.1.7	FLUID CONTROLS PVT LTD	INDIA		
6.1.8	MULTIMETAL INDUSTRIES	INDIA		
6.1.9	PANAM ENGINEERS	INDIA		
6.1.10	PARKER HANNIFIN CORPORATION	INDIA		
6.1.11	PRIME ENGINEERS	INDIA		
6.1.12	RELIANCE ENGINEERING & ELECTRICALS CORPN	INDIA		
6.1.13	SEALEXCEL (INDIA) PVT. LTD.	INDIA		
6.1.14	SWAGELOK CO.	INDIA		
6.1.15	SWASTIK ENGINEERING WORKS	INDIA		
6.1.16	TK FUJIKIN CORPORATION	INDIA		
6.1.17	WESMEC ENGINEERING PVT. LTD	INDIA		
6.1.18	PRECISION ENGINEERING INDUSTRIES	INDIA		
<b>6.2</b>	<b>INSTRUMENT TUBING</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.2.1	HEAVY METALS & TUBES LIMITED(MEHSANA)	INDIA		
6.2.2	JINDAL SAW LTD	INDIA		
6.2.3	RATNAMANI METALS AND TUBES LTD	INDIA		
6.2.4	REMI EDELSTAHL TUBULARS LTD	INDIA		
6.2.5	TK FUJIKIN CORPORATION	INDIA		
6.2.6	NUCLEAR FUEL COMPLEX	INDIA		
<b>6.3</b>	<b>MACHINE MONITORING SYSTEMS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.3.1	BAKER HUGHES (GE OIL & GAS INDIA PVT LTD)	INDIA		
6.3.2	ROCKWELL AUTOMATION INDIA PVT LTD	INDIA		
6.3.3	PROGNOST SYSTEMS GmbH	INDIA		
<b>6.4</b>	<b>THERMO COUPLE EXTN.CABLES</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.4.1	ASSOCIATED CABLES PVT LTD	INDIA		
6.4.2	ASSOCIATED FLEXIBLES & WIRES [P] LTD	INDIA		
6.4.3	CORDS CABLE INDUSTRIESLTD	INDIA		
6.4.4	DELTON CABLES LIMITED	INDIA		
6.4.5	KEI INDUSTRIES LIMITED	INDIA		



MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
6.4.6	T C COMMUNICATION PVT. LTD.	INDIA		
6.4.7	THERMO CABLES LTD	INDIA		
6.4.8	UDEY PYROCABLES PVT. LTD.	INDIA		
<b>6.5</b>	<b>SIGNAL CABLES</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.5.1	ASSOCIATED CABLES PVT LTD	INDIA		
6.5.2	ASSOCIATED FLEXIBLES & WIRESPRIVATE LTD	INDIA		
6.5.3	CMI LIMITED	INDIA		
6.5.4	CORDS CABLE INDUSTRIES LTD	INDIA		
6.5.5	DELTON CABLES LIMITED	INDIA		
6.5.6	ELKAY TELELINKS LTD.	INDIA		
6.5.7	KEC INETRNLATIONAL LIMITED	INDIA		
6.5.8	KEI INDUSTRIES LIMITED	INDIA		
6.5.9	LEONI CABLE SOLUTIONS (INDIA) PVT LTD.	INDIA		
6.5.10	POLYCAB WIRES PVT LTD	INDIA		
6.5.11	RALLISON ELECTRICALS PVT. LTD.	INDIA		
6.5.12	SUYOG ELECTRICALS LTD	INDIA		
6.5.13	T C COMMUNICATION PVT. LTD.	INDIA		
6.5.14	THERMO CABLES LTD	INDIA		
6.5.15	UDEY PYROCABLES PVT. LTD.	INDIA		
6.5.16	LAPP INDIA PVT LTD	INDIA		
<b>6.6</b>	<b>OPTICAL FIBRE CABLE &amp; ASSOC.ITEM</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.6.1	ABB INDUSTRI AS	INDIA		
6.6.2	AKSH OPTIFIBRE LIMITED	INDIA		
6.6.3	APAR INDUSTRIES LTD	INDIA		
6.6.4	BIRLA ERICSSON OPTICAL LIMITED	INDIA		
6.6.5	FINOLEX CABLES LTD.	INDIA		
6.6.6	HIMACHAL FUTIRISTIC COMMUNICATIONS LTD.	INDIA		
6.6.7	KEC INETRNLATIONAL - MYSORE	INDIA		
6.6.8	STERLITE OPTICAL TECHNOLOGIES LTD	INDIA		
6.6.9	SUDARSHAN TELECOM (A DIV. OF THE WCPML)	INDIA		
6.6.10	U M CABLES LTD	INDIA		
6.6.11	VINDHYA TELELINKS LIMITED	INDIA		
6.6.12	OPTEL TELECOMMUNICATIONS	INDIA		
6.6.13	ABB INDIA LTD	INDIA		
6.6.14	STERLITE TECHNOLOGIES LTD	INDIA		
<b>6.7</b>	<b>FIELD BUS SIGNAL CABLES</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.7.1	ASSOCIATED FLEXIBLES & WIRES [P] LTD	INDIA		
6.7.2	BELDEN INC	INDIA		
6.7.3	CORDS CABLE INDUSTRIES LTD	INDIA		
6.7.4	LAPP INDIA PVT LTD	INDIA		
<b>6.8</b>	<b>SIGNAL CABLE - FIRE RESISTANT</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.8.1	ASSOCIATED FLEXIBLES & WIRES [P] LTD	INDIA		
6.8.2	CORDS CABLE INDUSTRIES LTD	INDIA		
6.8.3	ELKAY TELELINKS LTD.	INDIA		
6.8.4	KEI INDUSTRIES LIMITED	INDIA		
6.8.5	POLYCAB WIRES PVT LTD	INDIA		
6.8.6	SUYOG ELECTRICALS LTD	INDIA		
6.8.7	THERMO CABLES LTD	INDIA		
6.8.8	ASSOCIATED CABLES LIMITED	INDIA		
6.8.9	UDEY PYROCABLES PVT LTD	INDIA		
6.8.10	TC COMMUNICATION PVT LTD	INDIA		
6.8.11	Lapp India Pvt Ltd	INDIA		
6.8.12	Leoni Cable Solutions (India) Pvt. Ltd.	INDIA		
<b>6.9</b>	<b>SPECIAL LEVEL INSTRUMENTS (TUNNING FORK)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.9.1	ABB INC	INDIA		
6.9.2	ENDRESS+HAUSER (I) AUTO. INSTR. PVT. LTD	INDIA		
6.9.3	MOBREY LTD	INDIA		
6.9.4	NIVO CONTROLS PVT LTD	INDIA		
6.9.5	SAPCON INSTRUMENTS PVT LTD	INDIA		
6.9.6	VEGA GRIESHABER KG / VEGA INDIA LEVEL & PRESSURE MEASUREMENT PVT LTD	INDIA		
6.9.7	EMERSON PROCESS MANAGEMENT	INDIA		
<b>6.10</b>	<b>COPPER TUBES (COATED, BARE)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.10.1	MEHTA TUBES LIMITED	INDIA		
6.10.2	MULTIMETALS LIMITED	INDIA		
6.10.3	RAJCO METAL INDUSTRIES P LTD	INDIA		
6.10.4	KAMANI TUBES	INDIA		
6.10.5	RELIANCE ENGINEERS LTD	INDIA		
6.10.6	ALCOBEX METALS PVT LTD	INDIA		
6.10.7	HIDUSTAN STEEL & METAL WORKS	INDIA		
6.10.8	INDUSTRIAL TUBES	INDIA		
<b>6.11</b>	<b>CORROSION MONITORS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.11.1	PEPPERL + FUCHS GMBH	INDIA		
6.11.2	CHEMTREAT INDIA LIMITED	INDIA		
6.11.3	MANAN ENGINEERING CORPORATION	INDIA		
6.11.4	ALLWYN INDUSTRIES	INDIA		
<b>6.12</b>	<b>CONTROL VALVE POSITIONER / SMART POSITIONER</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.12.1	FLOWSERVE INDIA CONTROL PVT LTD- BANGALORE	INDIA		
6.12.2	SAMSON CONTROLS PVT LTD	INDIA		
6.12.3	EMERSON PROCESS MANAGEMENT (FISHER)	INDIA		
6.12.4	METSO AUTOMATION	INDIA		
6.12.5	DRESSER	INDIA		
<b>6.13</b>	<b>SOLENOID VALVES</b>			

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.13.1	ASCO NUMATICS (INDIA) P. LIMITED	INDIA		
6.13.2	AVCON CONTROLS PVT. LTD.	INDIA		
6.13.3	HERION WERKE	INDIA		
6.13.4	PRECISION INSTRUMENT COMPANY	INDIA		
6.13.5	ROTEX AUTOMATION LTD.	INDIA		
6.13.6	SCHRADER DUNCAN LIMITED	INDIA		
6.13.7	ASCO JOUCOMATIC LTD	INDIA		
<b>6.14</b>	<b>CONTROL VALVES</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.14.1	ARCA REGLER GMBH	INDIA		
6.14.2	CCI VALVE TECHNOLOGY GMBH	INDIA		
6.14.3	EMERSON PROCESS MANAGEMENT CHENNAI PVT. LTD	INDIA		
6.14.4	FLOWSERVE INDIA CONTROL PVT LTD	INDIA		
6.14.5	FORBES MARSHALL ARCA P.LTD.	INDIA		
6.14.6	BAKER HUGHES (GE OIL & GAS INDIA PVT LTD)	INDIA		
6.14.7	INSTRUMENTATION LTD	INDIA		
6.14.8	KOSO INDIA PVT LTD	INDIA		
6.14.9	METSO FLOW CONTROL OY	INDIA		
6.14.10	MIL CONTROLS LIMITED	INDIA		
6.14.11	SAMSON CONTROLS PVT LTD	INDIA		
6.14.12	SEVERN GLOCON INDIA PVT LTD	INDIA		
6.14.13	SPX VALVES & CONTROLS (FORMERLY DEZURIK)	INDIA		
6.14.14	WEIR VALVES & CONTROLS UK LTD	INDIA		
6.14.15	GE INDIA INDUSTRIAL PVT LTD (DRESSER)	INDIA		
6.14.16	KENT INTROL UK LTD	INDIA		
6.14.17	CONTROL COMPONENT INDIA PVT LTD.	INDIA		
6.14.18	DRESSER VALVE INDIA PVT LTD	INDIA		
6.14.19	BRAY CONTROLS (I) PVT LTD	INDIA		
<b>6.15</b>	<b>PRESSURE RELIEF VALVE</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.15.1	ANDERSON GREENWOOD CROSBY SANMAR Ltd.	INDIA		
6.15.2	BHEL	INDIA		
6.15.3	BLISS ANAND PVT LTD	INDIA		
6.15.4	CURTISS WRIGHT FLOW CONTROL CORPORATION	INDIA		
6.15.5	DARLING MUESCO (INDIA) PVT. LTD	INDIA		
6.15.6	BAKER HUGHES (GE OIL & GAS INDIA PVT LTD)	INDIA		
6.15.7	FAINGER LESER VALVES (P) LTD.	INDIA		
6.15.8	INSTRUMENTATION LTD. (PALGHAT)	INDIA		
6.15.9	WEIR BDK VALVES	INDIA		
6.15.10	ANDERSON GREENWOOD CROSBY	INDIA		
6.15.11	DRESSER INC	INDIA		
6.15.12	TYCO SANMAR LTD	INDIA		
6.15.13	PENTAIR SAN MAR LTD	INDIA		
<b>6.16</b>	<b>INSTRUMENT VALVES &amp; MANIFOLDS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.16.1	ANDERSON GREENWOOD CROSBY SANMAR Ltd.	INDIA		
6.16.2	ARYA CRAFTS & ENGINEERING PVT LTD	INDIA		
6.16.3	ASTEC VALVES & FITTINGS PVT. LTD.	INDIA		
6.16.4	BAUMER TECHNOLOGIES INDIA PVT.LTD.(W058)	INDIA		
6.16.5	CIRCOR INSTR. TECHNOLOGIES INC	INDIA		
6.16.6	COMFIT & VALVES PVT. LTD.	INDIA		
6.16.7	EXCEL HYDRO PNEUMATICS PVT LTD	INDIA		
6.16.8	EXCELSIOR ENGG. WORKS	INDIA		
6.16.9	FLUID CONTROLS PVT LTD	INDIA		
6.16.10	MICRO PRECISION PRODUCTS PVT LTD	INDIA		
6.16.11	PANAM ENGINEERS	INDIA		
6.16.12	PARKER HANNIFIN CORPORATION	INDIA		
6.16.13	PRIME ENGINEERS	INDIA		
6.16.14	SWAGELOK CO.	INDIA		
6.16.15	SWASTIK ENGINEERING WORKS	INDIA		
6.16.16	TK FUJIKIN CORPORATION	INDIA		
6.16.17	WESMEC ENGINEERING PVT LTD.	INDIA		
6.16.18	CHEMTROLS INDUSTRIES LTD	INDIA		
6.16.19	PRECISION ENGINEERING INDUSTRIES	INDIA		
6.16.20	ANDERSON GREENWOOD CROSBY	INDIA		
6.16.21	TECNOMATIC INDIA PVT LTD	INDIA		
<b>6.17</b>	<b>TANK PR. PROTECT. DEVICES / FLAME ARRESSTER</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.17.1	ANDERSON GREENWOOD CROSBY SANMAR Ltd.	INDIA		
6.17.2	ANDERSON GREENWOOD VAREC	INDIA		
6.17.3	BRAUNSCHEWIGER FLAMMENFILTER	INDIA		
6.17.4	GROTH CORPORATION	INDIA		
6.17.5	PRESSURE & FLOW CONTROL INDUSTRIES	INDIA		
6.17.6	PROTEGO INDIA PVT LTD	INDIA		
<b>6.18</b>	<b>ON-OFF VALVES</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.18.1	BRAY CONTROLS INDIA PVT LTD	INDIA		
6.18.2	CAMERON LTD. (Group of Schlumberger Ltd)	INDIA		
6.18.3	EL-O-MATIC INDIA (PVT) LTD.	INDIA		
6.18.4	EMERSON PROCESS MANAGEMENT (INDIA) PVT LTD.	INDIA		
6.18.5	FLOWSERVE INDIA CONTROLS PVT. LTD.	INDIA		
6.18.6	KITAMURA VALVE MANUFACTURING CO LTD	INDIA		
6.18.7	KOSO INDIA PVT. LIMITED	INDIA		
6.18.8	L & T VALVES LIMITED	INDIA		
6.18.9	METSO INDIA PVT LTD / METSO FLOW CONTROL OY	INDIA		
6.18.10	MICROFINISH VALVES PVT LIMITED	INDIA		
6.18.11	SPX VALVES & CONTROLS (FORMERLY DEZURIK)	INDIA		
6.18.12	WEIR BDK VALVES	INDIA		
6.18.13	RMEBS CONTROLS PVT LTD (Old Name: ROTEX MANUFACTURERS & ENGINEERS P LTD.)	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
6.18.14	SAMSONS CONTROLS PVT LTD			
6.18.15	PENTAIR VALVES & CONTROLS INDIA PVT LTD	INDIA		
6.18.16	TYCO VALVES & CONTROLS	INDIA		
6.18.17	VIRGO VALVES & CONTROLS PVT LTD	INDIA		
6.18.18	DELVAL FLOW CONTROLS PVT LIMITED	INDIA		
6.18.19	FOURESS ENGINEERING (INDIA) LTD.	INDIA		
<b>6.19</b>	<b>SELF ACTUATED PR. CONTROL VALVES</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.19.1	ELSTER-INSTROMET INDIA PVT LTD (HONEYWELL)	INDIA		
6.19.2	EMERSON PROCESS MANGMNT CHENNAI PVT. LTD	INDIA		
6.19.3	BAKER HUGHES (GE OIL & GAS INDIA PVT LTD )	INDIA		
6.19.4	MIL CONTROLS LIMITED	INDIA		
6.19.5	NIRMAL INDUSTRIAL CONTROL PVT. LTD.	INDIA		
6.19.6	RMG REGEL+MESSTECHNIK GMBH	INDIA		
6.19.7	SAMSON CONTROLS PVT LTD	INDIA		
6.19.8	DRESSER VALVE INDIA PVT LTD	INDIA		
6.19.9	BRAY CONTROLS (I) PVT LTD	INDIA		
6.19.10	DELVAL FLOW CONTROLS PVT LIMITED	INDIA		
<b>6.20</b>	<b>SPECIAL CONTROL VALVES (BUTTERFLY)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.20.1	EMERSON PROCESS MANGMNT CHENNAI PVT. LTD	INDIA		
6.20.2	FLOWSERVE INDIA CONTROL PVT LTD- BANGALOR	INDIA		
6.20.3	BAKER HUGHES (GE OIL & GAS INDIA PVT LTD )	INDIA		
6.20.4	METSO INDIA PVT LTD / METSO FLOW CONTROL OY	INDIA		
6.20.5	SPX VALVES & CONTROLS (FORMERLY DEZURIK)	INDIA		
6.20.6	WEIR VALVES & CONTROLS UK LTD	INDIA		
6.20.7	SAMSONS CONTROLS PVT LTD	INDIA		
6.20.8	TYCO VALVES & CONTROLS	INDIA		
6.20.9	GE INDIA INDUSTRIAL PVT LTD (DRESSER)	INDIA		
6.20.10	PENTAIR VALVES & CONTROLS INDIA PVT LTD	INDIA		
6.20.11	BRAY CONTROLS (I) PVT LTD	INDIA		
6.20.12	DELVAL FLOW CONTROLS PVT LIMITED	INDIA		
6.20.13	FOURESS ENGINEERING (INDIA) LTD.	INDIA		
6.20.14	LARSEN & TOUBRO LTD.	INDIA		
6.20.15	INTERVALVE POONAWALA	INDIA		
6.20.16	IPC INDIA LTD.	INDIA		
<b>6.21</b>	<b>DESUPERHEATERS &amp; PRDS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.21.1	ARCA REGLER GMBH	INDIA		
6.21.2	BOMAFAL SPECIAL VALVE SOLUTIONS PVT. LTD.	INDIA		
6.21.3	CCI VALVE TECHNOLOGY AB	INDIA		
6.21.4	CIRCOR FLOW TECHNOLOGIES INDIA PVT LTD	INDIA		
6.21.5	FISHER SANMAR LTD (EMERSON PROCESS MANAGEMENT)	INDIA		
6.21.6	FORBES MARSHALL ARCA P LTD.	INDIA		
6.21.7	H.K. INDUSTRIES	INDIA		
6.21.8	LEPRETFLOW ENGINEERING PVT LTD	INDIA		
6.21.9	MAZDA LTD	INDIA		
6.21.10	TYCO VALVES & CONTROLS INDIA PVT LTD	INDIA		
6.21.11	VENTURI JET PUMPS LTD	INDIA		
6.21.12	YARWAY CORPORATION	INDIA		
6.21.13	INSTRUMENTATION LTD. (PALGHAT)	INDIA		
6.21.14	CHEMTROLS INDUSTRIES LTD	INDIA		
6.21.15	SAMSON AG MESS-UND REGELTECHNIK	INDIA		
6.21.16	INDITECH VALVES PVT LIMITED	INDIA		
<b>6.22</b>	<b>PR. REGULATOR &amp; SLAM SHUT VALVES</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.22.1	ELSTER-INSTROMET INDIA PVT LTD (HONEYWELL)	INDIA		
6.22.2	NIRMAL INDUSTRIAL CONTROL PVT. LTD.	INDIA		
6.22.3	RMG REGEL+MESSTECHNIK GMBH	INDIA		
<b>6.23</b>	<b>PILOT OPERATED SAFETY VALVES</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.23.1	ANDERSON GREENWOOD CROSBY SANMAR LTD	INDIA		
6.23.2	BLISS ANAND PVT LTD	INDIA		
6.23.3	CAMERON LTD. (Group of Schlumberger Ltd)	INDIA		
6.23.4	CURTISS WRIGHT FLOW CONTROL CORPORATION	INDIA		
6.23.5	BAKER HUGHES (GE OIL & GAS INDIA PVT LTD )	INDIA		
6.23.6	FAINGER LESER VALVES (P) LTD.	INDIA		
6.23.7	DRESSER INC	INDIA		
6.23.8	ANDERSON GREENWOOD CROSBY	INDIA		
6.23.9	PENTAIR SANMAR LTD.	INDIA		
6.23.10	DARLING MUESCO INDIA PVT LTD	INDIA		
<b>6.24</b>	<b>PROCESS STREAM ANALYSERS (O2-ZIRCONIA)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.24.1	ABB INDIA LTD	INDIA		
6.24.2	EMERSON PROCESS MANAGEMENT INDIA PVT LTD	INDIA		
6.24.3	SECO CONTROLS PVT LTD	INDIA		
6.24.4	SERVOMEX GROUP LTD.	INDIA		
6.24.5	YOKOGAWA INDIA LIMITED	INDIA		
6.24.6	GE SENSING EMEA	INDIA		
<b>6.25</b>	<b>GAS CHROMATOGRAPH (PROCESS)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.25.1	ABB INDIA LTD (BANGALORE)	INDIA		
6.25.2	APPLIED INSTRUMENTS TECHNOLOGIES INC.	INDIA		
6.25.3	ELSTER-INSTROMET INDIA PVT LTD (HONEYWELL)	INDIA		
6.25.4	EMERSON PROCESS MANAGEMENT INDIA PVT LTD	INDIA		
6.25.5	YOKOGAWA INDIA LIMITED	INDIA		
6.25.6	SIEMENS AG	INDIA		
<b>6.26</b>	<b>STACK GAS ANALYSER SYSTEMS (EXTRACTIVE)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.26.1	ABB INDIA LTD (BANGALORE)	INDIA		
6.26.2	EMERSON PROCESS MANAGEMENT INDIA PVT LTD	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
6.26.3	ENVIRONNEMENT S.A.	INDIA		
6.26.4	HORIBA LTD	INDIA		
6.26.5	SERVOMEX GROUP LTD.	INDIA		
6.26.6	THERMO FISHER SCIENTIFIC INDIA PVT. LTD.	INDIA		
6.26.7	YOKOGAWA INDIA LIMITED	INDIA		
6.26.8	CHEMTROLS INDUSTRIES LTD	INDIA		
<b>6.27</b>	<b>AMBIENT AIR ANALYSER SYSTEMS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.27.1	ENVIRONNEMENT S.A.	INDIA		
6.27.2	THERMO FISHER SCIENTIFIC INDIA PVT. LTD.	INDIA		
6.27.3	CHEMTROLS INDUSTRIES LTD	INDIA		
<b>6.28</b>	<b>PROCESS STREAM ANALYSER (IR/UV)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.28.1	ABB INDIA LTD (BANGALORE)	INDIA		
6.28.2	APPLIED INSTRUMENTS TECHNOLOGIES INC.	INDIA		
6.28.3	EMERSON PROCESS MANAGEMENT INDIA PVT LTD	INDIA		
6.28.4	HORIBA LTD	INDIA		
6.28.5	SERVOMEX GROUP LTD.	INDIA		
6.28.6	YOKOGAWA INDIA LIMITED	INDIA		
6.28.7	FORBES MARSHAL PVT LTD	INDIA		
<b>6.29</b>	<b>PROCESS STREAM ANALYSER (H.C.-TCD/FID)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.29.1	ABB INDIA LTD (BANGALORE)	INDIA		
6.29.2	EMERSON PROCESS MANAGEMENT INDIA PVT LTD	INDIA		
6.29.3	FORBES MARSHAL PVT LTD	INDIA		
6.29.4	SIEMENS AG	INDIA		
6.29.5	SICK AG	INDIA		
<b>6.30</b>	<b>ANALYSER SYSTEMS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.30.1	ABB INDIA LTD (BANGALORE)	INDIA		
6.30.2	APPLIED INSTRUMENTS TECHNOLOGIES INC.	INDIA		
6.30.3	EMERSON PROCESS MANAGEMENT INDIA PVT LTD	INDIA		
6.30.4	SERVOMEX GROUP LTD.	INDIA		
6.30.5	SIEMENS AG (ADAGE AUTOMATION PVT. LTD.)	INDIA		
6.30.6	YOKOGAWA INDIA LIMITED	INDIA		
6.30.7	CHEMTROLS INDUSTRIES LTD	INDIA		
6.30.8	FORBES MARSHAL PVT LTD	INDIA		
<b>6.31</b>	<b>STACK GAS ANALYSER SYSTEMS (INSITU)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.31.1	ENVORNMENT SA	INDIA		
6.31.2	FORBES MARSHALL CODEL PVT. LTD.	INDIA		
6.31.3	SERVOMEX GROUP LTD.	INDIA		
6.31.4	TELEDYNE	INDIA		
6.31.5	THERMO FISHER SCIENTIFIC	INDIA		
6.31.6	CHEMTROLS INDUSTRIES LTD	INDIA		
6.31.7	SICK AG	INDIA		
<b>6.32</b>	<b>STACK GAS ANALYSERS (SPM)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.32.1	ENVIRONNEMENT S.A.	INDIA		
6.32.2	FORBES MARSHALL CODEL PVT. LTD.	INDIA		
6.32.3	SERVOMEX GROUP LTD.	INDIA		
6.32.4	THERMO FISHER SCIENTIFIC	INDIA		
6.32.5	DURAG	INDIA		
6.32.6	SICK AG	INDIA		
6.32.7	AMETEK (LAND)	INDIA		
<b>6.33</b>	<b>ORIFICE PLATES &amp; FLANGES</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.33.1	BALIGA LIGHTING EQUIPMENTS (P) LIMITED	INDIA		
6.33.2	CAMERON LTD. (Group of Schlumberger Ltd)	INDIA		
6.33.3	COMFIT & VALVES PVT. LTD.	INDIA		
6.33.4	DANIEL MEASUREMENT SOLUTIONS PVT LTD (EMERSON)	INDIA		
6.33.5	EUREKA INDUSTRIAL EQUIPMENTS (P) LTD.	INDIA		
6.33.6	GAUGES BOURDON (I) PVT. LTD. (GEN.INST)	INDIA		
6.33.7	GURU NANAK ENGG WORKS	INDIA		
6.33.8	HYDROPNEUMATICS PVT. LTD.	INDIA		
6.33.9	INSTRUMENTATION LTD. (PALGHAT)	INDIA		
6.33.10	MICRO PRECISION PRODUCTS PVT LTD	INDIA		
6.33.11	MINCO (INDIA) PVT LTD (GEN. INST.)	INDIA		
6.33.12	STAR-MECH CONTROLS (INDIA) PVT LTD	INDIA		
<b>6.34</b>	<b>FLOW ELEMENTS : (VENTURI, FLOW NOZZLES)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.34.1	EMERSON PROCESS MANAGEMENT INDIA PVT LTD	INDIA		
6.34.2	GAUGES BOURDON (I) PVT. LTD. (GEN.INST)	INDIA		
6.34.3	HYDROPNEUMATICS PVT. LTD.	INDIA		
6.34.4	INSTRUMENTATION LIMITED	INDIA		
6.34.5	MICRO PRECISION PRODUCTS PVT LTD	INDIA		
6.34.6	MINCO (I) FLOW ELEMENT P. LTD. (GIC CO.)	INDIA		
6.34.7	STAR-MECH CONTROLS (INDIA) PVT LTD	INDIA		
6.34.8	MINCO (INDIA) PVT LTD	INDIA		
6.34.9	EUREKA INDUSTRIAL EQUIPMENTS PVT LTD.	INDIA		
<b>6.35</b>	<b>TEMP. ELEMENTS, THERMOWELLS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.35.1	ALTOP INDUSTRIES LTD.	INDIA		
6.35.2	DETRIV INSTRUMENTATION & ELECTRONICS LTD	INDIA		
6.35.3	GAUGES BOURDON (I) PVT LTD (GEN. INST.)	INDIA		
6.35.4	GOA INSTRUMENTS INDUSTRIES PVT. LTD.	INDIA		
6.35.5	PYRO-ELECTRIC INSTRUMENTS GOA PVT LTD	INDIA		
6.35.6	TECHNO INSTRUMENTS	INDIA		
6.35.7	TEMPSENS INSTRUMENTS INDIA PVT LTD	INDIA		
6.35.8	TEMP-TECH	INDIA		
6.35.9	THERMO ELECTRIC CO. INC.	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
6.35.10	THERMO-COUPLE PRODUCTS CO	INDIA		
6.35.11	THERMAL INSTRUMENTS INDIA PVT. LTD	INDIA		
6.35.12	ABB LTD	INDIA		
6.35.13	WIKA	INDIA		
<b>6.36</b>	<b>SKIN THERMOCOUPLES</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.36.1	BAUMER GROUP	INDIA		
6.36.2	DETRIV INSTRUMENTATION & ELECTRONICS LTD	INDIA		
6.36.3	PYRO-ELECTRIC INSTRUMENTS GOA PVT LTD	INDIA		
6.36.4	TECHNO INSTRUMENTS	INDIA		
6.36.5	THERMO ELECTRIC CO. INC.	INDIA		
6.36.6	THERMO-COUPLE PRODUCTS CO	INDIA		
6.36.7	WIKA INSTRUMENTS INDIA PRIVATE LIMITED.	INDIA		
6.36.8	ABB LTD	INDIA		
<b>6.37</b>	<b>SPECIAL TEMPERATURE ELEMENTS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.37.1	PYRO-ELECTRIC INSTRUMENTS GOA PVT LTD	INDIA		
6.37.2	THERMO ELECTRIC CO. INC.	INDIA		
6.37.3	THERMO-COUPLE PRODUCTS CO	INDIA		
6.37.4	BAUMER INDIA PVT LTD.	INDIA		
6.37.5	ABB LTD	INDIA		
<b>6.38</b>	<b>SURGE RELIEF VALVE</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.38.1	DANIEL MEASUREMENT SOLUTIONS PVT LTD (EMERSON)	INDIA		
<b>6.39</b>	<b>SPECIAL CONTROL VALVES (PLUG)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.39.1	EMERSON PROCESS MANGMNT CHENNAI PVT. LTD	INDIA		
<b>6.40</b>	<b>SPECIAL CONTROL VALVE ( FLUSH BOTTOM)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.40.1	MICRO PNEUMATICS PVT. LTD.	INDIA		
6.40.2	TECNIK VALVES PVT. LTD.	INDIA		
<b>6.41</b>	<b>WATER QUALITY ANALYSERS (SILICA)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.41.1	FORBES MARSHALL PVT. LTD.- PUNE	INDIA		
6.41.2	HACH COMPANY	INDIA		
6.41.3	HONEYWELL AUTOMATION INDIA LTD.	INDIA		
6.41.4	ENDRESS + HAUSER INSTRUMENTS INTL. AG	INDIA		
6.41.5	ABB LTD	INDIA		
<b>6.42</b>	<b>WATER QUALITY ANALYSER-DISSOLVED OXYGEN</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.42.1	ABB INDIA LTD (BANGALORE)	INDIA		
6.42.2	EMERSON PROCESS MANAGEMENT INDIA PVT LTD	INDIA		
6.42.3	FORBES MARSHALL PVT. LTD. - PUNE	INDIA		
6.42.4	HACH COMPANY	INDIA		
6.42.5	HONEYWELL AUTOMATION INDIA LTD.	INDIA		
6.42.6	METTLER - TOLEDO AG	INDIA		
6.42.7	YOKOGAWA INDIA LIMITED	INDIA		
6.42.8	ENDRESS + HAUSER INSTRUMENTS INTL. AG	INDIA		
6.42.9	INVENSYS	INDIA		
<b>6.43</b>	<b>WATER QUALITY ANALYSER SYSTEMS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.43.1	ABB INDIA LTD (BANGALORE)	INDIA		
6.43.2	EMERSON PROCESS MANAGEMENT INDIA PVT LTD	INDIA		
6.43.3	FORBES MARSHALL PVT. LTD. - PUNE	INDIA		
6.43.4	HONEYWELL AUTOMATION INDIA LTD.	INDIA		
6.43.5	METTLER - TOLEDO AG	INDIA		
6.43.6	YOKOGAWA INDIA LIMITED	INDIA		
6.43.7	ENDRESS+HAUSER	INDIA		
<b>6.44</b>	<b>PROCESS STREAM ANALYSER-MOISTURE/ DEW PT</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.44.1	SERVOMEX GROUP LTD.	INDIA		
6.44.2	GE SENSING EMEA	INDIA		
<b>6.45</b>	<b>PROCESS STREAM ANALYSER(PARAMAGNETIC-O2)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.45.1	ABB INDIA LTD (BANGALORE)	INDIA		
6.45.2	EMERSON PROCESS MANAGEMENT INDIA PVT LTD	INDIA		
6.45.3	HORIBA LTD	INDIA		
6.45.4	SERVOMEX GROUP LTD.	INDIA		
6.45.5	YOKOGAWA INDIA LIMITED	INDIA		
6.45.6	GE SENSING EMEA	INDIA		
6.45.7	SIEMENS AG	INDIA		
<b>6.46</b>	<b>WATER QUALITY ANALYSERS (PH)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.46.1	ABB INDIA LTD (BANGALORE)	INDIA		
6.46.2	EMERSON PROCESS MANAGEMENT INDIA PVT LTD	INDIA		
6.46.3	ENDRESS+HAUSER (I) PVT. LTD.	INDIA		
6.46.4	FORBES MARSHALL PVT. LTD.- PUNE	INDIA		
6.46.5	HACH COMPANY	INDIA		
6.46.6	HONEYWELL AUTOMATION INDIA LTD.	INDIA		
6.46.7	INVENSYS INDIA PRIVATE LIMITED (SCHNEIDER)	INDIA		
6.46.8	METTLER - TOLEDO AG	INDIA		
6.46.9	YOKOGAWA INDIA LIMITED	INDIA		
<b>6.47</b>	<b>PROCESS STREAM ANALYSER(HYDROGEN-TCD)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.47.1	ABB INDIA LTD (BANGALORE)	INDIA		
6.47.2	EMERSON PROCESS MANAGEMENT INDIA PVT LTD	INDIA		
6.47.3	HORIBA LTD	INDIA		
6.47.4	GE SENSING	INDIA		
<b>6.48</b>	<b>PRODUCT QUALITY ANALYSER SYSTEMS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.48.1	ABB INDIA LTD (BANGALORE)	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
6.48.2	THERMO FISHER SCIENTIFIC	INDIA		
6.48.3	YOKOGAWA INDIA LIMITED	INDIA		
6.48.4	CHEMTROLS INDUSTRIES LTD	INDIA		
6.48.5	BARTEC GMBH	INDIA		
6.48.6	YOKOGAWA ELECTRIC CORPORATION	INDIA		
<b>6.49</b>	<b>WATER QUALITY ANALYSERS (TURBIDITY)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.49.1	ABB INDIA LTD (BANGALORE)	INDIA		
6.49.2	EMERSON PROCESS MANAGEMENT INDIA PVT LTD	INDIA		
6.49.3	FORBES MARSHALL PVT. LTD.- PUNE	INDIA		
6.49.4	HACH COMPANY	INDIA		
6.49.5	METTLER - TOLEDO AG	INDIA		
6.49.6	YOKOGAWA INDIA LIMITED	INDIA		
6.49.7	ENDRESS + HAUSER	INDIA		
<b>6.50</b>	<b>WATER QUALITY ANALYSERS (CONDUCTIVITY)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.50.1	ABB INDIA LTD (BANGALORE)	INDIA		
6.50.2	EMERSON PROCESS MANAGEMENT INDIA PVT LTD	INDIA		
6.50.3	ENDRESS+HAUSER (I) PVT. LTD.	INDIA		
6.50.4	FORBES MARSHALL PVT. LTD.- PUNE	INDIA		
6.50.5	HACH COMPANY	INDIA		
6.50.6	HONEYWELL AUTOMATION INDIA LTD.	INDIA		
6.50.7	INVENSYS INDIA PRIVATE LIMITED (SCHNEIDER)	INDIA		
6.50.8	METTLER - TOLEDO AG	INDIA		
6.50.9	YOKOGAWA INDIA LIMITED	INDIA		
<b>6.51</b>	<b>PROCESS STREAM ANALYSER(IR/UV)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.51.1	ABB INDIA LTD (BANGALORE)	INDIA		
6.51.2	APPLIED INSTRUMENTS TECHNOLOGIES INC.	INDIA		
6.51.3	EMERSON PROCESS MANAGEMENT INDIA PVT LTD	INDIA		
6.51.4	HORIBA LTD	INDIA		
6.51.5	SERVOMEX GROUP LTD.	INDIA		
6.51.6	YOKOGAWA INDIA LIMITED	INDIA		
<b>6.52</b>	<b>SO2 ANALYSER</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.52.1	ABB LTD	INDIA		
6.52.2	YOKOGAWA	INDIA		
<b>6.53</b>	<b>WATER QUALITY ANALYSER-OIL IN H2O TOC/TC</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.53.1	ENVIRONMENT SA INDIA PVT LTD	INDIA		
6.53.2	FORBES MARSHALL PVT. LTD.(Old Name: FORBES MARSHALL STEAM SYSTEMS PVT. LTD.)	INDIA		
6.53.3	HACH COMPANY	INDIA		
6.53.4	LAR PROCESS ANALYSERS AG	INDIA		
<b>6.54</b>	<b>WATER QUALITY ANALYSER-OIL IN H2O DISLVD</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.54.1	FORBES MARSHALL PVT. LTD.- PUNE	INDIA		
<b>6.55</b>	<b>WATER QUALITY ANALYSERS(CHLORINE)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.55.1	ABB INDIA LTD (BANGALORE)	INDIA		
6.55.2	EMERSON PROCESS MANAGEMENT INDIA PVT LTD	INDIA		
6.55.3	HACH COMPANY	INDIA		
6.55.4	YOKOGAWA INDIA LIMITED	INDIA		
6.55.5	ENDRESS + HAUSER	INDIA		
<b>6.56</b>	<b>FLOW ELEMENTS-WEDGE TYPE</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.56.1	ABB INDIA LTD (BANGALORE)	INDIA		
6.56.2	MICRO PRECISION PRODUCTS PVT LTD	INDIA		
<b>6.57</b>	<b>GAS DETECTION SYSTEMS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.57.1	DETECTOR ELECTRONICS CORP.(KIDDE CO.)	INDIA		
6.57.2	DRAGER SAFETY AG & CO.	INDIA		
6.57.3	EMERSON PROCESS MANAGEMENT INDIA PVT LTD	INDIA		
6.57.4	HONEYWELL ANALYTICS	INDIA		
6.57.5	INDUSTRIAL SCIENTIFIC OLDHAM	INDIA		
6.57.6	MINE SAFETY APPLIANCES COMPANY	INDIA		
6.57.7	NET SAFETY MONITORING INC	INDIA		
6.57.8	RESPO PRODUCTS	INDIA		
6.57.9	ESP SAFETY PVT. LTD.	INDIA		
6.57.10	CHEMTROLS INDUSTRIES LTD	INDIA		
6.57.11	DETECTION INSTRUMENTS INDIA	INDIA		
<b>6.58</b>	<b>FIRE &amp; GAS DETECTION SYSTEMS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.58.1	DETECTOR ELECTRONICS CORP.(KIDDE CO.)	INDIA		
6.58.2	EMERSON PROCESS MANAGEMENT INDIA PVT LTD	INDIA		
6.58.3	HONEYWELL AUTOMATION INDIA LTD.	INDIA		
6.58.4	MINE SAFETY APPLIANCES COMPANY	INDIA		
6.58.5	NET SAFETY MONITORING INC	INDIA		
6.58.6	YOKOGAWA INDIA LIMITED	INDIA		
<b>6.59</b>	<b>PRODUCT QUALITY ANALYSERS (NIR)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.59.1	ABB INDIA LTD (BANGALORE)	INDIA		
6.59.2	APPLIED INSTRUMENTS TECHNOLOGIES INC.	INDIA		
6.59.3	BARTEC GMBH	INDIA		
6.59.4	YOKOGAWA INDIA LIMITED	INDIA		
<b>6.60</b>	<b>PRODUCT QUALITY ANALYSERS (VISCOSITY)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.60.1	ABB INDIA LTD (BANGALORE)	INDIA		
6.60.2	EMERSON PROCESS MANAGEMENT INDIA PVT LTD	INDIA		
<b>6.61</b>	<b>PRODUCT QUALITY ANALYSERS (DENSITY)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
6.61.1	MOBREY LTD			INDIA
6.61.2	THERMO FISHER SCIENTIFIC			INDIA
<b>6.62</b>	<b>PRODUCT QUALITY ANALYSERS (FLASH POINT)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.62.1	ABB INDIA LTD (BANGALORE)			INDIA
6.62.2	EMERSON PROCESS MGMT.			INDIA
6.62.3	BARTEC GMBH			INDIA
<b>6.63</b>	<b>PRODUCT QUALITY ANALYSERS (DISTILLATION)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.63.1	ABB INDIA LTD (BANGALORE)			INDIA
<b>6.64</b>	<b>PRODUCT QUALITY ANALYSER (SULPHUR)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.64.1	ABB INDIA LTD (BANGALORE)			INDIA
6.64.2	THERMO FISHER SCIENTIFIC INDIA PVT. LTD.			INDIA
<b>6.65</b>	<b>STACK GAS ANALYSERS (O2-ZIRCONIA) + CO + CO2</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.65.1	ABB INDIA LTD (BANGALORE)			INDIA
6.65.2	EMERSON PROCESS MANAGEMENT INDIA PVT LTD			INDIA
6.65.3	SERVOMEX GROUP LTD.			INDIA
6.65.4	YOKOGAWA INDIA LIMITED			INDIA
6.65.5	GE SENSING EMEA			INDIA
<b>6.66</b>	<b>ANALYSER-DENSITY/SP. GRAVITY (NUCLEONIC)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.66.1	BERTHOLD TECHNOLOGIES GMBH & CO.KG			INDIA
6.66.2	ENDRESS+HAUSER (I) PVT. LTD.			INDIA
6.66.3	OHMART/VEGA CORPORATION			INDIA
6.66.4	THERMO FISHER SCIENTIFIC			INDIA
<b>6.67</b>	<b>ANALYSER-DENSITY/SP GRAVITY (VIB CYLINDR)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.67.1	EMERSON PROCESS MANAGEMENT INDIA PVT LTD			INDIA
6.67.2	MOBREY LTD			INDIA
6.67.3	THERMO FISHER SCIENTIFIC			INDIA
<b>6.68</b>	<b>ANALYSER-DENSITY/SP GRAVITY (CORIOLIS)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.68.1	KROHNE MARSHALL PVT. LTD			INDIA
6.68.2	YOKOGAWA INDIA LIMITED			INDIA
6.68.3	ENDRESS + HAUSER FLOWTEC (INDIA) PVT LTD			INDIA
6.68.4	EMERSON PROCESS MANAGEMENT INDIA PVT LTD			INDIA
6.68.5	ENDRESS+HAUSER (I) PVT. LTD.			INDIA
<b>6.69</b>	<b>AUTOMATIC LIQUID SAMPLER</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.69.1	CAMERON LTD. (Group of Schlumberger Ltd)			INDIA
6.69.2	DOPAK ( SPIRARE ENERGY)			INDIA
<b>6.70</b>	<b>WOBBE METERS</b>			
<b>6.71</b>	<b>PROGRAMMABLE LOGIC CONTROLLERS (DMR)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.71.1	ABB INDIA LTD			INDIA
6.71.2	GE INTELLIGENT PLATFORMS PVT LTD			INDIA
6.71.3	HONEYWELL AUTOMATION INDIA LTD.			INDIA
6.71.4	INVENSYS SOFTWARE SYSTEMS (S) PTE LTD (SCHNEIDER)			INDIA
6.71.5	LARSEN & TOUBRO LTD			INDIA
6.71.6	ROCKWELL AUTOMATION INDIA PVT LTD			INDIA
6.71.7	SIEMENS LTD - NASHIK			INDIA
6.71.8	YOKOGAWA INDIA LTD			INDIA
6.71.9	GE-FANUC AUTOMATION			INDIA
<b>6.72</b>	<b>PROGRAMMABLE LOGIC CONTROLLERS (TMR/QMR, SIL3 CERTIFIED)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.72.1	ABB INDIA LTD (BANGALORE)			INDIA
6.72.2	EMERSON PROCESS MANAGEMENT INDIA PVT LTD			INDIA
6.72.3	HONEYWELL AUTOMATION INDIA LTD.			INDIA
6.72.4	INVENSYS SOFTWARE SYSTEMS (S) PTE LTD (SCHNEIDER)			INDIA
6.72.5	ROCKWELL AUTOMATION INDIA PVT LTD			INDIA
6.72.6	YOKOGAWA INDIA LIMITED			INDIA
6.72.7	ICS TRIPLEX (EMEA) PLC			INDIA
<b>6.73</b>	<b>PRESSURE GAUGES</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.73.1	AN INSTRUMENTS PVT LTD			INDIA
6.73.2	BAUMER TECHNOLOGIES INDIA PVT.LTD			INDIA
6.73.3	GAUGES BOURDON (I) PVT. LTD. (GEN.INST)			INDIA
6.73.4	GOA INSTRUMENTS INDUSTRIES PVT. LTD.			INDIA
6.73.5	H GURU INSTRUMENTS(SOUTH INDIA)PVT. LTD			INDIA
6.73.6	H.GURU INDUSTRIES			INDIA
6.73.7	MANOMETER (INDIA) PVT. LTD.			INDIA
6.73.8	Precision Mass Products Pvt. Ltd. (Old name: ASHCROFT INDIA PVT LTD)			INDIA
6.73.9	WALCHANDNAGAR INDUSTRIES LTD(TIWAC DIVN)			INDIA
6.73.10	WIKA INSTRUMENTS INDIA PVT LTD			INDIA
6.73.11	BAUMER BOURDON HAENNI SAS			INDIA
6.73.12	MASS PRODUCTS PVT. LTD			INDIA
6.73.13	BAUMER INDIA PVT LTD.			INDIA
<b>6.74</b>	<b>DRAFT GAUGES</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.74.1	AN INSTRUMENTS PVT LTD			INDIA
6.74.2	GAUGES BOURDON (I) PVT. LTD. (GEN.INST)			INDIA
6.74.3	SWITZER PROCESS INSTRUMENTS PVT. LTD.			INDIA
6.74.4	WIKA			INDIA
<b>6.75</b>	<b>DIFFERENTIAL PRESSURE GAUGES</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.75.1	AN INSTRUMENTS PVT LTD			INDIA
6.75.2	BAUMER TECHNOLOGIES INDIA PVT.LTD			INDIA
6.75.3	GAUGES BOURDON (I) PVT. LTD. (GEN.INST)			INDIA
6.75.4	HIRLEKAR PRECISION ENGINEERING PVT LTD			INDIA

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
6.75.5	SWITZER PROCESS INSTRUMENTS PVT. LTD.	INDIA		
6.75.6	WIKA INSTRUMENTS INDIA PVT LTD	INDIA		
6.75.7	HONEYWELL	INDIA		
6.75.8	SAMSONS CONTROLS PVT LTD	INDIA		
<b>6.76</b>	<b>TEMP.GAUGES(BI METALLIC,FILLED SYSTEM)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.76.1	AN INSTRUMENTS PVT LTD	INDIA		
6.76.2	Precision Mass Products Pvt. Ltd. (Old name: ASHCROFT INDIA PVT LTD)	INDIA		
6.76.3	BAUMER TECHNOLOGIES INDIA PVT.LTD	INDIA		
6.76.4	GAUGES BOURDON (I) PVT. LTD. (GEN.INST)	INDIA		
6.76.5	GOA INSTRUMENTS INDUSTRIES PVT. LTD.	INDIA		
6.76.6	H GURU INSTRUMENTS(SOUTH INDIA)PVT. LTD	INDIA		
6.76.7	H.GURU INDUSTRIES	INDIA		
6.76.8	WALCHANDNAGAR INDUSTRIES LTD(TIWAC DIVN)	INDIA		
6.76.9	WIKA INSTRUMENTS INDIA PVT LTD	INDIA		
6.76.10	BAUMER BOURDON HAENNI SAS	INDIA		
6.76.11	THERMAL INSTRUMENTS INDIA PVT LTD	INDIA		
<b>6.77</b>	<b>VARIABLE AREA FLOW METERS(LT)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.77.1	ABB AUTOMATION PRODUCTS GMBH / ABB LTD	INDIA		
6.77.2	ALFLOW GLASS EQUIPMENTS	INDIA		
6.77.3	BROOKS INSTRUMENT	INDIA		
6.77.4	EUREKA INDUSTRIAL EQUIPMENTS (P) LTD.	INDIA		
6.77.5	HEINRICHS MESSTECHNIK GMBH	INDIA		
6.77.6	INSTRUMENTATION ENGINEERS PVT. LTD.	INDIA		
6.77.7	KROHNE MARSHALL PVT. LTD	INDIA		
6.77.8	PLACKA INSTRUMENTS INDIA P LTD	INDIA		
6.77.9	YOKOGAWA INDIA LIMITED	INDIA		
6.77.10	EMERSON PROCESS MANAGEMENT INDIA PVT LTD	INDIA		
6.77.11	ROTA YOKOGAWA GMBH & CO. KG	INDIA		
6.77.12	CHEMTROLS INDUSTRIES LTD	INDIA		
<b>6.78</b>	<b>MAGNETIC FLOW METERS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.78.1	ABB AUTOMATION PRODUCTS GMBH / ABB LTD	INDIA		
6.78.2	EMERSON PROCESS MANAGEMENT INDIA PVT LTD	INDIA		
6.78.3	ENDRESS+HAUSER FLOWTEC (I) PVT. LTD.	INDIA		
6.78.4	INSTRUMENTATION ENGINEERS PVT. LTD.	INDIA		
6.78.5	KROHNE MARSHALL PVT. LTD	INDIA		
6.78.6	YOKOGAWA INDIA LIMITED	INDIA		
6.78.7	ENDRESS+HAUSER (I) PVT. LTD	INDIA		
<b>6.79</b>	<b>TERMINAL AUTOMATION SYSTEM</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.79.1	ADVANCED SYSTEK PVT LTD.	INDIA		
6.79.2	EMERSON PROCESS MANAGEMENT INDIA PVT LTD	INDIA		
6.79.3	HONEYWELL AUTOMATION INDIA LTD.	INDIA		
6.79.4	LARSEN & TOUBRO LTD-MAHAPE	INDIA		
6.79.5	CHEMTROLS INDUSTRIES LTD	INDIA		
6.79.6	CHEMTROLS SAMIL (INDIA) PVT LTD (Old Name: CHEMTROLS INDUSTRIES LTD)	INDIA		
<b>6.80</b>	<b>POSITIVE DISPLACEMENT METERS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.80.1	CAMERON LTD. (Group of Schlumberger Ltd)	INDIA		
6.80.2	IDEX FLUID & METERING P.LTD	INDIA		
6.80.3	TELTECH INSTRUMENTATION PVT.LTD.	INDIA		
6.80.4	TOSHNIWAL HYVAC PVT. LTD.	INDIA		
<b>6.81</b>	<b>ULTRASONIC FLOW METER</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.81.1	CAMERON LTD. (Group of Schlumberger Ltd)	INDIA		
6.81.2	DANIEL MEASUREMENT SOLUTIONS PVT LTD (EMERSON)	INDIA		
6.81.3	ELSTER-INSTROMET INDIA PVT LTD (HONEYWELL)	INDIA		
6.81.4	ENDRESS+HAUSER FLOWTEC (I) PVT. LTD.	INDIA		
6.81.5	KROHNE MARSHALL PVT. LTD	INDIA		
6.81.6	RMG REGEL+MESSTECHNIK GMBH	INDIA		
6.81.7	SICK AG	INDIA		
6.81.8	THERMO FISHER SCIENTIFIC	INDIA		
6.81.9	GE INDIA INDUSTRIAL PVT LTD	INDIA		
6.81.10	ENDRESS+HAUSER (I) PVT. LTD.	INDIA		
<b>6.82</b>	<b>VORTEX FLOW METER</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.82.1	ABB AUTOMATION PRODUCTS GMBH / ABB LTD	INDIA		
6.82.2	EMERSON PROCESS MANAGEMENT INDIA PVT LTD	INDIA		
6.82.3	ENDRESS+HAUSER FLOWTEC (I) PVT. LTD.	INDIA		
6.82.4	KROHNE MARSHALL PVT. LTD	INDIA		
6.82.5	RMG REGEL+MESSTECHNIK GMBH	INDIA		
6.82.6	ENDRESS+HAUSER (I) PVT. LTD	INDIA		
6.82.7	YOKOGAWA INDIA LTD	INDIA		
<b>6.83</b>	<b>TURBINE FLOW METERS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.83.1	CAMERON LTD. (Group of Schlumberger Ltd)	INDIA		
6.83.2	DANIEL MEASUREMENT SOLUTIONS PVT LTD (EMERSON)	INDIA		
6.83.3	ELSTER-INSTROMET INDIA PVT LTD (HONEYWELL)	INDIA		
6.83.4	RMG REGEL+MESSTECHNIK GMBH	INDIA		
6.83.5	ROCKWIN FLOWMETER INDIA (P) LTD	INDIA		
6.83.6	THERMO FISHER SCIENTIFIC	INDIA		
<b>6.84</b>	<b>MASS FLOW METERS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.84.1	ABB AUTOMATION PRODUCTS GMBH	INDIA		
6.84.2	BROOKS INSTRUMENT	INDIA		
6.84.3	EMERSON PROCESS MANAGEMENT INDIA PVT LTD	INDIA		
6.84.4	ENDRESS + HAUSER FLOWTEC (INDIA) PVT LTD	INDIA		
6.84.5	KROHNE MARSHALL PVT. LTD	INDIA		



MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
6.84.6	KURZ INSTRUMENTS INC	INDIA		
6.84.7	MAGNETROL INTERNATIONAL N.V	INDIA		
6.84.8	RHEONIK MESSGERATE GMBH	INDIA		
6.84.9	YOKOGAWA INDIA LIMITED	INDIA		
6.84.10	ROTA YOKOGAWA GMBH & CO. KG	INDIA		
6.84.11	ENDRESS+HAUSER (I) PVT. LTD.	INDIA		
<b>6.85</b>	<b>GAUGE GLASSES &amp; COCKS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.85.1	BLISS ANAND PVT LTD	INDIA		
6.85.2	CESARE BONNETTI S.P.A.	INDIA		
6.85.3	CHEMTROLS SAMIL (INDIA) PVT LTD	INDIA		
6.85.4	GAUGES BOURDON (I) PVT LTD (GEN. INST.)	INDIA		
6.85.5	LEVCON INSTRUMENTS PVT LTD	INDIA		
6.85.6	NISAN SCIENTIFIC PROCESS EQUIP. P LTD	INDIA		
6.85.7	PRATOLINA INSTRUMENTS PVT LTD	INDIA		
6.85.8	PUNE TECHTROL PVT LTD	INDIA		
6.85.9	SIGMA INSTRUMENTS CO	INDIA		
6.85.10	ASIAN INDUSTRIAL VALVES & INSTRUMENTS	INDIA		
6.85.11	TECHNOMATIC INDIA PVT LTD	INDIA		
<b>6.86</b>	<b>DRUM LEVEL INSTRUMENTS (ELECTRONIC)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.86.1	CESARE BONNETTI S.P.A.	INDIA		
6.86.2	MOBREY LTD	INDIA		
6.86.3	YARWAY CORPORATION	INDIA		
6.86.4	CESARE BONNETTI INDIA PVT LTD	INDIA		
<b>6.87</b>	<b>DRUM LEVEL INSTRUMENTS (BI-COLOUR GAUGE)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.87.1	CESARE BONNETTI S.P.A.	INDIA		
6.87.2	CESARE BONNETTI INDIA PVT LTD	INDIA		
<b>6.88</b>	<b>TANK LEVEL INSTRUMENTS (FLOAT OPERATED)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.88.1	ENDRESS+HAUSER YAMANASHI CO. LTD.	INDIA		
6.88.2	ENRAF B.V. (GR. COMPANY OF HONEYWELL)	INDIA		
6.88.3	NIVO CONTROLS PVT LTD	INDIA		
6.88.4	SBEM PVT LTD	INDIA		
6.88.5	SIGMA INSTRUMENTS CO	INDIA		
6.88.6	EMERSON PROCESS MANAGEMENT	INDIA		
<b>6.89</b>	<b>MAGNETIC LEVEL INSTRUMENTS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.89.1	ABB INC / ABB LTD	INDIA		
6.89.2	BLISS ANAND PVT LTD	INDIA		
6.89.3	CESARE BONNETTI S.P.A.	INDIA		
6.89.4	GAUGES BOURDON (I) PVT LTD (GEN. INST.)	INDIA		
6.89.5	KROHNE MARSHALL PVT. LTD	INDIA		
6.89.6	LEVCON INSTRUMENTS PVT LTD	INDIA		
6.89.7	MAGNETROL INTERNATIONAL N.V	INDIA		
6.89.8	PRATOLINA INSTRUMENTS PVT LTD	INDIA		
6.89.9	PUNE TECHTROL PVT LTD	INDIA		
6.89.10	SHRIDHAN AUTOMATION PVT LTD	INDIA		
6.89.11	SIGMA INSTRUMENTS CO	INDIA		
6.89.12	CHEMTROLS INDUSTRIES LTD	INDIA		
6.89.13	CHEMTROLS SAMIL (INDIA) PVT LTD (Old Name: CHEMTROLS INDUSTRIES LTD)	INDIA		
6.89.14	TECHNOMATIC INDIA PVT LTD	INDIA		
6.89.15	VEGA GRIESHABER KG	INDIA		
6.89.16	CESARE BONNETTI INDIA PVT LTD	INDIA		
<b>6.90</b>	<b>SPL. LEVEL INSTRUMENTS-GUIDED WAVE RADAR</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.90.1	ABB INC / ABB LTD	INDIA		
6.90.2	EMERSON PROCESS MANAGEMENT INDIA PVT LTD	INDIA		
6.90.3	ENDRESS+HAUSER (I) AUTO. INSTR. PVT. LTD	INDIA		
6.90.4	KROHNE MARSHALL PVT. LTD	INDIA		
6.90.5	MAGNETROL INTERNATIONAL N.V	INDIA		
6.90.6	VEGA GRIESHABER KG	INDIA		
<b>6.91</b>	<b>TANK FARM MANAGEMENT SYSTEM</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.91.1	ENDRESS+HAUSER (I) AUTO. INSTR. PVT. LTD	INDIA		
6.91.2	ENRAF B.V. (GR. COMPANY OF HONEYWELL)	INDIA		
6.91.3	ROSEMOUNT TANK RADAR AB (EMERSON PROCESS MANAGEMENT)	INDIA		
6.91.4	SBEM PVT LTD	INDIA		
6.91.5	VEGA GRIESHABER KG	INDIA		
6.91.6	ENDRESS+HAUSER (I) PVT. LTD.	INDIA		
<b>6.92</b>	<b>TANK LEVEL INSTRUMENT (SERVO TYPE)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.92.1	ENDRESS+HAUSER (I) PVT. LTD.	INDIA		
6.92.2	ENRAF B.V. (GR. COMPANY OF HONEYWELL)	INDIA		
6.92.3	SBEM PVT LTD	INDIA		
6.92.4	ENDRESS+HAUSER YAMANASHI CO. LTD.	INDIA		
<b>6.93</b>	<b>SPECIAL LEVEL INSTRUMENTS (RF TYPE)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.93.1	ABB INC / ABB LTD	INDIA		
6.93.2	AMETEK DREXELBROOK	INDIA		
6.93.3	ENDRESS+HAUSER (I) PVT. LTD.	INDIA		
6.93.4	MAGNETROL INTERNATIONAL N.V	INDIA		
6.93.5	MOBREY LTD	INDIA		
<b>6.94</b>	<b>SPECIAL LEVEL INSTRUMENTS (CAP.&amp; COND.)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.94.1	AMETEK DREXELBROOK	INDIA		
6.94.2	ENDRESS+HAUSER (I) PVT. LTD.	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
6.94.3	MAGNETROL INTERNATIONAL N.V	INDIA		
6.94.4	MOBREY LTD	INDIA		
6.94.5	SBEM PVT LTD	INDIA		
6.94.6	VEGA GRIESHABER KG	INDIA		
6.94.7	YARWAY CORPORATION	INDIA		
6.94.8	SAPCON INSTRUMENTS PVT. LIMITED	INDIA		
<b>6.95</b>	<b>NUCLEONIC LEVEL INSTRUMENTS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.95.1	ENDRESS+HAUSER (I) PVT. LTD.	INDIA		
6.95.2	THERMO FISHER SCIENTIFIC	INDIA		
6.95.3	TRACERCO LTD	INDIA		
<b>6.96</b>	<b>CLOSED CIRCUIT TV</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.96.1	COMMTTEL NETWORKS PVT LTD	INDIA		
6.96.2	ELECTRONIC CORPORATION OF INDIA LTD.	INDIA		
6.96.3	HONEYWELL AUTOMATION INDIA LTD.	INDIA		
6.96.4	NELCO LTD	INDIA		
6.96.5	PELCO	INDIA		
6.96.6	PHILIPS	INDIA		
6.96.7	SECURITY VISION	INDIA		
6.96.8	TRANSIT ELECTRONICS PVT. LTD.	INDIA		
6.96.9	DATALESS INFORMATION TECHNOLOGIES LTD	INDIA		
<b>6.97</b>	<b>FIELD INSTRUMENTS/TRANSMITTERS (P,DP,F,L,T,TD)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.97.1	ABB INDIA LTD (BANGALORE)	INDIA		
6.97.2	EMERSON PROCESS MANAGEMENT INDIA PVT LTD	INDIA		
6.97.3	ENDRESS + HAUSER INDIA PVT LTD	INDIA		
6.97.4	FUJI ELECTRIC SYSTEMS CO. LTD/FUJI ELECTRIC INDIA PVT LTD	INDIA		
6.97.5	INVENSYS INDIA PRIVATE LIMITED	INDIA		
6.97.6	YOKOGAWA INDIA LIMITED	INDIA		
6.97.7	HONEYWELL AUTOMATION INDIA LIMITED	INDIA		
6.97.8	ENDRESS + HAUSER WETZER INDIA PVT LTD	INDIA		
6.97.9	SCHNEIDER ELECTRIC SYSTEMS INDIA PRIVATE LIMITED	INDIA		
6.97.10	ABB AUTOMATION PRODUCTS GMBH	INDIA		
<b>6.98</b>	<b>TANK LEVEL INSTRUMENT (RADAR,ULTRASONIC)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.98.1	EMERSON PROCESS MANAGEMENT INDIA PVT LTD	INDIA		
6.98.2	ENDRESS+HAUSER (I) AUTO. INSTR. PVT. LTD	INDIA		
6.98.3	ENRAF B.V. (GR. COMPANY OF HONEYWELL)	INDIA		
6.98.4	KROHNE MARSHALL PVT. LTD	INDIA		
6.98.5	MAGNETROL INTERNATIONAL N.V	INDIA		
6.98.6	MOBREY LTD	INDIA		
6.98.7	ROSEMOUNT TANK RADAR AB (EMERSON PROCESS MANAGEMENT)	INDIA		
6.98.8	SIEMENS AG	INDIA		
6.98.9	VEGA GRIESHABER KG	INDIA		
6.98.10	VEGA INDIA LEVEL AND PRESSURE MEASUREMENT PVT LTD	INDIA		
6.98.11	HONEYWELL AUTOMATION	INDIA		
<b>6.99</b>	<b>SPEED TANSMITTERS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.99.1	ASEA BROWN BOVERY LTD (ABB LTD)	INDIA		
6.99.2	HANS TURCK GMBH & CO. KG	INDIA		
6.99.3	PEPPERL + FUCHS GMBH	INDIA		
<b>6.100</b>	<b>CONTROL PANEL &amp; ACCESSORIES</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.100.1	ACCUSONIC CONTROLS PVT LTD	INDIA		
6.100.2	CONTROL SYSTEMS ENGINEERS	INDIA		
6.100.3	ELECTRONIC CORPORATION OF INDIA LTD.	INDIA		
6.100.4	ELECTRONIC INSTRMNTATION & CONTROL P LTD	INDIA		
6.100.5	INDUSTRIAL CONTROLS & APPLIANCES PVT LTD	INDIA		
6.100.6	INSTRUMENTATION LTD	INDIA		
6.100.7	IRIS AUTOMATION PVT LTD	INDIA		
6.100.8	POSITRONICS PVT LTD	INDIA		
6.100.9	PRIMA AUTOMATION INDIA PVT LTD	INDIA		
6.100.10	PYROTECH ELECTRONICS PVT LTD	INDIA		
6.100.11	RADHA KRISHNA CONTROLS	INDIA		
<b>6.101</b>	<b>PREFABRICATED INSTRUMENT HOOKUPS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.101.1	ASTEC VALVES & FITTINGS PVT. LTD.	INDIA		
6.101.2	COMFIT & VALVES PVT. LTD.	INDIA		
6.101.3	EMERSON PROCESS MANAGEMENT INDIA PVT LTD	INDIA		
6.101.4	FLUID CONTROLS PVT LTD	INDIA		
6.101.5	HONEYWELL AUTOMATION INDIA LTD.	INDIA		
<b>6.102</b>	<b>SP. CONTROL VALVE ( KNIFE GATE)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.102.1	ORBINOX INDIA PVT. LTD	INDIA		
6.102.2	PENTAIR VALVES & CONTROLS INDIA PVT LTD	INDIA		
6.102.3	DRESSER VALVES	INDIA		
6.102.4	EMERSON PROCESS MANAGEMENT INDIA PVT LTD	INDIA		
6.102.5	VELAN ENGINEERING	INDIA		
<b>6.103</b>	<b>FIRE PROTECTION SYSTEM (VALVES &amp; ACC.)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.103.1	MBM AUTOMATION AND ROBOTICS	INDIA		
6.103.2	SUMMIT TECHNODYNE PVT. LTD.	INDIA		
<b>6.104</b>	<b>ANALYSER-DENSITY/SP.GRAVITY(V.CYLNDR.CORLIS)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.104.1	EMERSON PROCESS MANAGEMENT INDIA PVT LTD	INDIA		
6.104.2	ENDRESS+HAUSER (I) PVT. LTD.	INDIA		
6.104.3	KROHNE MARSHALL PVT. LTD	INDIA		
6.104.4	MOBREY LTD	INDIA		
6.104.5	THERMO FISHER SCIENTIFIC	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
6.104.6	YOKOGAWA INDIA LIMITED	INDIA		
<b>6.105</b>	<b>ANALYSER (AIR DEMAND/TOTAL SULPHUR)</b>			
<b>6.106</b>	<b>AVERAGING PITOT TUBES</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.106.1	EMERSON PROCESS MANAGEMENT INDIA PVT LTD	INDIA		
6.106.2	MICRO PRECISION PRODUCTS PVT LTD	INDIA		
6.106.3	MINCO (INDIA) PVT LTD (GEN. INST.)	INDIA		
6.106.4	STAR-MECH CONTROLS (INDIA) PVT LTD	INDIA		
6.106.5	THERMO FISHER SCIENTIFIC	INDIA		
6.106.6	VERIS INC.	INDIA		
<b>6.107</b>	<b>ANALYSERS (HYDROGEN SULPHIDE)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.107.1	AMETEK	INDIA		
6.107.2	SICK AG	INDIA		
6.107.3	THERMO FISHER SCIENTIFIC	INDIA		
<b>6.108</b>	<b>VISCOSITY METER</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.108.1	MOBREY LTD	INDIA		
6.108.2	ABB INDIA LTD	INDIA		
6.108.3	EMERSON PROCESS MANAGEMENT INDIA PVT. LTD.	INDIA		
6.108.4	PAC LP	INDIA		
6.108.5	AMETEK INSTRUMENTS INDIA PVT. LTD.	INDIA		
<b>6.109</b>	<b>RUPTURE DISCS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.109.1	BS & B SAFETY SYSTEMS (INDIA) LTD	INDIA		
6.109.2	FIKE CORPORATION-USA	INDIA		
<b>6.110</b>	<b>METER PROVERS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.110.1	DANIEL MEASUREMENT SOLUTIONS PVT LTD (EMERSON)	INDIA		
6.110.2	EMC MEASUREMENT SOLUTION	INDIA		
<b>6.111</b>	<b>GAS PRESSURE REDUCING SKIDS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.111.1	AUTOMETERS ENERGITEC LIMITED	INDIA		
6.111.2	DANIEL MEASUREMENT SOLUTIONS PVT LTD (EMERSON)	INDIA		
6.111.3	ELSTER-INSTROMET INDIA PVT LTD (HONEYWELL)	INDIA		
6.111.4	MULTITEX FILTRATION ENGINEERS LTD.	INDIA		
6.111.5	NIRMAL INDUSTRIAL CONTROL PVT. LTD.	INDIA		
6.111.6	RMG REGEL+MESSTECHNIK GMBH	INDIA		
6.111.7	ROCKWIN FLOWMETER INDIA (P) LTD	INDIA		
6.111.8	CHEMTROLS INDUSTRIES LTD	INDIA		
<b>6.112</b>	<b>GAS METERING SYSTEM (ULTRASONIC)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.112.1	DANIEL MEASUREMENT SOLUTIONS PVT LTD (EMERSON)	INDIA		
6.112.2	ELSTER-INSTROMET INDIA PVT LTD (HONEYWELL)	INDIA		
6.112.3	NIRMAL INDUSTRIAL CONTROL PVT. LTD.	INDIA		
6.112.4	RMG REGEL+MESSTECHNIK GMBH	INDIA		
6.112.5	CHEMTROLS INDUSTRIES LTD	INDIA		
<b>6.113</b>	<b>GAS METERING SYSTEM (TURBINE)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.113.1	AUTOMETERS ENERGITEC LIMITED	INDIA		
6.113.2	DANIEL MEASUREMENT SOLUTIONS PVT LTD (EMERSON)	INDIA		
6.113.3	ELSTER-INSTROMET INDIA PVT LTD (HONEYWELL)	INDIA		
6.113.4	NIRMAL INDUSTRIAL CONTROL PVT. LTD.	INDIA		
6.113.5	RMG REGEL+MESSTECHNIK GMBH	INDIA		
6.113.6	ROCKWIN FLOWMETER INDIA (P) LTD	INDIA		
6.113.7	CHEMTROLS INDUSTRIES LTD	INDIA		
<b>6.114</b>	<b>GAS METERING SYSTEM -DUAL CHAMBR ORIFICE</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.114.1	CAMERON LTD. (Group of Schlumberger Ltd)	INDIA		
6.114.2	DANIEL MEASUREMENT SOLUTIONS PVT LTD (EMERSON)	INDIA		
6.114.3	FMC MEASUREMENT	INDIA		
<b>6.115</b>	<b>LIQUID METERING SYSTEM (ULTRASONIC)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.115.1	DANIEL MEASUREMENT SOLUTIONS PVT LTD (EMERSON)	INDIA		
6.115.2	KROHNE MARSHALL PVT. LTD	INDIA		
<b>6.116</b>	<b>LIQUID METERING SYSTEM (TURBINE)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.116.1	CAMERON LTD. (Group of Schlumberger Ltd)	INDIA		
6.116.2	DANIEL MEASUREMENT SOLUTIONS PVT LTD (EMERSON)	INDIA		
6.116.3	ROCKWIN FLOWMETER INDIA (P) LTD	INDIA		
6.116.4	THERMO FISHER SCIENTIFIC	INDIA		
<b>6.117</b>	<b>LIQUID METERING SYSTEM (P D METERS)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.117.1	CAMERON LTD. (Group of Schlumberger Ltd)	INDIA		
<b>6.118</b>	<b>LIQUID METERING SYSTEM (MASS FLOW METER)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.118.1	ADVANCE SYSTEK	INDIA		
6.118.2	CHEMTROL INDUSTRIES LTD.	INDIA		
6.118.3	DANIEL MEASUREMENT SOLUTIONS PVT LTD (EMERSON)	INDIA		
6.118.4	FMC MEASUREMENT	INDIA		
6.118.5	HONEYWELL	INDIA		
6.118.6	RHEONIK MESSGERATE GMBH	INDIA		
<b>6.119</b>	<b>DISPLACER LEVEL INSTRUMENTS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.119.1	BAKER HUGHES (GE OIL & GAS INDIA PVT LTD)	INDIA		
6.119.2	EMERSON PROCESS MANGMNT CHENNAI PVT. LTD	INDIA		
6.119.3	FOXBORO ECKARDT GMBH (SCHNEIDER)	INDIA		
6.119.4	IINVENSYS INDIA PRIVATE LIMITED (SCHNEIDER ELECTRIC SYSTEMS INDIA PRIVATE LIMITED)	INDIA		
6.119.5	CHEMTROLS INDUSTRIES LTD	INDIA		
6.119.6	DRESSER PRODUITS INDUSTRIELS	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
6.119.7	DRESSER VALVE INDIA PVT LTD	INDIA		
<b>6.120</b>	<b>DISTRIBUTED CONTROL SYSTEMS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.120.1	ABB INDIA LTD (BANGALORE)	INDIA		
6.120.2	BHEL (For Power Plants)	INDIA		
6.120.3	EMERSON PROCESS MANAGEMENT INDIA PVT LTD	INDIA		
6.120.4	HONEYWELL AUTOMATION INDIA LTD.	INDIA		
6.120.5	INVENSYS INDIA PRIVATE LIMITED (SCHNEIDER)	INDIA		
6.120.6	SCHNEIDER ELECTRIC SYSTEMS INDIA PVT. LTD.	INDIA		
6.120.7	SIEMENS LTD (FOR NON FOUNDATION FIELD BUS SYSTEM)	INDIA		
6.120.8	YOKOGAWA INDIA LIMITED	INDIA		
<b>6.121</b>	<b>TELEPHONE AND PAGING SYSTEMS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.121.1	ARMTEL LIMITED	INDIA		
6.121.2	DEE EM SYSTEMS	INDIA		
6.121.3	FIBCOM INDIA LIMITED	INDIA		
6.121.4	INDUSTRONIC IND.-ELEC.GMBH&CO.KG	INDIA		
6.121.5	LARAON ENGINEERS & CONSULTANTS (NEUMAN)	INDIA		
6.121.6	PHILIPS	INDIA		
6.121.7	SIEMENS (UNIFY)	INDIA		
6.121.8	AVAYA GLOBAL CONNECT	INDIA		
6.121.9	AGC NETWORKS LTD	INDIA		
6.121.10	BPL SYSTEMS AND PROJECTS LTD	INDIA		
<b>6.122</b>	<b>FOUNDATION FIELD BUS (FF JB'S)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.122.1	MTL INDIA	INDIA		
6.122.2	P&F	INDIA		
6.122.3	R STAHL	INDIA		
<b>6.123</b>	<b>JUNCTION BOXES (Flame Proof)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.123.1	BALIGA LIGHTNING	INDIA		
6.123.2	FCG FLAME PROOF CONTROL GEARS	INDIA		
6.123.3	FCG POWER INDUSTRIES PVT LTD	INDIA		
6.123.4	FLAMEPROOF EQUIPMENTS PVT LTD	INDIA		
6.123.5	FLEXPRO ELECTRICALS	INDIA		
6.123.6	KAYSONS TECHNO EQUIPMENT P LTD.	INDIA		
6.123.7	PETROLEUM SAFETY PRODUCTS IND. PVT. LTD.	INDIA		
6.123.8	SUDHIR SWITCHGEARS PVT LTD	INDIA		
<b>6.124</b>	<b>FLAME SCANNERS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.124.1	DURAG	INDIA		
6.124.2	HONEYWELL	INDIA		
<b>6.125</b>	<b>PLC CABINETS / LOCAL CONTROL PANEL</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.125.1	BASE AUTOMATION INDIA	INDIA		
6.125.2	INDUSTRIAL CONTROL & APPLIANCES	INDIA		
6.125.3	MEGATECH CONTROLS	INDIA		
6.125.4	POSITRONICS PVT. LTD	INDIA		
6.125.5	PRIMA AUTOMATION INDIA PVT LTD	INDIA		
6.125.6	PYROTECH ELECTRONICS PVT LTD	INDIA		
6.125.7	RITTAL	INDIA		
<b>6.126</b>	<b>OPACITY ANALYSERS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.126.1	CHEMTROLS INDUSTRIES LTD (SICK Germany)	INDIA		
<b>6.127</b>	<b>THERMAL MASS FLOWMETERS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.127.1	EMERSON PROCESS MGMT	INDIA		
6.127.2	FLUID COMPONENTS INTL	INDIA		
6.127.3	GE SENSING	INDIA		
6.127.4	KURZ INSTRUMENTS INC	INDIA		
<b>6.128</b>	<b>MCT BLOCKS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.128.1	MCT BRATTBERG	INDIA		
6.128.2	ROXTEC	INDIA		
6.128.3	HILTI INDIA	INDIA		
6.128.4	DELSEAL INDIA PVT. LTD.	INDIA		
<b>6.129</b>	<b>BARRIERS (IS) / BARRIERS (FF)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.129.1	MTL	INDIA		
6.129.2	P & F	INDIA		
<b>6.130</b>	<b>BEACONS / HOOTERS/ MCP</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.130.1	BALIGA LIGHTING EQUIPMENT PVT LTD	INDIA		
6.130.2	CAEG FCG	INDIA		
6.130.3	EX PROTECTA	INDIA		
6.130.4	FLAMEPROOF EQUIPMENT PVT. LTD.	INDIA		
6.130.5	FLEXPRO ELECTRICALS	INDIA		
<b>6.131</b>	<b>AIR FILTER REGULATORS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.131.1	DONALDSON (INDIA)	INDIA		
6.131.2	MARSH BELLOFRAM	INDIA		
6.131.3	PALL	INDIA		
6.131.4	PLACKA INSTRUMENTS INDIA P LTD	INDIA		
6.131.5	SCHRADER DUNCAN LIMITED	INDIA		
6.131.6	SHAVO NORGREN (I) PVT LTD	INDIA		
6.131.7	DIVYA CONTROL ELEMENTS PVT LTD	INDIA		
6.131.8	JANATICS INDIA PVT LTD	INDIA		
6.131.9	SHAH PNEUMATICS	INDIA		
6.131.10	VELJAN HYDRAIR PVT LTD	INDIA		
6.131.11	JRU	INDIA		
6.131.12	ABB LTD.	INDIA		



MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
6.131.13	FISHER SANMAR LIMITED	INDIA		
<b>6.132</b>	<b>ACCESS CONTROL SYSTEM</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.132.1	ALE INDIA PVT. LTD.	INDIA		
6.132.2	ASCENT NETWORKS PRIVATE LIMITED	INDIA		
6.132.3	BOSCH LIMITED	INDIA		
6.132.4	COMMTEL NETWORKS PVT. LIMITED	INDIA		
<b>6.133</b>	<b>ANALYSER SHELTER</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.133.1	ABB INDIA LTD	INDIA		
6.133.2	AXIS SOLUTIONS PVT. LTD.	INDIA		
6.133.3	EMERSON PROCESS MANAGEMENT INDIA PVT LTD	INDIA		
6.133.4	PYROTECH ELECTRONICS PVT LTD	INDIA		
6.133.5	BARTEC INDIA PRIVATE LIMITED (BETTEC BENKE GMBH)	INDIA		
6.133.6	ADAGE AUTOMATION PVT. LTD. (Siemens)	INDIA		
6.133.7	YOKOGAWA INDIA LIMITED	INDIA		
6.133.8	CHEMTROLS INDUSTRIES LTD	INDIA		
<b>6.134</b>	<b>LOOP POWERED INDICATORS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.134.1	EMERSON PROCESS MANAGEMENT INDIA PVT LTD	INDIA		
6.134.2	ENDRESS+HAUSER WETZER GMBH+ CO.KG	INDIA		
6.134.3	HONEYWELL AUTOMATION INDIA LTD	INDIA		
6.134.4	INVENSYS INDIA PVT LTD (SCHNEIDER ELECTRIC INDIA PVT. LTD.)	INDIA		
6.134.5	MTL INSTRUMENTS PVT LTD	INDIA		
6.134.6	YOKOGAWA INDIA LIMITED	INDIA		
6.134.7	ABB	INDIA		
<b>6.135</b>	<b>FIRE PROOFING FOR INSTRUMENT ITEMS (FOR CABLE TRAYS/DUCTS)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.135.1	LOYDS INSULATION	INDIA		
6.135.2	THERMAL CERAMICS	INDIA		
6.135.3	UNIFRAX INDIA LTD	INDIA		
<b>6.136</b>	<b>SUNSHADE FOR FIELD INSTRUMENTS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.136.1	FIBROCHEM INDUSTRIES	INDIA		
6.136.2	LOTUS FIBRE	INDIA		
<b>6.137</b>	<b>METER RUN ASSEMBLY (INTEGRAL ORIFICE)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.137.1	EMERSON	INDIA		
6.137.2	YOKOGAWA	INDIA		
<b>6.138</b>	<b>PROXIMITY TYPE LIMIT SWITCH</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.138.1	HONEYWELL INC	INDIA		
6.138.2	PEPPERL & FUCHS	INDIA		
<b>6.139</b>	<b>POSITION INDICATION SWITCHBOXES</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.139.1	FLOWSERVE	INDIA		
6.139.2	WESTLOCK	INDIA		
<b>6.140</b>	<b>TERMINAL BLOCKS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.140.1	ELEMEX	INDIA		
6.140.2	PHONIX	INDIA		
6.140.3	CONNECTWELL	INDIA		
6.140.4	WEILDMULLER	INDIA		
<b>6.141</b>	<b>CABLE TRAY</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.141.1	METALLEMS	INDIA		
6.141.2	GLOBE ELECTRIC	INDIA		
6.141.3	INDIANA	INDIA		
6.141.4	RATAN ENGINEERING	INDIA		
6.141.5	IDS COMPOSITES	INDIA		
6.141.6	NATIONAL GALVANISER	INDIA		
6.141.7	VATCO	INDIA		
6.141.8	STEELITE	INDIA		
6.141.9	INDIANA GRATINGS	INDIA		
6.141.10	DECO ENTERPRISE	INDIA		
6.141.11	PREMIER POWER PRODUCT (CAL) PVT LTD	INDIA		
6.141.12	INDIA ELECTRICALS SYNDICATE	INDIA		
6.141.13	JAMUNA METALS	INDIA		
6.141.14	UNITTECH FABRICATORS & ENGINEERS PVT LTD	INDIA		
<b>6.142</b>	<b>INSTRUMENT DB&amp;B BALL VALVES</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.142.1	ASTEC VALVES & FITTINGS PVT. LTD.	INDIA		
6.142.2	CIRCOR INSTR. TECHNOLOGIES INC	INDIA		
6.142.3	COMFIT & VALVES PVT. LTD.	INDIA		
6.142.4	PARKER HANNIFIN CORPORATION	INDIA		
6.142.5	SWAGelok CO.	INDIA		
6.142.6	HAVI ENGINEERING	INDIA		
<b>6.143</b>	<b>MOTOR OPERATED VALVES</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.143.1	L&T VALVES	INDIA		
6.143.2	CESARE BONETTI	INDIA		
6.143.3	XOMOX SANMAR LTD	INDIA		
6.143.4	ADAMS	INDIA		
6.143.5	AMPO POYAM	INDIA		
6.143.6	ADVANCE VALVES	INDIA		
6.143.7	FASANI SPA / PENTAIR	INDIA		
6.143.8	FLOWSERVE	INDIA		
<b>6.144</b>	<b>CORROSION COUPONS</b>			
<b>6.145</b>	<b>OPTICAL PYROMETERS</b>			
<b>6.146</b>	<b>SPECIAL CONTROL VALVES (AXIAL)</b>			
<b>6.147</b>	<b>SPECIAL CONTROL VALVES (PISTON)</b>			

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
<b>6.148</b>	<b>AUTOMATIC GAS SAMPLER</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.148.1	CAMERON LTD. (Group of Schlumberger Ltd)	INDIA		
<b>6.149</b>	<b>PRODUCT QUALITY ANALYSERS (RVP)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.149.1	BARTEC GMBH	INDIA		
6.149.2	ATAC	INDIA		
<b>6.150</b>	<b>TARGET FLOWMETERS</b>			
<b>6.151</b>	<b>RECEIVER INSTRUMENTS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.151.1	YOKOGAWA INDIA LIMITED	INDIA		
<b>6.152</b>	<b>INFRARED TEMP MEASUREMENT SYSTEM</b>			
<b>6.153</b>	<b>ANTI SURGE CONTROL</b>			
<b>6.154</b>	<b>SPEED GOVERNOR FOR TURBINE</b>			
<b>6.155</b>	<b>PRESSURE SWITCHES</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.155.1	ASCO JUCOMATIC LTD	INDIA		
6.155.2	BAUMER BOURDON HAENNI SAS	INDIA		
6.155.3	DAG PROCESS INSTRUMENTS PVT LTD	INDIA		
6.155.4	INDFOS INDUSTRIES LIMITED	INDIA		
6.155.5	KAUSTUBHA UDYOG	INDIA		
6.155.6	SWITZER PROCESS INSTRUMENTS PVT. LTD.	INDIA		
6.155.7	UNITED ELECTRIC CONTROLS CO	INDIA		
6.155.8	GAUGES BOURDON (I) PVT LTD (GEN. INST.)	INDIA		
<b>6.156</b>	<b>SPECIAL CONTROL VALVES ( ECC ROTARY PLUG)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.156.1	DRESSER VALVES INDIA PVT. LIMITED (GE INDIA)	INDIA		
6.156.2	EMERSON PROCESS MANGMNT CHENNAI PVT. LTD	INDIA		
6.156.3	FLOWSERVE INDIA CONTROLS PVT. LTD.	INDIA		
6.156.4	METSO AUTOMATION	INDIA		
6.156.5	SAMSON CONTROLS PVT. LIMITED	INDIA		
6.156.6	INSTRUMENTATION LTD	INDIA		
<b>6.157</b>	<b>BLENDING AUTOMATION SYSTEMS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.157.1	ABB LTD	INDIA		
6.157.2	EMERSON PROCESS MGMT	INDIA		
6.157.3	HONEYWELL AUTOMATION INDIA LTD	INDIA		
6.157.4	INVENSYS	INDIA		
6.157.5	YOKOGAWA INDIA LIMITED	INDIA		
<b>6.158</b>	<b>GAUGE GLASSES &amp; COCKS (HIGH PRESSURE SERVICES 900# &amp; ABOVE)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.158.1	CESARE BONNETTI S.P.A.	INDIA		
6.158.2	LEVCON INSTRUMENTS PVT LTD	INDIA		
6.158.3	NISAN SCIENTIFIC PROCESS EQUIP. P LTD	INDIA		
6.158.4	PUNE TECHTROL PVT LTD	INDIA		
<b>6.159</b>	<b>MAGNETIC LEVEL GAUGES (HIGH PRESSURE SERVICES 900# &amp; ABOVE)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.159.1	BLISS ANAND PVT LTD	INDIA		
6.159.2	CHEMTROLS SAMIL	INDIA		
<b>6.160</b>	<b>PORTABLE NUCLEONIC SURVEY METER (BETA-GAMMA-NEUTRON)</b>			
<b>6.161</b>	<b>SP CONTROL VALVES (ECCENTRIC DISC HI PERFORMANCE TYPE)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.161.1	GE INDIA INDUSTRIAL PVT LTD (DRESSER)	INDIA		
6.161.2	EMERSON PROCESS MGMT.	INDIA		
6.161.3	FLOWSERVE	INDIA		
6.161.4	METSO	INDIA		
6.161.5	TYCO VALVES & CONTROLS	INDIA		
6.161.6	PENTAIR VALVES & CONTROLS INDIA PVT LTD	INDIA		
<b>6.162</b>	<b>SPECIAL CONTROL VALVES (SEGMENTAL)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.162.1	GE INDIA INDUSTRIAL PVT LTD (DRESSER)	INDIA		
6.162.2	EMERSON PROCESS MGMT.	INDIA		
6.162.3	FLOWSERVE	INDIA		
6.162.4	METSO	INDIA		
6.162.5	PENTAIR VALVES & CONTROLS INDIA PVT LTD	INDIA		
6.162.6	SAMSON AG	INDIA		
<b>6.163</b>	<b>SPECIAL CONTROL VALVES (BALL CONTROL)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.163.1	FLOWSERVE INDIA CONTROL PVT LTD-BANGALORE	INDIA		
6.163.2	METSO	INDIA		
6.163.3	PENTAIR VALVES & CONTROLS INDIA PVT LTD	INDIA		
6.163.4	TYCO VALVES & CONTROLS	INDIA		
<b>6.164</b>	<b>SPECIAL CONTROL VALVES (VARIABLE CV)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.164.1	GE INDIA INDUSTRIAL PVT LTD (DRESSER)	INDIA		
6.164.2	MIL CONTROLS LIMITED	INDIA		
6.164.3	INSTRUMENTATION LTD	INDIA		
<b>6.165</b>	<b>SPECIAL CONTROL VALVES (LOW CV)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.165.1	GE INDIA INDUSTRIAL PVT LTD (DRESSER)	INDIA		
6.165.2	EMERSON PROCESS MGMT.	INDIA		
6.165.3	FLOWSERVE	INDIA		
6.165.4	INSTRUMENTATION LTD	INDIA		
6.165.5	MIL CONTROLS LIMITED	INDIA		
<b>6.166</b>	<b>SAFETY VALVE BOILER SERVICE</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.166.1	BHEL (TRICHY)	INDIA		

MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
6.166.2	INSTRUMENTATION LIMITED	INDIA		
6.166.3	TYCO SANMAR LTD	INDIA		
<b>6.167</b>	<b>INTERFACE DEVICES</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.167.1	MTL INSTRUMENTS	INDIA		
6.167.2	PEPPERL + FUCHS	INDIA		
6.168.1	AUMA INDIA PRIVATE LTD	INDIA		
6.168.2	CAIR EUROMATIC AUTOMATION PVT LTD	INDIA		
6.168.3	FLOWSERVE LIMITORQUE	INDIA		
6.168.4	LIMITORQUE INDIA LIMITED	INDIA		
6.168.5	MARSH AUTOMATION PVT. LTD.	INDIA		
6.168.6	ROTORK CONTROLS (INDIA) LTD	INDIA		
<b>6.169</b>	<b>PROCESS STREAM ANALYSERS(ELECTROCHEM-02)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.169.1	ABB LTD	INDIA		
6.169.2	EMERSON PROCESS MGMT.	INDIA		
6.169.3	GE SENSING EMEA	INDIA		
6.169.4	METTLER - TOLEDO AG	INDIA		
<b>6.170</b>	<b>ALARM PANEL / ALARM ANNUNCIATOR</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.170.1	ELECTRONIC CORPORATION OF INDIA LTD	INDIA		
6.170.2	INSTALARM INSTRUMENTS PVT LTD	INDIA		
6.170.3	MINILEC (INDIA) PVT LTD	INDIA		
6.170.4	MTL INSTRUMENTS PVT LTD	INDIA		
6.170.5	PROCON INSTRUMENTATION PVT LTD	INDIA		
6.170.6	ICA	INDIA		
6.170.7	IIC	INDIA		
<b>6.171</b>	<b>PUSH BUTTON AND INDICATING LAMPS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.171.1	C & S ELECTRIC LTD	INDIA		
6.171.2	ESSEN DEINKI	INDIA		
6.171.3	HOTLINE SWITCHGEAR & CONTROLS	INDIA		
6.171.4	LARSEN & TOUBRO LTD	INDIA		
6.171.5	PRECIFINE PRODUCTS PVT LTD	INDIA		
6.171.6	SCHNEIDER ELECTRIC INDIA PVT LTD	INDIA		
6.171.7	SHRI TULSI SWITCHGEARS PVT LTD	INDIA		
6.171.8	SIEMENS LIMITED	INDIA		
6.171.9	STANDARD ELECTRICALS LTD	INDIA		
6.171.10	IDEC-IZUMI	INDIA		
6.171.11	R. STAHL (P) LTD	INDIA		
6.171.12	TEKNIK	INDIA		
<b>6.172</b>	<b>TUBE FITTINGS (SEAL OIL, LUBE OIL, HYDROCARBON &amp; OTHER CRITICAL APPLICATIONS)</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.172.1	SWAGELOK CO.	INDIA		
6.172.2	ASTEC	INDIA		
6.172.3	EXCEL-HYDRO	INDIA		
6.172.4	ARYA CRAFTS & ENGINEERING PVT LTD	INDIA		
6.172.5	CIRCOR INSTR. TECHNOLOGIES INC- FORM.H608	INDIA		
6.172.6	COMFIT & VALVES PVT. LTD.	INDIA		
6.172.7	EXCELSIOR ENGG. WORKS	INDIA		
6.172.8	FLUID CONTROLS PVT LTD	INDIA		
6.172.9	MULTIMETAL INDUSTRIES	INDIA		
6.172.10	PANAM ENGINEERS	INDIA		
6.172.11	PRECISION ENGINEERING INDUSTRIES	INDIA		
6.172.12	PRIME ENGINEERS	INDIA		
6.172.13	RELIANCE ENGINEERING & ELECTRICALS CORPN	INDIA		
6.172.14	SEALEXCEL (INDIA) PVT. LTD.	INDIA		
6.172.15	SWASTIK ENGINEERING WORKS	INDIA		
6.172.16	TK FUJIKIN CORPORATION	INDIA		
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.173.1	MTL (6000 SERIES)	INDIA		
6.173.2	PEPPERL & FUCHS	INDIA		
<b>6.174</b>	<b>CONTROL VALVE - ANGLE TYPE</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.174.1	METSO AUTOMATION PTE LTD	INDIA		
<b>6.175</b>	<b>VP CONVERTER</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.175.1	EMERSON PROCESS MANAGEMENT INDIA PVT. LTD.	INDIA		
6.175.2	M.T.L INSTRUMENTS PVT. LTD.	INDIA		
<b>6.176</b>	<b>FLOW METER ULTRASONIC TYPE - For Flare Gas Application</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.176.1	GE SENSING	INDIA		
6.176.2	SICK AG	INDIA		
<b>6.177</b>	<b>CLAMP-ON ULTRASONIC FLOW TRANSMITTER</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.177.1	KROHNE MARSHALL PVT. LTD.	INDIA		
<b>6.178</b>	<b>INSTRUMENT VALVES &amp; MANIFOLDS FOR ANALYSERS / SAMPLING SYSTEMS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.178.1	SWAGELOK CO.	INDIA		
6.178.2	PARKER HANNIFIN CORPORATION	INDIA		
6.178.3	HOKE	INDIA		
<b>6.179</b>	<b>PRESSURE REGULATOR FOR ANALYSERS / SAMPLING SYSTEMS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.179.1	SWAGELOK CO	INDIA		
6.179.2	GO	INDIA		
6.179.3	TESCOM	INDIA		
6.179.4	PRESSURE TECH	INDIA		
<b>6.180</b>	<b>GAS CYLINDER PRESSURE REGULATOR DUAL STAGE WITH PRESSURE GAUGE &amp; SAFETY VALVE FOR ANALYSERS / SAMPLING SYSTEMS</b>			



MASTER SUPPLIER LIST (MSL)				
ITEM CATEGORY INDEX SHEET				
Sr.No	ITEM	Indian Vendors	Foreign Vendors	Total Vendors
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.180.1	GO	INDIA		
6.180.2	GCE DRUVA	INDIA		
6.180.3	INOX	INDIA		
6.180.4	BALDOTA	INDIA		
6.180.5	CP ENGG	INDIA		
<b>6.181</b>	<b>PELTIER / COMPRESSOR COOLER FOR GAS SAMPLE FOR ANALYSERS / SAMPLING SYSTEMS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.181.1	BUHLER	INDIA		
6.181.2	M&C	INDIA		
6.181.3	JCT	INDIA		
<b>6.182</b>	<b>DIAPHRAGM PUMP SINGLE / DOUBLE STAGE / HEAD PUMP FOR GAS SAMPLE FOR ANALYSERS / SAMPLING SYSTEMS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.182.1	KNF	INDIA		
6.182.2	BUHLER	INDIA		
6.182.3	M&C	INDIA		
<b>6.183</b>	<b>PURGE CONTROLLER FOR PANEL FOR ANALYSERS / SAMPLING SYSTEMS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.183.1	BARTEC	INDIA		
6.183.2	PEPPERL-FUCHS	INDIA		
<b>6.184</b>	<b>VORTEX COOLER FOR ANALYSERS FOR ANALYSERS / SAMPLING SYSTEMS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.184.1	THERMOMEGATECH	INDIA		
<b>6.185</b>	<b>FILTERS FOR ANALYSERS / SAMPLING SYSTEMS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.185.1	BLASTON	INDIA		
6.185.2	CLASSIC	INDIA		
6.185.3	HEADLINE FILTERS	INDIA		
6.185.4	GENIE MEMBRANE	INDIA		
<b>6.186</b>	<b>HOT EXTRACTION SAMPLE PROBE FOR ANALYSERS / SAMPLING SYSTEMS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.186.1	JCT	INDIA		
6.186.2	BUHLER	INDIA		
<b>6.187</b>	<b>BULK POWER SUPPLY WITH SMPS (24 V DC) FOR ANALYSERS / SAMPLING SYSTEMS</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.187.1	PHOENIX CONTACT	INDIA		
6.187.2	SIEMENS	INDIA		
6.187.3	COSEL	INDIA		
<b>6.188</b>	<b>ETHERNET SWITCHES</b>			
<b>6.189</b>	<b>HMI SOFTWARE</b>			
<b>6.190</b>	<b>ELECTROMECHANICAL RELAY</b>			
<b>A</b>	<b>INDIAN BIDDERS</b>			
6.190.1	OEN	INDIA		
6.190.2	HONEYWELL	INDIA		
6.190.3	ABB INDIA LTD (BANGALORE)	INDIA		
6.190.4	ALSTOM T & D INDIA LTD (FORMLY A347)	INDIA		
6.190.5	DANISH PRIVATE LIMITED	INDIA		
6.190.6	EASUN REYROLLE LTD	INDIA		
6.190.7	ENPRO INDUSTRIAL AUTOMATION PVT LTD	INDIA		
6.190.8	GE INDIA INDUSTRIAL PVT LTD	INDIA		
6.190.9	SIEMENS LIMITED	INDIA		
<b>6.191</b>	<b>CONDITION MONITORING SYSTEM</b>			



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## **PART II : PRICE PART**

### **PREAMBLE TO SCHEDULE OF PRICE (SOP)**

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**1.0 PREAMBLE TO SCHEDULE OF PRICE**

- 1.1 Bidder's quoted price shall be strictly as per various FORM included under Schedule of Price (SOP). Bidder shall quote LUMPSUM PRICE for entire scope of work as per provisions of the Bidding Document in FORM SP-0. This LUMPSUM PRICE may also be referred to as Total Lumpsum Price or Contract Price.
- 1.2 The above Total Lumpsum Price (Form SP-0) shall be considering Contract as "Works Contract Service".
- 1.3 Lumpsum price shall include cost of any other supplies/work(s)/Services not specifically mentioned in the Bidding Document but are necessary for the efficient, trouble free operation of the Devangonhi Petroleum Storage & Marketing Terminal, irrespective of, whether the above unspecified supplies/work(s)/services are specifically mentioned in the bidder's bid or not.
- 1.4 The price quoted shall be lumpsum price on turnkey basis. Total payments to be made to the Contractor shall be limited to lumpsum price indicated, irrespective of the progressive payments made during execution based on the split up of price.
- 1.5 Contractor shall carry out and complete entire scope of work/supplies/Services as detailed in various sections/volumes of the Bidding Document within the quoted Lumpsum Price.
- 1.6 Spares for start-up/commissioning and mandatory spares required are in CONTRACTOR's scope and are deemed to be included in their above quoted Lumpsum Price.
- 1.7 The Prices indicated in FORM SP-0 shall be final & binding and shall be considered as "Total Lumpsum Price" for complete Scope of Work..
- 1.8 It shall be the sole responsibility of the CONTRACTOR to duly observe and faithfully perform and fulfil all obligations of all laws, rules, regulations, orders and formalities during the entire period/currency of the Contract, applicable to Goods and Service Tax (GST), Customs Duty, etc. on the import, manufacture, sale and/or supply of any

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material(s)/equipment to the OWNER and faithful performance of the works contract service under the Contract. The CONTRACTOR shall keep the OWNER and its Consultant indemnified from and against any and all claims, demands, prosecutions, actions, proceedings, penalties, damages, demurrages and/or other levies whatsoever made or levied by any Court, Tribunal or the Customs or other Authorities with respect to any alleged breach, evasion or infraction of such duties, taxes, charges or levies or any breach or infraction of any applicable laws, rules, regulations, orders or formalities concerning the same and from the consequence thereof.

- 1.9 The Price of Works Contract Service shall be deemed to cover various factors including but not limited to cost of materials/equipment/Services, overheads, bidding cost, financing costs, profits, mobilization & demobilization cost etc., as applicable. Unless the scope expressly excludes certain provisions from the CONTRACTOR's scope in the Bidding document/Contract, no additional payment on any such head expressly not mentioned herein in the bidding document/contract shall be entertained on a later date.
- 1.10 Bidder shall submit their Priced Bid duly filled in with prices, stamped & signed by Bidder on each page and scanned & uploaded in the respective "PRICE BID" folder only on the e-Procurement Portal as mentioned in the ITB/NIT in the following manner:
- Total Lumpsum Price as per FORM SP-0.
- 1.11 Insurance taken by the Contractor as per provisions of the bidding document shall be included in the Lumpsum Quoted Price.
- 1.12 The unpriced commercial bid shall contain the unpriced copy of price bid format indicating "Quoted" against respective item(s) against the Form SP-0.
- 1.13 The Lumpsum quoted price shall be deemed to be inclusive of all taxes and duties, municipal taxes, statutory levies, royalty, customs duty and custom related duties, Direct tax / Income tax / Withholding tax for foreign bidders (If applicable) GST compensation cess (if applicable) irrespective of whether the same is categorically specified or not but exclusive of "Goods and Service Tax" (hereinafter callings) (i.e., IGST or CGST and SGST/UGST) applicable in case of interstate supply of intrastate supply respectively. The GST as legally leviable & payable by the Contractor under the provisions of applicable law(s) shall be reimbursed by MRPL as per contractor's GST invoice to MRPL. Prices, taxes, duties including



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GST on any transaction between contractor and sub-supplier / sub-contractor shall be included in the lumpsum price quoted by the bidder.

Kindly note that the Quoted Price shall be as per SCC Clause no 6.0 (Price, Taxes and Duties).

- 1.14 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)):
- a) The cost of all indemnities under the Contract, and insurance premiums 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.
  - b) 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.
  - c) 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 storage, security thereof, waste on materials, and return of empties and surpluses.
  - d) 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
  - e) All supervision charges, establishment's overheads, finance charges and other costs and expenses and charges to the Bidder, and the Bidders profit of and relative to the work and/or supply.
  - f) The cost of all deductions, reductions, discounts, adjustments and withholdings whatsoever under or in connection with the contract.

- 1.15 The total payment shall be deemed to include use of steel scaffolding for carrying outworks at all heights and depths and use of cranes for erection & assembly of work.

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1.16 The lumpsum prices quoted shall not be subject to escalation or increase for any reason whatsoever.

1.17 CURRENCIES OF BID AND PAYMENT

- a) Currency of Bid: Currency of Bid shall be in Indian Rupees (INR) in accordance with the provision of Instructions to Bidder (ITB).
- b) Bid Currencies once quoted shall not be allowed to change.

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**(STAMP & SIGNATURE OF BIDDER)**

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	<b>LSTK-B : CIVIL AND STRUCTURAL WORKS VOLUME I : COMMERCIAL</b>	

## **PART II : PRICE PART**

### **SCHEDULE OF PRICE (SOP)**

**Mangalore Refinery and Petrochemicals Limited**  
**(A subsidiary of Oil and Natural Gas Corporation Limited)**

*Bidder to complete all the highlighted cells before submission*

**FORM SP-0 : TOTAL LUMPSUM PRICE**

**Tender No:** 3200000490

**Tender Description :** LSTK-B PACKAGE FOR DEVANGONTHI MARKETING TERMINAL BANGALORE

**Name of Bidder :**



Sl.No.	Description	UOM	Qty	Service Tariff Code *	Unit Rate in INR	Amount in INR
1	TOTAL LUMPSUM PRICE FOR LSTK-B PACKAGE for Project Management, Detailed Engineering, 3D model, Tie in engineering/Interface & implementation, Total Procurement, Fabrication, Manufacturing, Quality Assurance, Inspection including TPI, Testing & Expediting, Supplies, Transportation, Insurance, Storage of all Equipment, Materials, items and other Construction Materials, Construction Management & Supervision, Construction, Erection and Installation, painting, Obtaining all Statutory Approvals (except for Environment Clearance which shall be obtained by OWNER), Mechanical Completion including Pre-commissioning, Preparation of O&M manuals, Commissioning and Start up assistance, Contract closure activities including Final invoice / billing and handing over the entire LSTB-B Package including spares with Final and "As Built" documentation to OWNER on single point responsibility basis (Lump Sum Turn Key - LSTK Basis), as per scope of work, terms and conditions of the LSTK-B Package- TENDER no: 3200000490.	Lump sum	1	To be quoted in EPS	To be quoted in EPS	0.00
2	<b>Total Amount (Rs.) excluding GST (FORM SP-0)</b>					0.00

3	<b>APPLICABLE amount of GST in INR</b>		0.00
4	<b>APPLICABLE GST %</b>		0.00
5	<b>Total Lumpsum Amount in INR including GST mentioned above</b>		0.00

**Notes to FORM SP-0 :**

1. The bidder shall go through the "PREAMBLE TO SCHEDULE OF LUMPSUM PRICE" of this price schedule document, tender document and quote accordingly.
2. The Lumpsum price shall include cost of all the supply items and works which are deemed to be performed, executed and supplied by the Contractor for providing the service as per specification, as stipulated in the tender document.
3. Total of Form SP-0 as per Sl No 5 above shall be considered for evaluation, subject to Techno-Commercial acceptance.
4. This Lumpsum Price is inclusive of Pre-commissioning/Commissioning Spares, Mandatory Spares, and Engineering Spares and first fill & 6 months Consumables/Catalysts/Chemicals and Operation Spares during Defect Liability Period. However, the Lumpsum Price shall be exclusive of 2 Years Recommended Spares for Operation and Maintenance required beyond the Defect Liability Period.
5. Price quoted by the bidder shall remain firm and fixed and valid until completion of the all the services as per the Contract.
6. Bidders shall clearly mention in the Technical Bid, the various applicable taxes and their rates considered, to be paid by MRPL (without mentioning the actual tax amount).
7. The Price Bid shall clearly mention the applicable tax rates and the tax amounts to be paid by MRPL. Rates of Goods and Services tax should be indicated in terms of percentage on technical bid. The rate of GST on percentage and amount shall clearly mention in the Price Bid.
8. Bidder to refer Taxes and Duties clauses of the tender before quoting.
9. The Bidder's invoice must contain the following:
  - a) HSN/SAC/STC for materials and accounting code for services.
  - b) GSTIN (GST Identification number)
10. Applicable GST as quoted shall be considered for evaluation.
11. Statutory variations on Goods and Service Tax (GST) applicable on finished goods supplied from the Contractor's works and services shall only be permissible up to contractual completion period and limited to the maximum value as indicated by the Bidder above. All other variations in GST shall be to Contractor's account.
12. In case Tax is indicated as "NIL" and if GST becomes applicable after opening of price bids, the same shall be borne by the Contractor.
13. For the purpose of statutory variation, the rates prevailing on the due date of submission of the last price bid shall be taken as the base.



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<b>A-1</b>	<b>REQUIREMENT DURING CONSTRUCTION</b>
<b>A-1.1</b>	<b>CONSTRUCTION SUPERVISION AND MANAGEMENT</b>

## MRPL Marketing Terminal Project at Devangonhi, Bangalore

**PROJECT :** Marketing Infrastructure Projects, MRPL



**OWNER :** MANGALORE REFINERY AND PETROCHEMICALS LTD

**PMC :** Nauvata Engineering Pvt. Ltd.



**JOB NO. :** JBG20005

0	05-Feb-2021	Issued for Bid	JT	ASN	ASN
Rev. No.	Date	Description	Prepared By	Checked By	Approved By



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## 1 GENERAL CONTROL AND ADMINISTRATION

### 1.1 SCOPE OF CONSTRUCTION WORK

Contractor shall be totally responsible for all Work and services related to facilitate the Construction of the Project as described in the Project Specification.

During the execution of the Work at the Site, Contractor's activities will be monitored by MRPL/PMC and any other personnel appointed by MRPL/PMC.

### 1.2 CONSTRUCTION EXECUTION PLAN (CEP)

Bidders are required to produce, and submit in their technical proposal, an outline Construction Execution Plan (CEP). Contractor will provide a detailed CEP within one month of award of contract and submit to MRPL/PMC for review. In the event of the bidder being successful the structure and contents of this CEP shall be expanded further from this proposal in the development of the detailed CEP for the project execution.

This CEP shall also identify the key critical construction strategies and key issues that will require detailed risk assessment and constructability reviews.

### 1.3 LOCAL AUTHORITY REQUIREMENTS -REGISTRATION

Contractor and its Sub-contractors shall ensure that it is properly and fully registered with the appropriate and relevant Indian authorities and government organisations for the purpose of conducting the business of contracting of construction works in India.

### 1.4 PERMITS AND GOVERNMENT INSPECTION

Contractor shall apply for and arrange the necessary field inspections and tests by the Government Inspection Authorities.

### 1.5 VISAS AND WORK PERMITS

Contractor shall make all necessary arrangements in a timely manner, and be fully responsible for the necessary passports, Indian visas and work permits for any expatriates personnel to be employed by it, its Sub-contractors and Vendors Representatives.



Contractor shall ensure that MRPL/PMC and its agents shall be saved harmless from any actions arising associated with Contractors activities. Contractor shall demonstrate to MRPL/PMC its plans and procedures to ensure compliance with all government and MRPL requirements.

### 1.6 ORGANISATION

Contractor shall establish a Site management organization with adequate authority to be responsible for all Site activities up to Provisional Acceptance.

Contractor shall appoint a Construction Manager responsible, on behalf of Contractor, for all its Site activities. Either the Construction Manager or a nominated deputy, duly approved by MRPL, shall always be present on the Site during normal working hours. Contractor shall ensure that its representatives are in attendance during any working out of normal working hours.

As far as possible such organization shall be compatible with MRPL/PMC's site organization to facilitate communication and work arrangement as far as practicable.

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Contractor shall provide MRPL/PMC with a detailed Organogram of its complete proposed Site organization, including names, terms of reference for the various job functions and their respective reporting relationships. CVs of nominees for senior positions shall be submitted to MRPL/PMC for approval. Organogram shall be presented to show the organizations during the following stages of the works:-

- Detailed design and commencement of construction
- Peak construction activity
- Mechanical installation completion and pre-commissioning

Contractor shall ensure that the numbers of its skilled Construction Supervisory Personnel are adequate in numbers and capability/qualifications to ensure effective control and coordination of all construction operations of both its own and its Sub-contractors and that they are present on the Site at all times throughout the total duration of the Project.

MRPL/PMC reserves the right to instruct Contractor to increase the levels of its and/or its Sub-contractors Supervisory Personnel in the event that either the safety, quality, or progress of the Work warrant such action to be taken.

Contractor shall ensure its Site management team, including engineering personnel who are fully able to resolve all engineering questions arising at the Site, are available at all times during the construction period and up to Provisional Acceptance.

## 1.7 PERSONNEL

Contractor shall provide all necessary management personnel, labour, Vendor specialists and Sub-contractors in adequate numbers in order to execute the Work in accordance with the Contract.

Contractor's and its Sub-contractor's personnel, both technical and direct labour, shall have all the required technical skills and qualifications required for the performance of the work to which they are assigned and shall have in their possession all licenses and certificates needed to substantiate this. MRPL/PMC reserves the right to conduct technical interviews with all personnel presented to MRPL for their acceptance.

## 1.8 PERSONNEL REGISTRATION



Once Contractor's personnel and its Sub-contractor's key personnel have been accepted by MRPL/PMC, they shall not be changed or promoted to more senior positions unless alternative persons, accepted by MRPL/PMC, are made immediately available at Site.

Contractors and Sub-contractor's supervisory staff and Vendor Representatives shall be fully conversant with the English language, both written and spoken.

Contractor shall ensure that all expatriate person(s) to be employed on the Site are registered for work in India

Contractor and its Sub-contractors shall maintain full personnel records on all persons employed on the Site.

Contractor shall issue a Daily Workforce Reports to MRPL/PMC before noon on following day. The breakdown shall be by Contractor and individual Sub- contractor, and be further divided by job position and trade.

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Contractor shall inform MRPL/PMC daily of the number of men scheduled to work overtime (divided as above) and the expected duration of the scheduled overtime. Contractor shall inform MRPL/PMC of their proposal to work any hours outside those of daylight and identify safety and supervisory personnel required to control such work. Contractor shall also identify any requirements for MRPL/PMC personnel to support and inspect such work.

## 1.9 RECRUITMENT AND TRAINING

Contractor shall maximize the use of local Indian construction labour before utilizing labour from other sources.

Contractor shall use a suitable screening method in the recruitment of all labour in order to ensure that personnel are in good health and of proper technical and skilled ability. Contractor shall keep full records of all persons screened for MRPL/PMC inspection.

Contractor shall ensure that, as a minimum, the Terms and Conditions of Employment of all persons are in full accordance with Indian Labour Law requirements.

Contractor shall ensure that it, and its Subcontractors or Partners, complies fully with Indian immigration laws for any approved foreign labour or supervision.

## 1.10 TRAINING

Contractor shall ensure that an adequate skill-training scheme is established in order to make maximum use of the local labour. Contractor shall maintain their training scheme records and shall be submitted to MRPL/PMC upon request.

Contractor shall ensure that the requirements for the safety induction and training of labour are carried out in accordance with the Safety Management System, during Construction and up to Provisional Acceptance.

Contractor shall ensure that all its, and its Sub-contractors, supervisory and direct labour to be engaged in work within existing operational facilities (e.g. piping tie-ins, civil foundations, cable laying, equipment installation) satisfy the MRPL/PMC operations procedure, permitting and safety induction requirements to do such work.

## 1.11 PERSONNEL RELATIONS



Contractor shall ensure that it and all its Sub-contractors and Vendors' Representatives maintain harmonious Labour Relations whilst on the Site. There shall also be a strict observance of a mutual understanding, between employers, that persons, still employed by one company, will not be offered employment by another company.

Contractor shall maintain close liaison with MRPL/PMC with regard to all issues, which could affect the maintenance of harmonious Labour Relations on pay, conditions and ethnic issues.

Contractor's staff shall be suitably trained and experienced in the maintenance of harmonious labour relations. Contractor shall use its best efforts to ensure that any industrial dispute within the construction work force does not cause interference with MRPL/PMC operations or other Contractor's operations

Contractor shall inform MRPL/PMC of any strikes or threatening labour disputes or disturbances, which may lead to a work stoppage or disruption.



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Contractor shall prevent any unlawful, riotous or disorderly conduct amongst its Sub-contractors or its own employees.

Contractor shall ensure that expatriate personnel do not take part in political action, or interfere in local political matters, and Contractor shall include a clause to such effect in all Subcontracts.

Contractor shall develop a mutual working relationship with the Local Community, which maintains harmonious public relations during the total period of the Contract. Contractor will be expected to ensure that the activities and the behavior of the workforce employed by itself and its subcontractors, conduct itself in a responsible and appropriate manner.

## 1.12 LOCAL CONDITION - HOLIDAYS

Contractor and its Sub-contractors shall not work on the scheduled weekly day of rest, any recognized India public holiday or outside the hours of daylight, without MRPL/PMC approval. Three days' notice is required. Contractor shall identify the work he proposes to carry out and provide sufficient safety and supervisory personnel to control the work. Contractor shall identify any support or inspection work required from MRPL/PMC.

## 2 PROJECT CONTROLS

### 2.1 CONSTRUCTION PROGRESS MONITORING AND REPORTING

Contractor is referred to Project Procedure 20005-GEN-G-DOC-9105 – Planning, Scheduling, Progress Control and Reporting.



MRPL/PMC will monitor Contractor's progress against the Schedule, advise Contractor of any factor or concerns which may have an adverse impact on the Schedule. Contractor shall recommend the appropriate corrective action to be taken, and subsequently MRPL/PMC will monitor the action taken by Contractor to ensure satisfactory progress of the Work is attained.

### 2.2 CONSTRUCTION PLANNING AND SCHEDULING

The Schedule to be submitted by Contractor for approval by MRPL/PMC shall be based on the key dates provided whilst maintaining adherence to "world class" construction safety practices. The schedule shall fully recognize the requirement to progress underground works in their logical sequence taking account of relevant excavation depths and proximity's of various underground services and piling and foundations for equipment and structures. The schedule shall also recognize the need to establish a proper erection sequence for all major/large items of equipment in regard to the confines of the project site, the need to create maximum work faces and shall be based on and shall support the principle of systems completion to facilitate timely commencement of pre-commissioning. Pre-commissioning activities scheduling shall be developed to ensure the availability of utility systems in a timely manner to facilitate the pre-commissioning of process systems and units to support the effective coordinated completion of the project and its commissioning. The Schedule shall be established early during the Engineering phase of the Project and shall detail the breakdown of tasks, their duration's, start and finish dates. Critical paths activities shall all be clearly defined. The Schedule shall be 'commissioning needs driven' at all times.

Contractor shall provide a level 3 schedule for each defined Unit clearly identifying critical path activities, shutdown and tie-in activities and erection sequence. Contractor shall provide sufficient relevant detail to form the basis of Level 4 schedules to be provided by Sub-contractors. These



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individual level 3 Unit schedules shall be summarized into an overall level 2 schedule for the Project.

Contractor shall ensure that it coordinates all construction interface activities between its various Sub-contractors and between them and its own construction activities. Contractor shall ensure that it coordinates all its Sub- contractors “Level 4” planning of all construction activities and interfaces of various/units and disciplines to ensure to the coordinated completion of individual systems.

Contractor shall make available to MRPL/PMC all Contractor’s and Sub-contractor’s Level 4 Schedules.

### 3 QUALITY MANAGEMENT

#### 3.1 QUALITY SYSTEM

Contractor shall establish a Quality Assurance and Quality Control Group within its field organization. This group shall be directly responsible to Contractor’s Corporate Quality Assurance and Manager and shall also report to the Project Director/Project Manager.

The quality control personnel shall be familiar with applicable National and International codes and standards, Indian statutory requirements and Project Specification and Standards. Contractor is required to manage and implement an overall Quality System that complies with ISO 9001: 2000.

Contractor’s site Quality Assurance personnel shall implement a comprehensive programmer of internal quality audits of site activities, including its and its Sub-contractor’s work. The audit schedule shall be provided to MRPL/PMC for its prior agreement.



Contractor shall engage either the services of an independent Consultant or use his competent in-house group to audit adherence to the agreed Project Quality Plan. Such audits will be conducted on a quarterly basis or as directed by MRPL/PMC. Any CONSULTANT shall be approved by MRPL/PMC prior to engagement of its services on the Project.

#### 3.2 CONSTRUCTION PRACTICES

Contractor shall prepare and submit for review by MRPL/PMC, all required construction procedures. Contractor’s Quality Plan for the Project shall include a complete listing of all procedures it intends to produce for proper control of the Site activities and shall ensure that the principle of risk assessment and constructability is maintained throughout the total period of the Project. All procedures developed by Contractor’s home office organization shall be reviewed by MRPL/PMC.

All Construction Procedures shall be submitted to MRPL/PMC for review at least one month prior to the commencement of the specific construction activity to which they relate.

MRPL/PMC will audit and, if applicable, reject the Work performed by Contractor, if it is not in accordance with the Project Specification and/or other Contract documents and subsequently require Contractor to achieve the required quality established for the Work.

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### 3.3 TOTAL QUALITY MANAGEMENT (TQM)

Within the Quality Management System Contractor shall identify how he proposes to implement a TQM strategy that provides the means for not only achieving the required quality but will provide continuous improvement throughout the Project.

All Contractor's quality management documents shall be available electronically for access by MRPL/PMC at any time.

### 3.4 QUALITY ASSURANCE PLAN

Contractor shall develop a Construction QA plan which shall be an integral part of the Project QA plan, and is to be issued for review within 30 days of Contract award.

### 3.5 QUALITY CONTROL PLAN

Contractor shall carry out a quality control programme during CONSTRUCTION and produce objective evidence of quality of the Work, to ensure that the Work is being executed to the Project Specifications and that the facilities shall perform entirely satisfactorily once in operation.

Contractor's Construction Quality Control Plans (QCPs), shall be separate for each major activity or/and area of the Work, and shall incorporate Inspection and Test Plans identifying all activities and shall incorporate all relevant witness and hold points, which are to be previously agreed with MRPL/PMC .

These shall include for Indian Statutory Requirements and Third Party Inspections.



Contractor shall use MRPL/PMC's or prepare a comprehensive set of Construction Quality Control Inspection and Test Check Sheets for all engineering disciplines and construction phases of the Work up to Completion, as necessary to meet the requirements needed to achieve Contract Completion . These are to be agreed with MRPL/PMC prior to use and shall be collated in separate files for each system as part of the documentation needed to be incorporated into the respective system Completion Manual and system Quality Control dossier.

Contractor shall prepare a comprehensive "punchlisting" procedure, and directives, for the process of determining completion of mechanical installation works relevant to state of readiness for the performance of testing of the installation. This shall cover civil works, structural, mechanical- static and rotating, piping, electrical, instrumentation and miscellaneous services and for establishing integrity of other components of the facility. Contractor shall demonstrate its procedure for ensuring that its Sub-contractors perform rigorous inspection and identification and correction of deficiencies prior to their submission to Contractor for performance of testing. Contractor shall further demonstrate that it has performed its inspection of the system/installation to be submitted for testing/inspection and that corrections of deficiencies have been performed prior to submission to MRPL/PMC for acceptance/inspection.

Contractor shall describe its procedure for scheduling and co-ordination of the completion of components of systems to achieve a state of readiness for pre- commissioning. Contractor shall specifically describe its proposals for ensuring coordinated progressive completion of instrumentation installation and pre-commissioning to support pre-commissioning and commissioning of processing systems pre-commissioning Construction Contracts.

Contractor shall ensure that its schedule of completion is developed with MRPL/PMC such that consistency with the overall plant commissioning is achieved.

Contractor shall develop, for MRPL/PMC's approval, the Mechanical Completion Procedure.

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## 4 CONSTRUCTION CONTRACTS

### 4.1 SUBCONTRACTS

Contractor shall submit, with its bid, its proposed Sub-contract strategy. The extent of any proposed subcontracting at all levels down to the direct labour element, shall be addressed in this Sub-contract strategy.

Contractor shall provide documentation, acceptable to MRPL/PMC, demonstrating Contractor's efforts to maximize the utilization of Indian resources in the execution of the Work and to appoint suitably qualified and skilled Indian Sub- contractors. Such documentation shall be provided with Contractors bid for MRPL/PMC review and approval and consideration in evaluation of bids.

The approval by MRPL/PMC and subsequent Contractor's use of any/all Sub- contractors does not relieve Contractor from any of its responsibilities regarding the execution of the Contract.

### 4.2 COMMON USER PLANT AND EQUIPMENT

Contractor shall propose, within his Subcontract strategy how he will appoint contracts for common use plant and equipment for all types of the construction Work and temporary facilities

Items that may be considered in such a strategy could involve but not be limited to:

- Scaffolding
- Welding machines
- Craneage
- Transport vehicles (passenger and material/equipment)
- Toilets
- Local and satellite/remote office accommodation

## 5 MATERIALS MANAGEMENT

### 5.1 VENDORS



Contractor is responsible for identifying Vendor's representatives that are required to attend the Site during the construction phase and after Final Test Certificate issue.

Contractor shall propose his strategy for Vendor representative to support construction and Pre-commissioning activities.

### 5.2 CONSTRUCTION EQUIPMENT AND MATERIALS

Contractor is responsible for all materials during receipt, custom clearance, handling, transportation, inspection, storage, preservation and installation, until Final Test Certificate.

Contractor shall inspect all materials immediately upon receipt at Site and any damage to such materials shall be recorded. Contractor shall take appropriate measures for immediate repair and/or replacement of damaged materials.

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Non-conformance of materials to the Project Specification shall be processed in accordance with a Procedure to be submitted by Contractor for MRPL/PMC acceptance, refer to Project Specs.

Only materials necessary for the execution of the Work may be present on the Site. Construction equipment and materials shall not be removed from the Site without prior written consent of MRPL/PMC. Contractor shall agree with MRPL/PMC's security personnel a system for the movement of materials and equipment in and out of the facilities.

Contractor shall propose for MRPL/PMC's approval, a fully auditable system, which shall account for all materials imported into India. Once MRPL/PMC accepts this, it shall be fully implemented by Contractor.

Any proposed Materials Tracking and Control System shall provide for, but not be limited to the following cases, and be linked to Contractor's off-site procurement centers:

Materials incorporated into the Project:

- Surplus material at Provisional Acceptance.
- Surplus material sold to MRPL/PMC.
- Surplus material re-exported by Contractor and or/its Sub-contractors.
- Surplus material otherwise disposed of by Contractor and/or its Sub- contractors.
- Scrap materials collected and disposed of on a regular basis during the period of work execution.

Contractor shall at all times strictly control the issue of materials to its Sub- contractors.

The issue of materials by Contractor to its Sub-contractors does not relieve Contractor of its obligations to ensure their proper storage in accordance with the Positive Material Identification and Materials Segregation Procedures, established for the Project.

Contractor shall be responsible for making any required provision for bonded area(s) at all ports of freight consolidation, for the receipt of imported Project materials, and shall obtain both MRPL/PMC and Indian Customs' acceptance of said areas.

Contractor shall develop a procedure in conjunction with the MRPL/PMC and the Indian Customs Authorities, for the receipt and clearance of all Project materials at Site.



### 5.3 CONTROL OF MATERIALS AT THE SITE

Contractor shall provide a computer based Materials Tracking and Control System, acceptable to MRPL/PMC, to provide continuous control of all materials from materials take-off, issue of requisitions, through to the final location of the materials on Project Site. The Material Control System at Site shall be linked electronically to Contractor offshore procurement centres.

The system shall also control surplus, overage, damage, scrap and materials discrepancies.

All imported materials shall be fully traceable for India Custom's auditing, if required. Any imported materials overages, wastage or scrap shall be disposed of in accordance with current Indian Customs Regulations. Contractor shall prepare a procedure for MRPL/PMC acceptance in this regard.

All materials control procedures and formats shall be subject to review by MRPL/PMC.

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Contractor shall issue to MRPL/PMC each month a Material Status Report. The report shall be in the format agreed with MRPL/PMC and shall cover all materials.

The Materials Status Report shall contain as a minimum the following information:

- Requisition number and Order number with latest revision number.
- Description of materials and item number.
- Planned, forecast and actual issue dates for:
  - Requisitions
  - Proposed Vendor List, being derived from MRPL/PMC Project Vendors List
  - Request for quotation
  - Receipt of quotations
  - Pre-order Evaluation Package to MRPL/PMC.
  - Pre-order Evaluation Package approved by MRPL/PMC.
  - Purchase Order
  - Vendor Data, approved MRPL/PMC.
  - Delivery Ex-Works
  - Site Receipt
- Vendor's name, country and/or origin of goods.
- Contractual delivery date.
- Vendor's latest delivery promise, last check date, method (personal visit, fax, telex, etc).
- Final Inspection Notice.
- Shipping Schedule for all materials deliveries to the Site.

Note: Part shipments shall also be shown.



The Materials Status Report shall also highlight those materials items where the forecast delivery to Site date has slipped to within four weeks of, or beyond, the required on Site date to meet Schedule requirements. Such items shall be regarded as critical.

Contractor shall supply MRPL/PMC with exception reports for critical and overdue activities concerning materials deliveries.

Materials Exception Reports shall be issued weekly.

In addition to the Materials Status Report Contractor shall issue monthly a Bulk Materials Status Report summarizing the following:

- Required bulk quantity from consolidated take-offs.
- Quantity on order
- Quantity delivered
- Quantity used

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- Storage or overage

#### 5.4 CONTROL OF MATERIALS REMOTE FROM THE SITE

If Contractor intends to undertake a part of the Work remote from the Site, it shall obtain agreement from MRPL/PMC in writing prior to such action and shall ensure full access for inspection by MRPL/PMC during all stages of the execution of such Work.

The administration, security and control of bulk materials received at the facilities and transferred for prefabrication outside these facilities shall be subject to the prior approval by MRPL/PMC of a Materials Control Procedure to define Contractor actions in regard to Security and Quality Control.

#### 5.5 MARKING OF EQUIPMENT AND MATERIALS

Contractor shall assign all materials with a relevant identification number.

All bulk materials shall also be suitably identified, in particular piping materials shall be clearly identified as to type. When divided into smaller fabricated parts, each part shall carry the required identification of spool and isometric numbers.

#### 5.6 PRESERVATION

Contractor shall preserve materials stored or standing idle prior to Ready for Start-Up in accordance with Vendor's preservation requirements. Contractor shall issue a material preservation procedure, incorporating standard preservation activities needed during construction and incorporating Vendor's requirements needed to satisfy their guarantee.

The materials preservation procedure shall be issued for MRPL/PMC's review prior to first order placement and shall be coordinated with Vendor's packaging procedures and preparation of materials for shipment requirements.

Contractor and its Sub-contractors shall take all necessary precautions to protect materials from damage by the elements, including the provision of all necessary air-conditioned storage. Dissimilar material shall be kept separate to prevent contamination.

Contractor shall ensure that it and its Sub-contractors take all necessary precautions to protect materials from damage during all construction activities.



Contractor shall ensure the inner cleanliness of all materials prior to final connections. Prefabricated piping and equipment not yet installed shall be laid down on adequate temporary supports. Adequate measures shall be taken to ensure the protection of piping and equipment from the ingress of sand and other foreign matters. All flange facings and beveled ends shall be coated with a non-drying oily film type rust preventative and subsequently protected by wooden or hard PVC covers.

The issue of materials by Contractor to its Sub-contractors does not relieve Contractor from its obligation to ensure their preservation in accordance with the Project Specification.

Attention is particularly called to the possibility of internal stress corrosion cracking of welds in stainless steel pipe stored in saliferous atmospheres. To prevent this type of cracking Contractor shall:

- Ensure the integrity of the pipe covers.



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- Store pipe in an inclined position allowing any condensation to be drained by means of a 10-mm hole drilled in the bottom edge of the lower pipe protection cap.

Large bore piping 30-inch and above shall be mechanically cleaned internally and visually inspected internally.

All pipelines shall be flushed after completion of pressure test. Contractor shall carry out chemical cleaning where required prior to Final Test Certificate in accordance with Job Procedure for Flushing and Blowing of Lines and Equipment.

Contractor shall also clean the relevant piping externally, in addition to the cleaning of sump pits, equipment, tanks, buildings, etc., to the satisfaction of MRPL/PMC's

## 6 CONSTRUCTION ENGINEERING

### 6.1 HOME OFFICE CONSTRUCTION

Contractor shall ensure that suitable construction personnel are assigned to the Project during the design phase to ensure construction strategies and constructability are effectively addressed.

Contractor shall ensure that, as a minimum, its designated Site Construction Manager and Planning Engineer are assigned full time as part of its Project management team during the initial Engineering and Procurement phase of the Contract.



### 6.2 CONSTRUCTION STRATEGIES

The construction strategy shall consider and address potential for the use of skid mounted, Vendor package units, pre-assembled heaters and boilers, prefabrication and pre-assembly of structural steelwork and the pre-dressing of columns/vessels/exchangers prior to their erection. Construction strategies shall also take account of the method of delivery of materials to the Site and the subsequent transport to the Project Site, ensuring that the principle of constructability is maintained throughout all phases of the Project.

### 6.3 CONSTRUCTABILITY

Contractor shall submit for review by MRPL/PMC, its detailed Engineering Constructability Review Procedure. This shall typically address:

- |               |  |
|---------------|--|
| Detail Design | e.g. the detailed plan for the pre-dressing of vessels, cable laying, the engineering design strategy to minimize the level of risk during construction up to Final Test Certificate. Also addresses the extent of equipment pre-assembly. |
| Plot Plan     | e.g. the adequacy of areas for access and lifting operations, identification of the routes for the movement of large materials loads around the Site, site logistics plan and the construction erection sequence on the Project Site.      |
| Review Action | e.g. regular reviews by Contractor in order to ensure that the principle of Constructability is being maintained throughout all phases of the Project.   |

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#### 6.4 RISK ASSESSMENTS

Risk Assessment methodology shall be used to identify and assess Health & Safety and Environmental Hazards during field erection and testing up to Final Test Certificate. These hazards may be identified at any stage of the project; e.g. MRPL/PMC data, existing drawings, site survey investigations, design and Constructability reviews, or information that may emerge during the construction and Pre-commissioning phases.

Once potential hazards are identified, the risk to health and safety must be assessed. The assessment shall characterize the risk in terms of severity and probability.

From the risk assessment, a method statement shall be developed which at best would eliminate the risk or as a minimum, would contain the risk to an acceptable level. If the work is similar to other work which has been assessed for risk, the original assessment may be modified to suit the specific circumstances.

All risk assessments, (together with associated detailed job specific method statements) generated throughout the duration of the Project shall be retained by:

- Contractor Construction Manager
- Contractor Safety Management
- Sub-contractors

Contractor shall carry out, during detail design phase-prior to commencement of construction operations, comprehensive risk assessments in regard to all its construction operations, and particularly in respect of those that will take place alongside existing facilities. Contractor shall ensure that the identified risks are addressed in the design so as to mitigate any impact of any adverse factors. Risk assessments shall be carried out progressively during the course of construction to address the changing phases and nature of the works.



#### 6.5 METHOD STATEMENTS AND CALCULATIONS

Detailed Method Statements shall be prepared by Contractor and/or its Sub- contractors for all work which has risks to health and safety, as determined by risk assessment. These Method Statements will describe the work procedures, sequence of operation and the controls necessary to achieve effective management risk, and efficient execution of the works.

Detailed job method statements shall be prepared for all critical tasks such as:

- Piling
- Heavy lifts
- General rigging and fitting
- Vessel entries
- Live line welding (Hot Taps)
- Excavations below 1.2 m depth
- Grating and handrail installation/removal
- Heat treatment/stress relieving
- Any erection work with specific risks



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- Work which is deemed to be novel
- Any work that involves the handling of hazardous substances

This method statement shall, among others, describe:

- The job to be undertaken
- The individual activities required to complete the job
- The sequence of the various activities in the execution of the work
- Plant, equipment, tools to be used in each activity
- Substances/chemicals to be used in each activity
- Control measures and procedures to be used for each activity
- Personal protective equipment required
- Emergency resources required, e.g. fire watchers, fire extinguishers, fire blankets
- Name of supervisor for each activity
- Name of person in overall charge of the job
- Novel procedures may require demonstration or training exercises
- Any specific known hazards to be listed (e.g. presence of asbestos, pyrophorics, contaminated soil, etc.) particular attention should be paid to refurbishment or demolition of existing plants.
- Process fluids and chemicals likely to be encountered

Method statements shall be submitted to MRPL/PMC at least fourteen (14) days prior to the anticipated commencement of the work. The method statement shall be reviewed by MRPL/PMC. Audits of method statements shall be carried out by Contractor's Safety Management Team.

Method statements shall also be submitted with the applications for various permits for performance of works with in existing facilities.



## 6.6 LIFTING STUDIES

Contractor shall develop a schedule of heavy lifts. The lifts shall be classified in terms of their criticality. Contractor shall provide his procedure for the evaluation of heavy lifts. The procedure shall incorporate any special MRPL/PMC requirements. All critical lifts shall be described in lifting studies and detailed method statements. The lifting schedule together with the procedures shall be submitted to the MRPL/PMC for review at least six weeks prior to the planned date of the particular heavy lift.

Contractor shall identify any major heavy lifts which may impact, and require special accommodation within, the detailed design or which may otherwise seriously impact the construction installations sequence.

Contractor shall employ an experienced, competent and responsible person or Specialist Contractor, previously approved by MRPL/PMC, to be in charge of all lifting operations.

Lifting Studies shall comprise, as a minimum, the following data:

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- Dimensional Plan and Elevation drawing, showing all stages of movement of the load, from initial to final installed position.
- Details and capacities of jacks, skates, chain blocks being employed and the locations on or under the load.
- Angles of chain blocks doing the operation and method of attachment to the load and supporting steelwork or structure.
- Details of skid beams, channels and packing arrangement under the beams or channels.
- Loads imposed by skates or jacks on supporting floors/ground and the arrangement for dispersing such loads to acceptable design limits.
- Method statement for the entire lifting operation, indicating how Construction equipment will be installed, load erected and Construction equipment removed.
- Detailed calculations as appropriate, including any spreader beam capacities and Load Safety Factors.
- Itemized checklist for the entire lifting operation.
- Original Crane Certificate of Inspection/Load Rating, for the crane(s) and all lifting tackle to be used in the lifting operation. Such certificates, and any requirement for additional testing, shall be in strict accordance with Indian Regulations.

Contractor shall submit the above information for each lifting study six (6) weeks prior to the planned date for the designated lift.

## 6.7 TRANSPORTATION STUDIES



Contractor shall make provision for:

- Off-loading materials direct from sea-going vessels at the Project Jetty, transport to designated laydown areas.
- All necessary permits associated with the transportation of materials using public facilities such as the harbor and public roads, including police escorts if applicable.
- All temporary facilities for the transport and intermediate storage of materials (e.g. reinforcement of roads, culverts, foundations for crane outriggers, etc.), including any required permits.
- Removal and restoration of all obstructions previously removed to facilitate the transportation and erection of materials.

Contractor shall make available to MRPL/PMC, developed plans and procedures with respect to the above at least four months prior to the planned date for the first off-loading and transportation of materials.

## 6.8 FIELD DESIGN CHANGE CONTROL

Contractor shall submit his procedure for the identification and resolution of any proposed changes to the design during the construction phase. This procedure shall identify the reasons why the change is required and the proposed change.

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The Design Change Control procedure shall show all changes are controlled through correct engineering and how all agreed changes are incorporated into the as-built drawings and model.

A register of design changes and design queries shall be kept for each Sub- contractor and discussed at the relevant weekly progress meeting.

## 6.9 CONSTRUCTION DEFECTS

During prefabrication, pre-assembly and installation of materials at the Site, Contractor shall keep a register of all construction defects identified by his own QA/QC inspection team and MRPL/PMC. All such identified defects shall be rectified in accordance with the original design.

## 7 SITE FACILITIES AND LOGISTICS

### 7.1 SITE INFORMATION

#### 7.1.1 SECURITY

Temporary and permanent access points which service the new construction area.

#### 7.2 TEMPORARY FACILITIES

Contractor shall maintain in good condition throughout the construction period and up to Provisional Acceptance, all temporary facilities as defined in the Project Procedure being required to accommodate all its personnel and the personnel of its Sub-contractors, Vendors Representatives and all temporary facilities are to be ready prior to the start of site Work.

Contractor shall be allowed to accommodate up to four full time MRPL/PMC Representatives in his Temporary facilities complete with computers, telephones, office furniture etc.

Contractor shall determine area allocation, sizing and layout of temporary facilities, buildings and fences and allocation of Sub-contractor areas in consultation with MRPL/PMC.

Contractor shall be responsible for planning the most effective use of the available space. Contractor shall prepare a detailed layout drawing and plan showing the utilization of the available area and submit them for approval to MRPL/PMC

Contractor shall advise MRPL/PMC of the area it will require to accommodate its Temporary Facilities.



Contractor shall relocate, extend and upgrade the existing roads, fences and culverts as may be required for the execution of the Work and the transportation of materials. This being subject to specific prior agreement in writing from MRPL/PMC.

Contractor shall restore such relocated and/or extended facilities to their original conditions upon completion of the Work, and/or not later than the date of Provisional Acceptance unless otherwise agreed by MRPL/PMC. Contractor shall also remove any temporary fencing and reinstate any roads, fences and culverts upon completion of the Work.

Contractor shall provide all cleaning services for its temporary facilities.

Contractor shall provide for the treatment of all termites and insects in its offices.

Contractor shall remove all its temporary facilities and those of its Sub- contractors and make good the Site, upon its demobilization from the Project unless otherwise agreed by MRPL/PMC.

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Contractor shall provide all cleaning services for MRPL/PMC's offices, and surrounding areas, and shall dispose of all office waste materials in the prescribed manner.

### 7.2.1 COMMUNICATIONS

As part of his temporary facilities Contractor shall provide a communications system between the Site and its design office. Contractor shall detail his communications system both to its design office and locally within the Site.

### 7.2.2 SANITATION

Contractor shall ensure the provision of adequate sanitation including sufficient WCs, urinals and washing facilities for all personnel within the office accommodation area and within the Project Worksite areas. Project Site WCs may be of the portable chemical type. All sanitary facilities shall be maintained on a daily basis.

Contractor shall ensure that sewage is disposed of to an approved disposal and treatment facility for its effective treatment to world-class standards.

### 7.2.3 MESSING AND CANTEEN FACILITIES

Contractor shall provide and maintain adequate messing facilities for their employees on site.

### 7.2.4 MEDICAL FACILITIES

Contractor shall provide a medical Centre staffed by a fully qualified nurse to be available for basic medical and first aid treatment.

Arrangements shall be made with local hospitals for treatment beyond the capability of the site medical establishment.

Contractor shall make provision for an on-site ambulance, in the case of emergencies, for immediate access and transport to the local hospital.



## 7.3 UTILITIES FOR CONSTRUCTION

Contractor shall provide a Potable Water distribution system from the MRPL/PMC provided supply at his designated areas. Water at the construction workface shall be free of charge. Water at the fabrication area and camp shall be charged at the Contract rates. Contractor shall provide meters at these points.

Contractor shall arrange its supplies of water for hydro test and flushing of equipment and piping systems. Contractor shall allow for collection and distribution from MRPL/PMC's supply point. Hydro test water shall be reused where possible.

Contractor shall provide and maintain all temporary electrical facilities. The temporary electrical installation shall meet all electrical safety regulations required under the Project Specification and Indian National Electrical Codes. MRPL/PMC- provided power shall be charged at the Contract rate. However Contractor is responsible for providing sufficient power generation for total work scope.

Records of inspections by Contractor of all temporary electrical equipment installed by Contractor and its Sub-contractors are to be kept by Contractor.

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Electrical distribution systems shall generally be underground conveniently positioned to local weatherproof distribution boards.

Underground cables shall be buried and protected at sufficient depth and at locations to avoid disturbance from construction work. Cable markers and warning tape shall be installed above the cables, all in accordance with sound international practice. Accurately annotated drawings for all buried temporary facilities are to be maintained. Temporary cables shall be removed as soon as practical

Contractor shall install earthing for electrical equipment.

Contractor shall install a temporary lighting system to guarantee safe working conditions prior to undertaking any night-time work by it or its Sub- contractors.

#### **7.4 TRANSPORTATION (ON AND OFF SITE)**

Contractor shall make reference to main transport routes to be used within the facilities during the construction phase. Contractor shall follow these guidelines but shall identify to MRPL/PMC any other access roads it proposes to use to allow full and free access to extra-long and heavy load transport vehicles. The proposal shall identify increased road turning radii and increases in road widths, such works are to be adequate to withstand all imposed road loading.

Contractor shall be fully responsible for the coordination with Indian Authorities in regard to the use and/or temporary modification of any public roads it proposes to use for the transport of extra-long and heavy loads. Such works shall be entirely to Contractor's own costs.

##### **7.4.1 PERSONNEL TRANSPORTATION**

Contractor shall provide directly all the necessary transport for its and its Sub- contractors' personnel to, from and on the Site at all times.

Contractor shall provide adequate parking facilities adjacent to its site offices and that of its Sub-contractors.

Access for private vehicles to the Site office accommodation area shall be strictly limited and will require an Entry Pass issued by Contractor's security personnel on approval of MRPL/PMC. Contractor shall, after consultation with MRPL/PMC, establish an entry permit procedure and ensure its full implementation. Private vehicles will not be permitted either in the Construction area or any operational area.

Contractor shall designate his vehicles necessary for transportation and construction purposes that will be permitted entry to the construction and operation areas.



All such vehicles, which are to enter any existing operational facilities, shall be fitted with a spark arrestor approved by MRPL/PMC and be subject to inspection by MRPL/PMC.

All vehicles will be the subject of inspection to ensure their roadworthiness prior to issue of passes.

##### **7.4.2 TRAFFIC PLANNING**

The construction site shall be organized in such a way that pedestrians can move safely and without risk. Consideration will be given to:

Development of detailed layout drawings from the Construction Site Logistics Plan

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Separate gates for vehicle and pedestrian use.

Separation between vehicles or pedestrians where practicable.

Private vehicles shall not be permitted within any construction areas and operating plant areas.

Contractor shall make provision for transporting of workers to construction areas.

Traffic management shall be coordinated by MRPL/PMC in consultation with all Contractors.

## 7.5 CONSTRUCTION LAYDOWN AND WAREHOUSES

Contractor shall define his construction laydown and fabrication requirements and advise MRPL/PMC at the time of Tender. If Contractor requires additional or temporary laydown areas adjacent to the Project Site, he shall be responsible to source these areas and identify any potential for disruption to traffic and plant personnel access, and request MRPL/PMC's approval.

All laydown of vessels for pre-dressing and piping for prefabrication shall be carried out within the designated areas and all safety rules shall apply. Access to these areas shall be restricted to properly badged personnel and vehicles with passes.

Bulk pipe materials storage yards shall be provided, laid out and controlled by Contractor to ensure that material segregation is maintained at all times.

Contractor shall provide ample temporary covered warehouses, air- conditioned where necessary, for all permanent works materials which, in accordance with Suppliers recommendations and good engineering practice, should not be left unprotected (e.g. gaskets, rotating equipment, compressors, electric motors, small piping materials, small valves, instruments). Contractor shall arrange a fenced storage yard for Equipment and materials which do not require weather protection. Storing and handling of materials shall be in strict accordance with the respective manufacturers' recommended/handling storage procedures, including humidity and temperature storage criteria. Contractor shall provide its storage and materials receipt and issue procedures to MRPL/PMC for approval.



A secure fence shall surround the whole area. Warehouses shall have concrete floors, racking, issue counters and access doors for trucks. Separate, secure areas are to be provided for small items of value and for materials quarantine storage purposes.

Materials receipt/inspection areas shall be established by Contractor, for materials supplied not in accordance with Project Specification and applicable Engineering Design Codes a separate fenced MATERIAL quarantine area shall be provided by the Contractor.

## 7.6 TEMPORARY OFFLOADING FACILITIES

Contractor is required to demonstrate that it has carefully considered all potential Temporary Offloading Facilities and that Contractor has developed strategies for the offloading of major equipment either at the recognized ports or at any of the facilities. Contractor shall advise if it has considered the construction of any new temporary offloading facility in close proximity to the Project. Contractor shall submit documents to MRPL/PMC and all third parties for their approval regarding its method statement and procedures relating to the use of any Construction Jetty, which Contractor may provide, and the sea lane approaches to it.



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## 7.7 DISPOSAL OF PERMANENT WASTE

During construction, Contractor shall remove all waste, scrap and excess material each day from all work areas, or as directed by MRPL/PMC.

Litter, garbage and similar waste shall be disposed of by Contractor in locations previously authorized by MRPL/PMC.

Contractor shall dispose of all unwanted abrasives, used in any blasting process to be carried out prior to painting, via a specialized company approved by MRPL/PMC. Alternatively, these materials may be taken away for recycling by Contractor.

Contractor shall ensure that all waste engine oil and lubrication oil is properly contained, recycled or otherwise disposed of in a manner that meets with the approvals of the regulations of India and in any event does not present a threat to contamination of the environment. Contractor shall advise its proposals to MRPL/PMC.

Permanent waste such as tins, cans, locally procured waste construction materials etc., shall be gathered in containers within the areas allocated by MRPL/PMC and dumped in authorized locations or otherwise disposed of at maximum seven days intervals, or as directed by MRPL/PMC .

Scrap from imported materials must be gathered and disposed of in accordance with the procedure to be developed by Contractor which shall be subject to approval/agreement of MRPL/PMC.

Excavated soil and any clear fill material, surplus to requirements, shall be dumped by Contractor in places authorized and previously approved by MRPL/PMC.

## 7.8 APPEARANCE OF SITE AND CLEANING

Contractor shall provide and maintain at all times, an effective, temporary, site drainage system during the construction stage of the Project.

Contractor shall maintain good housekeeping across the entire Site and in particular maintain construction roads surface condition and clear access on each side of all such roads.



Contractor shall prevent any vehicle from parking on the Site roads.

Contractor shall not 'wash down' earth moving or concrete transportation vehicles on site roads and shall ensure that the cleanliness of site roads is not adversely affected by construction traffic usage.

Contractor shall ensure that Construction equipment is grouped and laid out in a neat and orderly fashion throughout the Site.

Contractor shall install silt control measures to ensure that road side drains do not become blocked with sand/silt during dewatering activities.

Contractor shall develop a temporary cable strategy for welding machines, power tools and lighting, throughout the Site that groups them, eliminates tripping hazards and minimizes damage potential.

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### 7.8.1 FINAL CLEANING

Contractor shall, after completion of all work, remove from the Site all temporary constructions; buildings and those materials left over from construction, which the MRPL/PMC does not wish to retain.

Contractor shall disconnect and remove all temporary wiring, plumbing, etc. and shall dispose of all waste and scrap to locations agreed with MRPL/PMC, leaving the Site and the dumping areas in a clean and orderly condition to the entire satisfaction of MRPL/PMC.

An authorized representative of Contractor shall remain at Site until all cleaning work has been completed to the satisfaction of the MRPL/PMC.

### 7.9 TOOLS AND EQUIPMENT

All Contractors' tools and equipment shall be fit for purpose, and maintained in a safe working condition. Guards and electrical trip switches must work effectively and must not be removed or bypassed. Homemade tools are not permitted. Sub-contractors shall provide suitable facilities for the storage, and shall be responsible for the security, of their tools and equipment.

All electrical equipment (including leads) shall be inspected and tested in compliance with regulations. Equipment shall be tested prior to shipment to site. Contractor shall employ the service of a competent person to inspect, test and tag all electrical equipment. A test schedule shall be put in place and portable site tools inspected at intervals not to exceed 3 months.

Contractor shall keep, on site, a register of all electrical tools and equipment in use. The register shall detail:

- Individual identity number of the tool.
- Name, signature and company of the competent individual who performed the inspection/test.
- Date of inspection.
- Condition of the tool, details of repairs and any withdrawal from use.
- The following minimum standards apply:
- All electrical equipment will be tagged, as tested.
- All equipment shall be earthed, e.g. lighting towers, distribution panels, generators.
- Spark-free (anti-spark) tools/hammers shall be used in live plant area for tie-ins/modification jobs.



All electrical leads shall be in good condition and shall be connected to the power source through standard industrial water proofed plugs and sockets which shall be in good condition.

### 7.10 MOBILE PLANT AND EQUIPMENT

Contractor shall provide all Construction equipment necessary for the effective execution of the construction of the Work.

All Construction equipment shall meet all Indian statutory requirements, be in good condition, well maintained and protected against climatic conditions, to ensure safe working and availability of



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the Construction equipment at all times. All Construction equipment intended for use on the Site shall also conform to the specific rules and requirements of MRPL/PMC

Regular inspection and testing of Construction equipment shall be carried out in accordance with site safety regulations, as a minimum requirement, and Contractor shall keep records of these inspections. Contractor shall not allow the use of any Construction equipment, which is unsafe or unsuitable for the task it has to perform. MRPL/PMC shall stop the use of any Construction equipment deemed unsafe or incapable of performing the Work to the required standard; such Construction equipment shall be replaced immediately at Contractor cost. MRPL/PMC will consider no Schedule effect claim in this instance.

The use of a man-basket from a crane will only be considered in extreme conditions and needs prior special inspection of the equipment and safety harness attachments of both operators to crane hook, by Contractor Safety Officer before use. The use of a man-basket shall only be considered if there is no other feasible alternative method. Contractor shall obtain MRPL/PMC's approval prior to use of a man-basket in each instance.

Schedule implications shall not be considered sufficient reason for use of a man-basket. Contractor is to plan its work on the basis that man-baskets are not permitted. The use of a bosun's chair is not permitted.

Contractor shall ensure local provision of servicing and repair facilities for Construction equipment and a stock of spare parts and consumables at Site or in the area, to avoid delay to the Schedule in case of any Construction equipment breakdown.

Contractor shall adhere to the Project colour coding system for Construction equipment.

Only vehicles that have been approved by MRPL/PMC shall be used within the facilities in order to minimise site traffic. Only Personnel who have been instructed in the following shall be permitted to drive Contractor's and Sub- contractors' vehicles brought on site:

- Site speed limits
- Limitations of access to construction areas
- Not to block access points, fire hydrants and to park in an orderly manner
- Keys to be left in the ignition at all times to allow emergency removal of vehicles



Persons who have a full driving license and registered as being competent shall only drive Contractor's and Sub-contractors' vehicles. Any violations of the site driving rules will result in the removal of the driver's name from Site list of permissible drivers.

All vehicles shall be well maintained, and subject to a planned maintenance programme.

Vehicles shall, as a minimum, comply with national regulations regarding testing for road worthiness and be fit for use on the Public Highway.

MRPL/PMC recognizes the risks associated with lifting activities and Contractor shall implement a system of control to minimize these risks. Equipment involved in lifting, e.g. Cranes, piling rigs, etc., shall:-

- Be tested, examined and certified within national legislation, and/or by third party certifying authorities' records to be available on site.
- Carry the manufacturer's operating manual and load charts in its cab; in a language understood by the operator.

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- Be subject to inspection by MRPL/PMC prior to entry to site.
- Have all safety devices and overrides operational.
- Be operated by competent persons who fulfil statutory requirements for the particular vehicle in question.
- Mobile crane operators shall demonstrate competence by an onsite test before they are approved to work and operate a crane.
- Have the operator carry out a daily check of the equipment, and a record of inspections, and defects found retained on site.

## 8 FIELD EXECUTION

### 8.1 CONSTRUCTION PRACTICES AND INSTALLATION PROCEDURES

Contractor shall be responsible for the direct and positive management of all its Sub-contractors' activities at Site; in particular for ensuring their construction progress and in the quality of the work performed by them. MRPL/PMC reserves the right to attend all Progress meetings held between Contractor and Sub-contractors, in order to monitor this action.

### 8.2 SITE INSPECTION AND TESTING

Contractor shall apply for and arrange for all necessary site inspections and tests by local government authorities. All such applications shall be Contractor's responsibility and shall be copied to MRPL/PMC for information.

Contractor shall carry out all site inspections and tests necessary to comply with Project Specification and to satisfy the requirements to achieve Contract Completion – refer to Construction Completion Checklist and is in addition to any inspection carried out at materials Vendor's and their sub-Vendor's works.

MRPL/PMC reserves the right to witness these site tests and inspections; Contractor shall therefore inform MRPL/PMC at least 48 hours before such site testing and inspection are due to commence, a longer period of notice shall be given for inspection at Vendor's works.



Contractor's site inspections shall take cognizance of any local authority, insurance or third party inspection requirements.

Contractor shall ensure that all stored materials have the identifications stipulated in the materials specifications.

Contractor shall provide the necessary testing, measuring and calibration facilities and tools.

Contractor shall provide proof of proper construction, with routine checks on the quality of the Work, by means of samples of construction Work, radiographs of welds, hydraulic pressure tests, leak tests, earth fault tests, etc., in accordance with the Project Specification and, when required, by MRPL/PMC .

If during testing the Work is deemed to be unsatisfactory, Contractor shall remedy the defects immediately at its own cost. MRPL/PMC will consider no Schedule effects claimed by Contractor in such instances.

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Final inspecting and closing up of equipment shall be witnessed and certified by MRPL/PMC and Licensor's Representative, where required. Equipment will only be closed after inspection and approval by MRPL/PMC.

The presence of MRPL/PMC at any test or inspection shall not relieve Contractor of its entire responsibility for the quality of the Work under the Contract.

Contractor shall provide reports of all necessary inspection/tests in accordance with statutory requirements, insurance party and Project Specification. Where applicable, these reports shall be in a form suitable for the requirements of such other parties as may be involved.

MRPL/PMC reserves the right to request any additional tests/inspections during construction by giving notice in writing to Contractor, who shall carry out the test/inspections including the preparatory/restoring works, to prove the Work has been satisfactorily executed.



Contractor shall agree with MRPL/PMC and thereafter implement a notification scheme for inspection with respect to Work to be covered or hidden from view.

MRPL/PMC shall be requested to inspect all underground Work installations prior to backfill. If Contractor backfills prior to such inspection he shall re-excavate to allow inspection to be carried out.

#### Vendor Specialist Supervision

Contractor shall, where necessary, provide Vendor specialist assistance to supervise erection, installation and final adjustments and to inspect and advise during testing, start-up and running in of:

- Complicated rotating equipment, e.g. generators, compressors and ancillaries, special pumps, proprietary equipment, etc.
- Refrigeration systems.
- Air conditioning equipment (central distribution systems)
- Integrated control and safeguarding systems and other special instrument items
- High voltage cabling, transformers and equipment
- Switchgear
- Variable speed control equipment (if used)
- Fire protection systems and equipment
- Programmable shutdown logic systems
- Telecommunications equipment
- Gas detection systems
- Fiber optic cable testing and jointing
- Analyzer and other specialist instrument equipment
- Tight shutoffs, hard and soft seat valves, etc.
- PTFE lined piping
- Water treatment systems

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- Hoists and lifting equipment
- Road and Marine Tanker loading arms
- Vaporization system
- Effluent treatment packages
- Specialist construction supplies and services, e.g. concrete additives, concrete anchors and fixing equipment, specialist bolting equipment, hot tapping equipment, grouting, fireproofing, refractory, pipe wrapping/coating/jointing equipment etc.

In addition Vendor's and Licensor's specialists shall be present during installation, final adjustments, testing, running-in, start up and initial operation of equipment, for which such presence is a condition of sale with respect to the Vendor's and Licensor's guarantees.

### **8.3 WELDING CONTROL, TESTING AND NDE**

#### **8.3.1 WELDING PROCEDURES**

Contractor shall submit its own and its Sub-contractors welding procedures for review and approval by MRPL/PMC prior to commencement of any welder qualification tests. Contractor shall consider the use of its own welding procedures in order to attain an early start to welding activities at site.

#### **8.3.2 WELDER'S QUALIFICATION TEST**

Prior to commencing work on the Site, all Welders assigned for the welding of equipment and piping designed and fabricated in accordance with one of the codes listed below, shall pass the qualification test as described in the latest issue of the relevant code:

- ASME Boiler and Pressure Vessel Code Section IX
- BS 5500
- ASME B31.1
- ASME B31.3
- INDIAN STANDARDS



In addition to ASME Boiler and Pressure Vessel Code Section IX, all welders' performance test plates shall be radiographed prior to mechanical testing. The acceptability of the welders shall be based on the quality of the radiographs and associated tests as specified.

Contractor shall invite MRPL/PMC to witness above tests, whether carried out on Work or elsewhere. All welder tests shall be witnessed by an independent third party to be appointed by Contractor. Such a third party is to be previously approved by MRPL/PMC prior to the start of construction welding activities.

#### **8.3.3 WELDING INSPECTION**

Contractor shall arrange for radiographic inspection of welds (NDT) to be carried out by an independent third party, previously approved by MRPL/PMC.

The radiographs shall be taken in accordance with the relevant engineering design code and the Project Specification.

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Safety measures and the required hot work permits, shall be discussed and agreed with the party responsible for operating the permit to work system and shall be in accordance with procedures approved by MRPL/PMC .

Contractor shall provide all facilities for the preparation, examination and storage of radiographic films and shall agree upon the details of the facilities for storage of radioactive sources with MRPL/PMC. Contractor shall provide such radiographic storage facilities at its own cost.

The quality of radiographs and ultrasonic inspection and acceptance criteria shall be in accordance with the applicable codes and Project Specification and established Project Quality Control Procedure.

Radiographic, ultrasonic and visual examination of welds shall be carried out as a routine check on the quality of work and as specified in the relevant engineering design code and Project Specification.

Welding and inspection of steel piping shall be done in accordance with the Project Specification and relevant engineering codes of practice.

In addition to being a check on the quality of welding, the radiographic spot check method shall also be used as a check on the performance of the individual welder. Spot radiography shall therefore be equally divided between all the welders employed. MRPL/PMC has the right to specify the location for spot radiographic checks.

MRPL/PMC may request additional radiographic spot checks and ultrasonic and magnetic flux tests on piping, tanks and equipment, all at no additional cost to MRPL/PMC.

Welds proven faulty shall be repaired and radiographed again by Contractor, entirely at its own cost.



If spot radiography should reveal unacceptable defects, then the level of inspection shall be increased in accordance with the applicable code requirements. The reasons for any such unsatisfactory welding shall be investigated and welders who cannot comply with the requirements shall be withdrawn for training and re-testing. The welder's certificate shall no longer be valid in such a case.

Stress relieving temperatures of welds shall be recorded on a valid calibrated chart recorder. The records and weld location shall be identified in an appropriate document, as previously approved by MRPL/PMC.

Contractor shall maintain a proper and up-to-date documentation system of radiographs identifying location and welder during the construction period. The system shall be agreed with MRPL/PMC prior to implementation. Locations of radiographs shall be identified in appropriate documents and be maintained during the construction.

A proper record system of welder performances shall be maintained by Contractor and shall include welder performance reports, rejection notes, persistent faults, etc.

Inspection reports shall be available for MRPL/PMC review at any time and handed over to MRPL/PMC prior to Construction Completion. Necessary reports and their formats shall be agreed upon with MRPL/PMC.

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## 8.4 SITE INSPECTION OF PIPE FABRICATION AND ERECTION

### 8.4.1 PIPING

Contractor shall produce and follow a comprehensive inspection and test procedure for all piping systems, taking into account the requirements of the Project Specification and applicable codes as well as the duties of the piping systems under consideration.

Contractor shall ensure that piping, fittings and valves are accompanied by the required original Material Certificates. Contractor shall establish Materials Identification Procedure for the Project in accordance with the Construction Quality Plan agreed with MRPL/PMC. This procedure shall be maintained throughout construction and up to Provisional Acceptance.

The inspection procedures shall be submitted to MRPL/PMC for approval/comments, and shall include the method of identification, verification and control to ensure that components of the correct materials are installed.

Contractor shall prepare hydrostatic test packs for all piping systems subject to such tests. These are to be approved by MRPL/PMC prior to use. System test packs shall form a part of the Project Quality Control documentation.

Contractor shall identify in its Sub-contract strategy the need or otherwise for specialist bolt tensioning techniques and when these will be mobilized.

## 8.5 SITE INSPECTION OF STEELWORK

Site inspection of steelwork shall be carried out in accordance with the Project Specification.

All steelwork shall be lined and levelled and grouted. Bolted steelwork shall be torqued to the correct settings and recording. Welding shall conform to the welding control procedures identified in this section.

MRPL/PMC will intervene and stop work that is being performed unsafely by Contractor and its Sub-contractors.

## 8.6 SITE INSPECTION OF MECHANICAL EQUIPMENT

Site inspection of mechanical equipment shall be carried out in accordance with the Project Specification, which include but are not limited to, those referenced in the following paragraphs. Material Identification, in accordance with a procedure prepared by Contractor and accepted by MRPL/PMC, shall be carried out for all materials inspected at Site.



All tests and inspections, which are to be witnessed and monitored by MRPL/PMC, shall be established in accordance with Procedures to be submitted by Contractor and agreed upon by MRPL/PMC.

### 8.6.1 COLUMNS, REACTORS, VESSELS, HEAT EXCHANGERS, FIRED EQUIPMENT ETC.

All columns, reactors, vessels, heat exchangers and fired equipment, etc., shall be subject to a further thorough inspection against Site Quality Assurance/Quality Control Procedures, previously agreed with MRPL/PMC, upon arrival at Site.

All materials fabricated at Site shall be inspected against Project Quality Assurance/Quality Control procedures, previously agreed with MRPL/PMC, prior to erection of such materials.



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Hydrostatic test procedures for all equipment and piping systems shall be prepared by Contractor and submitted to MRPL/PMC.

Column draw-off trays will be subject to a tightness test before closing up of column.

Prior to final closing up (after flushing), the Equipment shall be internally inspected by MRPL/PMC and Licensor Representative, as appropriate, to ensure cleanliness, dryness and correct assembly of internals, etc.

### 8.6.2 VALVES

Contractor shall re-test after trial fit-up, all safety relief valves, including pressure/vacuum valves, in an instrument workshop at the Site, against calibrated test instruments, in order to ensure the correct set pressure and tightness in accordance with procedures laid down in the Project Specification. Tests shall be carried out no earlier than 90 days prior to Contract Completion. Lead seals to be applied after testing. If after installation, seals are found to be broken, Contractor shall remove said valve, re-test, re-seal and replace at no cost to MRPL/PMC.

Valves shall not be repacked at the Site unless Contractor has available at the Site the Vendors' original certificates guaranteeing that these valves can be installed without any site testing and re-packing.

Contractor shall random spot check approximately 10% of the valves in order to ensure correct packing. This check shall be extended if packing's are found not to be in accordance with the requirements. Contractor shall keep full records of all such tests.

All valves shall be fully stroked through their full movement range prior to installation. Contractor shall maintain records of all such action.

### 8.6.3 AIR COOLERS, CONDENSERS

Contractor shall inspect all fan and drive bearings for cleanliness and proper lubrication.

Contractor shall check proper adjustment and operation of variable pitch fan blades.

Contractor shall check the direction of rotation of all motors before final coupling.



Contractor shall pressure test assembled equipment sections, together with the relevant piping, in accordance with the applicable code and Project Specification. Contractor shall submit all pressure test records to MRPL/PMC.

Individual noise and vibration tests shall be carried out to verify the manufacturer's guarantee, such tests may be witnessed by MRPL/PMC. Contractor shall submit all records of such tests to MRPL/PMC.

### 8.6.4 ROTATING EQUIPMENT

Contractor shall provide copies of its Standard Procedure for the installation of Rotating Equipment for MRPL/PMC approval. Vendor Instructions shall be obtained and strictly adhered to if more stringent. MRPL/PMC shall be the sole arbitrator in such instances.

Contractor shall visually check the equipment with manufacturers' test/inspection record but equipment shall normally not be opened unless there is clear evidence that an internal inspection is necessary.

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Contractor shall perform the coupling alignment between the equipment and driver. An inspection record shall be maintained and submitted by Contractor to MRPL/PMC

Suitable screens or protection guards shall be installed to all rotating equipment to which persons may be exposed to injury to the entire satisfaction of MRPL/PMC. This shall be done prior to starting the operation of such equipment.

## **8.7 SITE INSPECTION OF CIVIL MATERIALS**

### **8.7.1 PILING RECORDS**

Contractor shall supply pile-driving records in accordance with the Project Specification and relevant Civil Engineering Standard and Quality Control Procedures.

### **8.7.2 AGGREGATES OF CONCRETE AND REFRACTORY MATERIALS**

MRPL/PMC prior to Work commencing shall approve all sources of cement, grout, aggregate, reinforcing steel and fire protection materials.

Prior to pouring any concrete, Contractor shall submit to MRPL/PMC test certificates for the cement, fine and coarse aggregate, reinforcing steel, bitumen, etc. Contractor shall arrange for concrete slump and cube strength tests throughout the construction period and up to Provisional Acceptance. All concrete mix designs are to be approved by MRPL/PMC prior to use.

Contractor shall be responsible for taking samples of materials used for refractory lining of flue ducts and fired heaters and for testing to ensure conformance to specification. Contractor shall test any pre-lined stacked ducts and heater sections (in a laboratory) prior to shipment. All testing shall be carried out by an independent laboratory. The MRPL/PMC shall approve test laboratory. Evidence of the satisfactory inspection of such materials shall be submitted to MRPL/PMC.

## **8.8 SITE INSPECTION OF ELECTRICAL EQUIPMENT**

Site testing of Electrical Installation and Equipment shall be in strict accordance with the Project Specification and relevant Electrical Engineering Standards and Codes.

Contractor shall supply all necessary calibrated testing equipment and instruments.



All test results shall be recorded in an agreed format with MRPL/PMC. Certified copies (signed by a competent person approved by MRPL/PMC) of the record shall be forwarded to MRPL/PMC prior to energising an electrical system or any part of it.

MRPL/PMC shall witness all electrical system functional tests.

## **8.9 SITE INSPECTION OF INSTRUMENT EQUIPMENT**

Site Installation, Inspection and Testing of Instruments shall be in strict accordance with the Project Specification and relevant Instrument Standards and Codes.



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Contractor shall provide all the necessary testing and calibration equipment, including an appropriate instrument test workshop at the Site. Contractor shall retain all records of calibration testing, including origin of the calibration.

Such documentation shall form a part of the Project Quality Control documentation to be submitted to MRPL/PMC.

All materials test results shall be recorded and Contractor upon Contract Completion shall forward copies to MRPL/PMC

MRPL/PMC shall witness all instrument loop system functional checks.

## 8.10 SITE INSPECTION OF FIRE PROTECTION EQUIPMENT

Contractor shall submit for MRPL/PMC's approval full Quality Assurance/Quality Control documentation to cover for the installation, inspection and testing of all fire and gas detection and protection systems.

Contractor shall provide to MRPL/PMC entire satisfaction, full and complete records of the testing of each element of the fire and gas detection and protection systems.

## 8.11 TANK TESTING AND CALIBRATION

Contractor shall submit tank erection, testing and calibration procedures for review and approval by MRPL/PMC

The procedures shall specifically address the following:

- Progressive Non-Destructive (NDT) examination procedures to ensure control of welding and welders, vacuum testing activities, dimensional control, etc., during construction.
- Availability, quality, use, storage, distribution and disposal of test water.
- Settlement monitoring during construction, hydro testing and up to Provisional Acceptance. At least eight reference points per tank shall be established and monitored.

Contractor shall engage an independent third party Non Destructive Testing Agency to monitor tank construction. MRPL/PMC shall approve the NDT agency prior to engagement by Contractor.



Under no circumstances shall seawater be used for the hydro testing of tanks.

Tank strapping tables to be provided by Contractor, shall be obtained by Contractor using the Electro-Ophthalmic Distance Ranging (EODR) method (Laser technique). Contractor shall provide these to the Tank Gauging System Vendor, for input to the tank gauging software. A recognized, independent Authority, previously approved by MRPL/PMC shall carry out the tank calibration. The engagement of such Authority by Contractor will be entirely at Contractor's own cost.

## 9 CONTRACT COMPLETION

### 9.1 DEFINITION AND SCOPE

Contractor shall develop a procedure which establishes the basis of a checklist of construction items that need to be satisfied by Contractor in order to achieve Contract Completion of a particular Unit or system of the Project.

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### 9.1.1 CONTRACT COMPLETION

Contract Completion of a Unit or an individual system of the Project occurs when it has been erected and the system's testing and inspection activities are completed in accordance with the Contract, together with complete QA/QC support documentation as required in the Project Specification.

Contract Completion Certification establishes that a system, part system, Unit or part Unit is in a fit state to progress to Pre-commissioning. This will be subject to minimal agreed extent of outstanding works and the availability of associated utilities, system and process and safety control which will allow Pre-commissioning to progress safely, with regard to personnel and equipment protection, and efficiently in terms of the pre-commissioning activities.

The extent of outstanding works at the time of Contract Completion Certification will be agreed on the basis of safety, quality and productivity for completion of the works by Contractor and impact on Pre-commissioning and Operational activities. MRPL/PMC shall be the final arbiter in regard to the agreement of the allowable extent of outstanding punch listing correction activities.

### 9.1.2 CONTRACTOR'S RESPONSIBILITY

System testing is part of Contractor's Scope of Work and includes all non- operating activities, such as adjustments, cold alignment checks, hydrostatic/pneumatic testing, flushing, blowing out and chemical cleaning, etc.

All utilities until Final Test Certificate except water for hydro testing and flushing shall be provided by Contractor.

In case of non-process parts of the Works (e.g. buildings), Contract Completion is the Ready-for-Use condition, as accepted by MRPL/PMC.

Vendor's proprietary equipment and Licensors usually require the inspection of certain equipment/facilities before their FTC. Contractor shall schedule those activities, which may have an impact upon Contract Completion, in such a way that they do not affect the Schedule.

### 9.1.3 PROCEDURES



Contractor shall provide a detailed procedure including forms, document flow, schedule, certification scheme and status monitoring method for attaining Contract Completion, this procedure shall be agreed upon with the MRPL/PMC well in advance of such activity.

This shall not, however, relieve Contractor of its responsibility for the completion of all such Work as required by the Project Specification and other Contract documents.

All pinnacle documents, forms and procedures required for Contract Completion shall be compiled in a system Completion Manual, which itself forms a part of the documentation which has to be submitted and approved by MRPL/PMC prior to the achievement of Contract Completion. All Quality Control support data to support this pinnacle data shall be filed in a separate Quality Control dossier for each system.

## 9.2 HANDOVER DOSSIER REQUIREMENTS

Contractor shall provide a single handover dossier for each Unit or system, which shall encompass all the requirements from construction and Pre- commissioning phases up to Final Test Certificate.

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Dossiers shall identify all of the component parts of the system, or any part system, and shall provide for cross referencing and checking to Quality Control Documentation by Pre-commissioning Engineers to establish a mechanical integrity of the system prior to commencement of Pre- commissioning activity.

Contractor shall compile its Unit or system dossier on an on-going basis and shall identify the number of test packs to be included in each Unit or system and how the status of each test pack will be tracked and progressed.

### 9.3 PUNCH LISTING

Contractor shall start preparing the required engineering discipline punch lists categorized into various disciplines for each Unit or system well in advance of the scheduled Contract Completion date of any Unit or system of the Project and shall submit these to MRPL/PMC. These punch lists shall cover all items, which have not yet been fully completed or are which deviate from the requirements of the Project Specification which require resolution prior to acceptance Contract Completion. These shall be broken down per Unit or system and are to be completed by Contractor in order to achieve Contract Completion. Contractor's electronic punch lists database shall be made available to MRPL/PMC.

MRPL/PMC reserves the right to add items to any engineering punch list up to Final Test Certificate.

MRPL/PMC will only consider a punch list item complete when the MRPL/PMC has certified the completion of all the individual items therein.

If, however, Contractor deems it reasonable to complete certain activities after Contract Completion, it shall attach a consolidated punch list of those open items to the Notice of Contract Completion. It is then at the discretion of the MRPL/PMC to accept (or not) Contract Completion of that system of the Project.

Contractor shall propose its procedure for identification of control of punch list items which it proposes shall be completed after Contract Completion.

Contractor before Final Test Certificate shall clear all outstanding punch list items.

### 9.4 NOTIFICATION OF COMPLETION



When Contractor considers that a Unit or system has reached the stage of Contract Completion it shall inform the MRPL/PMC in writing by means of 'Notice of Contract Completion' to which the consolidated punch list of all open items previously agreed by MRPL/PMC shall be attached.

Notice of Contract Completion shall be substantiated by complete documentation in accordance with all the requirements of the Quality Control dossier for the individual system.



### 9.5 MAINTENANCE COORDINATION

Contractor shall provide a Maintenance Coordinator to liaise directly with MRPL/PMC personnel on all aspects of the completed Work. The Maintenance Coordinator shall be provided from the first Unit or system FTC up to Provisional Acceptance.

Contractor's Maintenance Coordinator shall be available to provide assistance, guidance on maintenance manuals and spare parts. The Maintenance Coordinator shall be responsible for coordinating all activities of Contractor, to respond to the MRPL/PMC's request for assistance

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with respect to any breakdown repairs and communications on any Warranty requirements with Vendors until Provisional Acceptance of the Project.

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<b>A-1</b>	<b>REQUIREMENT DURING CONSTRUCTION</b>
<b>A-1.2</b>	<b>HSE MANAGEMENT</b>

## MRPL Marketing Terminal Project at Devangonhi, Bangalore

**PROJECT :** Marketing Infrastructure Projects, MRPL

**OWNER :** MANGALORE REFINERY AND PETROCHEMICALS LTD

**PMC :** Nauvata Engineering Pvt. Ltd.

**JOB NO. :** JBG20005

0	05-Feb-2021	Issued for Bid			
Rev. No.	Date	Description	Prepared By	Checked By	Approved By



**MANGALORE REFINERY AND PETROCHEMICALS LTD.**  
**CONTRACT WORKER'S SAFETY POLICY - REV.**

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## **MANGALORE REFINERY AND PETROCHEMICALS LTD.**

### **CONTRACT WORKER'S SAFETY POLICY**

#### **1. SCOPE :**

This policy is applicable to all the contractors and their employees working in MRPL. This is also applicable to sub-contractors, suppliers, vendors and visitors. All the contractors are required to ensure that they and their employees comply with relevant safety requirements as mentioned in this Safety Policy depending on the nature of work. This policy is not a substitute to the statutory rules and regulations and also the prevailing MRPL Safety Requirements. This is to further reinforce the existing Safety Standards in Refinery.

**2. REFERENCE :** This document should be read in conjunction with following :

- General Conditions of contract (GCC)
- Special Conditions of Contract (SCC)
- Job specifications

#### **3. SAFETY REQUIREMENTS FOR CONTRACTORS:**

-Contractor shall furnish Safety policy and Safety Manual of their Company and his track record in safety for past three years to the Engineer Incharge.

Contractor shall furnish details of their safety department with CVs of safety officers in his bid document to Engineer Incharge.

-The contractor MUST employ Qualified Safety Officers as per the table below, having about 5 years of relevant experience in chemical units or Petrochemical Plants or refineries, as per The Factories Act 1948 / Building and other construction workers (Regulation of Employment and conditions of service) Act 1996 and Central Rules 1998 / The Karnataka Factories Rules 1969. Contractor shall ensure that all his workmen are aware about the nature of risk involved in their work and have adequate training for carrying out their work safely. Such Safety Officers appointed shall be dedicated and responsible only for safety. They should not be given any other responsibility. The contractor and his sub-contractor, if any, shall comply with the instructions given by MRPL Engineer In- Charge or his authorized nominee regarding safety precautions, protective measures, house-keeping requirements etc. Engineer-In-Charge from MRPL shall have the right to stop the work of the contractor, if in his opinion, proceeding with the work will lead to an unsafe and dangerous condition. Engineer-In-Charge shall get the unsafe condition removed or provide protective equipment at the contractors cost, which ever is applicable.



### Table

Max. no. of employees < 30	One discipline (Engr. / Supervisor) with safety experience can function as Safety Staff on part time basis.
No. of employees : 30 – 100	One Safety Supervisor on full time responsibility.
No. of employees : 101 – 250	For Manpower Supply – Oriented Maintenance contract – One Safety Supervisor on full time responsibility. For Service – Oriented Maintenance / Project contract One Safety Engineer on full time responsibility + One Safety Supervisor on full time responsibility
Upto 250 Persons deployed by him at site	Deploy one Safety Officer and additionally deploy Three Safety Supervisors
For 251 to 500 Persons	Two Safety Officers, Six Safety Supervisors and Ten Safety Stewards
For more than 500 persons	Three Safety Officers, Ten Safety Supervisors and Twenty Safety Stewards

#### Qualification criteria of safety officer:

BSc (Physics Chemistry only)/Diploma (Mech/Elect/Civil only) with post graduate Diploma in Industrial safety with min of 5 years experience in supervisory cadre.

OR

BE/BTech (Mechanical/Electrical/Civil only) with post graduate Diploma in Industrial safety with min of 2 years experience in supervisory cadre.

#### Qualification criteria of safety supervisor:

BSc (Physics Chemistry only)/Diploma (Mech/Elect/Civil only) with qualification in industrial safety with relevant experience.

#### 4. PERSONNEL :

- Personnel / workmen (age 18 years & above) deployed at site should be physically / medically fit. Labours/workers shall not bring children/babies inside the refinery.

SMOKING IS STRICTLY prohibited inside the refinery.

- Contractors and their workmen should restrict their activities to the site allocated to them.

- All contract men shall wear IS make PPEs like gloves, goggles, face shields, full body safety harness, safety belt, Safety Helmets, Safety Shoes etc during the work. They will not be permitted

- to enter the Refinery without wearing Safety Helmet, Safety Goggles & Safety Shoes. Damaged PPEs shall be taken out from use and disposed off properly.
- The contractor shall ensure that their men do not tamper with the facilities in operation. They shall not operate any Valves/ Switches etc.
  - The contractor shall ensure that his workmen do not move around freely inside refinery premises other than the assigned place of work & also do not sleep anywhere (Below piperacks / equipments / trucks / etc.) inside refinery premises.
  - The personnel engaged by the Contractor shall maintain good conduct and discipline commensurate with Industrial standard. If in the opinion of the Engineer-in-charge any of the personnel have not maintained good conduct and discipline, the Contractor shall remove such personnel immediately from MRPL premises and provide alternate personnel.
  - The contractor Supervisors and Engineers must get themselves conversant with MRPL's Standard Operating Procedures (SOP), safety norms, Rules and Regulations that are in force. They must also be conversant with the MRPL's Emergency Procedures and Emergency telephone numbers and should ensure display of same at prominent place.
  - Special safety precautions to be taken by the contractor or their personnel working in an operating refinery are given below. The safety procedure may undergo a change from time to time, which will be intimated to the contractor to follow and implement them.
  - In addition to the following minimum safety requirements, the contractor must comply with the safety requirements, norms, rules and regulations as per the Factories Act 1948 and Karnataka Factories Rules 1969, OISD Guidelines 207 and other OISD standards / guidelines and Indian Standards.
  - The contractor must prepare a detailed "Safety Programme" and submit it to Engineer In-charge of MRPL immediately after the finalization of contract / placing of LOI / order. This will include Safety Policy, Safety Responsibilities at various levels, Formations of Safety Committees and meetings, Method statements, Job Safety Analysis (JSA), Safety inspections, various pre-inspection checklists, Safety manuals, Safety Audits, Emergency Plans, Safety procedures to be implemented for all the activities, deputation of Safety Officers, enforcement of safety practices.
  - Contractor shall devise a procedure on Accident Reporting. All accidents including Near Misses and property damages to be reported as per the MRPL's Accident Reporting Procedure in force. All Accidents including Near Misses to be communicated immediately to Engineer Incharge over

telephone / verbally / and later submit the accident report. All accidents must be investigated, classified, analysed & comply with the recommendations to avoid its recurrence. Monthly Accident statistics must be developed and circulated. Contractor shall maintain a register of all such accidents.

- During the mobilization, equipments, machines, tools, tackles etc. to be inspected at the site from where it is being mobilized. Damaged ones should be discarded and ensured not mobilized at MRPL site. The statutory checks, inspections and certification is carried out before mobilizing at MRPL site. Necessary repairs and maintenance to be carried out and equipment, machine, tools, tackles etc. is mobilized at MRPL site in working condition. The previous records of maintenance and the competent person's certificates to be made available during mobilization and submitted to MRPL Engineer Incharge. The equipments, machines, tools, tackles, etc to be tagged and mobilized.

- A Safety Committee must be formed to discuss accidents, Unsafe Acts and Unsafe conditions. This should be chaired by the High ranking Official / Site-In-Charge with equal participation both from supervisory and non-supervisory cadres of employees. Engineer In-Charge of MRPL also should be involved in such meetings as an observer. The frequency of meetings shall be once in a month minimum and actions taken to avoid recurrence of Nearmiss, Minor injuries etc.

Circular of the meeting must also be issued to MRPL Engineer Incharge at least one week in advance. Minutes of the meetings to be prepared on the same day and submitted on next day of the meeting.

The contractor shall take all safety precautions during the execution of awarded work and shall maintain and leave the site safe at all times. At the end of each working day and at all times when the work is temporarily, suspended, he shall ensure that all materials, equipment and facilities will not cause damage to existing property, personal injury or interfere with other works of the Refinery. The contractor shall comply with all applicable provisions of the safety regulations, clean up programme and other measures that are in force at the site.

- Safety Inspections of the site to be conducted daily and Safety Audits to be conducted once in three months by a team of Senior Officials of the contractor. Report on findings of such Audit to be submitted to the Engineer Incharge and compliance report of the suggestions on findings to be submitted weekly to Engineer Incharge.

Daily Safety Inspection of jobs and safety audit to be conducted every month and the report and protocol signed by all parties, Contractor's safety officers with signatures of Site Incharges of contractor shall be part of subsequent RA bill.

- Method statement along with Job Safety Analysis to be submitted at least 15 days in advance before starting of any activity.

Prior information of high risk jobs as planned shall be informed with short details of the work, job safety analysis report to the Engineer Incharge at least 48 hours before starting of such jobs.

High risk jobs like fabrication at height, lifting and shifting, erection of equipments etc shall be video recorded by the contractor.

- The contractor shall provide and maintain all lights, guards, fencing, warning sign, caution boards, other safety measures and provide for vigilance as and where necessary or as required by the Engineer-In-Charge or by any duly constituted authority for the protection of workers or for the safety of others. The caution boards shall also have appropriate symbols visible during night also.

- Adequate lighting facilities, including emergency lighting, such as floodlights, hand lights and area lighting shall be provided along with ELCBs by the contractor at the site of work with isolation switch known to all at site with proper display, storage area of materials and equipment and temporary access roads within his working area. The contractor shall obtain written approval of the Engineer-In-Charge to the lighting scheme and place of tapping prior to its installation.

Use of devices like Distress alarm system for all personnel entering into confined space to be mandatory. Biometric attendance of personnel entering confined space should be maintained.

Necessary Biometric punch machine to be arranged by the contractor at his own cost for this purpose. Staircases shall have temporary hand rail and guard till permanent handrails are fabricated and installed.

The contractor shall plan his operations so as to avoid interference with the other departmental works, other contractors or sub-contractors at the site. In case of any interference, necessary coordination shall be sought by the contractor from the Department for safe and smooth working.

The contractor shall be held fully responsible for non-compliance of any of the safety measures, procedures and delays, implications, injuries, fatalities, property damage and environmental degradation and compensation arising out of such situations or incidents. The contractor should devise a procedure to maintain head count of his personnel manually or with an installation of

punching machine at site and ensure evacuation of his personnel through defined emergency exit in case if situation demands and also during confined space entry.

- Smoking is prohibited in the Refinery / work site / offices.

Consumption of alcohol and any other intoxicating material shall be also treated as safety violation and heavy penalty shall be levied on the main contractor.

- Radiography source and also the Explosives used for controlled blasting will not be permitted to be stored at site. Detailed accident report with photographs to be submitted to factory manager and Engineer In-charge from MRPL immediately.

- Contractor's Vehicles/Engines and approved electrical / mechanical equipments & lifting tools / tackles, welding generator that are to be used inside refinery are to be certified by competent authority. Statutory checks are to be carried out and records are to be maintained by contractors to ensure healthiness. These certificates will be regularly checked by MRPL engineer in-charge.

- The Contractor shall ensure that all industrial consumables such as Oxygen, Acetylene, Argon, Nitrogen, welding electrodes etc. are approved by MRPL, tested and records maintained by the contractor as per Gas Cylinder Rules before they are used for the job. LPG for gas cutting purpose is not allowed.

- The Fire prevention / protection and safety equipments (including Personal Protective Equipments) should be certified by MRPL engineer in-charge.

#### **5. HEALTH AND HYGIENE :**

- Sufficient number of toilets shall be provided by the contractor for its workmen and hygiene standard should be maintained.

Contractor to ensure no water stagnation at site.

Potable water facility for all workers shall be provided and maintained by the contractor.

Inspection of drinking water, sanitation, shall be done by MRPL. Availability of dust masks shall be ensured by the contractor at site.

Contractor to maintain affordable hygienic canteen for the workers.

- The contractor must maintain record of medical examinations of its employees as per The Factories Act 1948 and The Karnataka Factories Rules, 1969 and The Building and other construction workers (Regulation of Employment and conditions of service) Act 1996 and Central Rules 1998. This will include eye test of crane operators, vehicle drivers and all others. Also

Fitness certificate by the Medical Officer for working at height to be produced for each employee requiring to work at height.

- Adequate means and personnel for rendering first aid should be readily available at site and during working hours at places where work is carried out.
- Medical aid for First-Aid should be available.
- First Aid kits or boxes, as appropriate, should be provided at the workplaces and on motor vehicles, cranes, etc. and be protected against contamination by dust, moisture, etc.
- When workers are employed underground or beneath structures or pits or other conditions in which they may need to be rescued, suitable rescue equipment like tripod with pulley and safety belt should be readily available at site at or near the work site along with trained rescue workers.

#### **6. VEHICLE MOVEMENT :**

- The contractor shall conduct his operation so as not to interfere with the use of existing roads at or near locations where the work is being performed.
- Speed limit inside the refinery is 16 KMPH which should be strictly followed. For heavy machinery like cranes / forklift / RMC trucks, etc. the speed limit is 5 KMPH maximum.
- Special precautionary measures should be taken during transportation of long sized cargo, route as defined should be followed and for safety of personnel (with proper escort) and damages to the facilities should be avoided. Procedure for vehicle entry and Speed limits in Refinery should be strictly followed. Vehicles and cargos passing through refinery should have PESO approved spark arrestor fitted.
- When interference to traffic is inevitable, notice of such shall be given to the Engineer- In-Charge of MRPL well in advance with the details of start of the work and time required, storage of materials, and details of the proposed methods of providing the required facilities for safe and continuous use of roads and obtain his clearance.
- The contractor shall exercise full care to ensure that no damage is caused by him or his workmen, during the operation, to the existing water supply, sewerage, power or telecommunication lines or any other services or works. The contractor shall be required to provide and erect before starting of the work, substantial barricades, guardrails and warning signs. He shall furnish, place and maintain adequate warning lights, signals etc, as required by the Engineer-In-Charge.
- Vehicles must have green red flags and whistles for the cleaner to guide driver. All vehicles entering MRPL premises shall have cleaner / helper.

- The vehicles must be maintained as per the preventive maintenance schedule of the manufacturer / supplier. Only Drivers that are trained in Defensive Driving shall be deployed inside Refinery.

- Vehicles to be inspected fortnightly by trained technicians as per the inspection checklist.

Pre-inspection checklist to be formed to that effect.

- All vehicles to bear a sticker. "If you notice this vehicle is over speeding then please inform on telephone no 08242882192 / 2191 / 2194 / 2771 / 2731".

- Tractors and trucks / cranes / forklift should not be used for transporting personnel.

- Every vehicle should have the contractor's name prominently displayed on Tractor Trolleys, trucks, jeeps, cranes, JCBs, Poclains, trailers. The display board should be put on front and rear side of each of the vehicle.

Tractor trolleys must have independent brake systems both on tractor as well as on trolleys.

- All vehicles must be fitted with PESO approved spark arrestors.

Tippers/trucks carrying debris and soil/mud/sand shall ensure that there is no spillage of material on road. If any such spillage observed the same need to be cleaned and cleared by the contractor immediately. Wheels of the trucks and vehicles shall be clean and free from mud.

- Contractor to maintain Inspection and maintenance logs for every vehicle.

- Any kind of repair work on contractor's vehicle is to be carried out only inside the work shop or designated place and not allowed inside the battery area or any where at on road or at site.

#### **7. SAFE MEANS OF ACCESS :**

- The contractor must possess adequate numbers of self retractable type fall arrestors (of different sizes viz. 6 m, 20m, 40m, and 60 m), Safety nets and Safety Belts (Full Body Safety Harness) (ISI approved).

- Adequate and safe means of access and exits shall be provided for all work places, at all elevations. Using of scaffolding members (avoiding a ladder) for approach to high elevation shall not be permitted.

- Suitable scaffolds shall be provided for workmen for all works that cannot be done safely from the ground, or from solid construction except such short duration work as can be done safely from ladders. Ladder shall be of rigid construction having sufficient strength for the intended loads and made of metal and all ladders shall be maintained well for safe working condition. If the ladder is used for carrying materials as well, suitable foot holds and handholds shall be provided on the ladder. Ladders shall not be used for climbing carrying materials in hands. While climbing both the

hands shall be free. Ensure positioning of person at base / grade level while it is in use. All ladders, platforms, full body safety harness and safety nets should be inspected regularly and records should be maintained. Damaged items shall immediately be taken out of service and disposed off.

- Scaffolding staging more than 1.5 m above the ground or floor, swung or suspended from an overhead support or erected with stationary support and ladder shall conform to relevant IS specification. Timber bamboo scaffolding is not allowed inside the Refinery.

- Working platforms of scaffolds shall have toe boards 15cms in height to prevent materials from falling down.

- A sketch of the scaffolding proposed to be used shall be prepared and approval of the contractor's Mechanical Engineer obtained prior to start of erection of scaffolding. All scaffolds shall be examined and certified with proper display of tags by contractor's Mechanical Engineer before use.

- Safe means of access shall be provided to all working platforms and other elevated working places. Every ladder shall be securely fixed. No single portable ladder shall be over 9m in length. For ladders upto 3m in length the width between side rails in the ladder shall in no case be less than 300mm. For longer ladders this width shall be increased by atleast 20mm for each additional metre of length. Step shall be uniform and shall not exceed 300mm.

- Working platform and gangway along the side of pipe racks shall be provided. Under no circumstance the contractor employees should step on pipes at pipe racks.

#### **8. EXCAVATION, TRENCHING AND EARTH REMOVAL :**

- A Work Permit must be taken for any excavation or earth removal inside the existing refinery premises from Engineer In-Charge MRPL, as the area of work has underground pipelines, cables etc.

- All trenches 1.2m or more in depth shall at times be supplied with at least one ladder for each spacing of 3.0m in length or fraction thereof. Ladder shall be extended from bottom of the trench to at least 1m above the surface of the ground.

- The sides of the trench which are 1.2m or more in depth shall be stepped back to give suitable slope (angle of repose) or securely held by timber bracing (i.e. shoring of the excavated trench or pit should be done), so as to avoid the danger of sides from collapsing. The excavated material shall not be placed within 2m of the edges of the trench or half of the depth of the trench, whichever is more. Cutting shall be done from top to bottom. Under no circumstances under-cutting shall be done.



- The contractor shall ensure the stability and safety of the excavation, adjacent structures, services and the works.
- Open excavations shall be fenced off by railing (ledger pipes) and warning signals installed at well-lit places so as to prevent persons falling into the excavations.
- All blasting operations shall be carried out on the basis of procedures approved by Inspector of explosives. All works in this connection shall be carried out as per IS code of practice. Barricades, Warning signs etc. shall be placed on the roads / open area, Prior approval of such operation shall be obtained from Engineer-In-Charge of works. The blasting procedure being followed by the contractor must be submitted with MRPL engineer in-charge.
- The contractor must submit the methodology, safety aspects, schedule, License and other relevant features of control blasting operations.
- Wherever manual removal of earth is involved, earth shall be removed from the top by maintaining the proper slope equal to the angle of re-pose of the earth. Manual removal of earth / lowering of person in a pit should be done with tripod and pulley besides use of Full body Safety Harness by person.
- Such work shall be constantly supervised by the contractor's responsible persons.

#### **9. DEMOLITION :**

Before any demolition work is commenced and also during the progress of the work :

- Proper approvals shall be taken from Engineer in-Charge MRPL before commencing demolition.
- Area around shall be barricaded with cautionary signs and posting of security guards or supervisors for preventing unauthorised entries of personnel.
- All roads and open area adjacent to the work site shall either be closed or suitably protected. Appropriate warning signs shall be displayed for cautioning approaching persons.
- No floor, roof or other part of the building shall be overloaded with debris or materials as to render it unsafe.
- Entries to the demolition area shall be restricted to authorized persons only.

Contractor to place separate collection facility of waste like metal, on metal non degradable and bio degradable wastes and shall dispose to designated place daily basis.

Contractor shall be responsible to clear dry grass and wooden items etc from and around his working site/storage/fabrication yard etc to prevent any fire accidents.

#### **10. PERSONAL PROTECTIVE EQUIPMENTS :**

- All proper "ISI" marked Personal Protective Equipments (PPEs) as considered necessary by the Engineer-In-Charge shall be kept available by contractor for the use of the persons employed on the site and maintained in a condition suitable for immediate use. Also the contractor shall take adequate steps to ensure proper use of equipment by those concerned. The PPEs are to be provided by the contractor.
- All persons employed at Refinery shall use safety helmets, safety shoes and safety goggles as minimum safety gears. For other types of works, persons working in that area shall also use the required PPEs, as advised by the Engineer-In-Charge of MRPL.
- Workers employed on mixing asphaltic materials, cement and lime mortars shall use Gumboots, safety goggles, hand gloves and proper respirator.
- Persons engaged in welding and gas-cutting works shall use suitable welding face shields with welder's helmet. The persons assisting the welders shall use suitable goggles. Protective goggles shall be worn while chipping and grinding.
- Stonebreakers shall use protective goggles. They shall be seated at sufficiently safe intervals or distance.
- Persons engaged in or assisting in shot blasting (Sand blasting is prohibited) operations and cleaning the equipment after shot blasting shall use suitable gauntlets, overalls, dust mask, dust proof goggles, safety shoes and protective hood supplied with fresh air.
- All persons working with 3M lifeline and hook at height above ground or floor and exposed to risk of falling down shall use safety belts (Full Body Safety Harness with double life line and scaffolding hooks, ISI marked) which should be properly secured to solid object unless otherwise protected by cages, guard railings, etc. In places where the use of full body safety harness is impractical, suitable safety net of adequate strength fastened to substantial supports shall be employed under proper valid permit.
- When workers are employed in sewers and inside manholes, which are in use, the contractor shall ensure that the manholes are opened and are adequately ventilated at least for an hour. The atmosphere inside the space shall be checked for the presence of any toxic gas or oxygen deficiency and recorded in the confined space entry permit, availability of standby person at manhole must be ensured before the personnel are allowed to get into the man-holes. The manholes opened shall be cordoned off with suitable railing and provided with warning signals or

caution boards or barricade tape to prevent accidents. There shall be proper illumination in the night.

#### **11. PAINTING :**

- Respirators shall be provided by the contractor for use when paint is applied, safety of personnel in vicinity also should be considered while painting.
- Overalls shall be supplied by the contractor to the workmen and adequate facilities shall be provided to enable the painters for decontamination at the cessation of work.
- All solvent-based paints, thinners shall be stored in separate well ventilated storage kept under proper surveillance.
- Smoking, open flames or sources of ignition / hot work shall not be allowed in places where paints and other flammable substances are stored, mixed or used. A caution board, with the instructions written in national / regional language, "SMOKING / HOT WORK – STRICTLY PROHIBITED" shall be displayed in the vicinity where painting is in progress or where paints are stored. Symbols shall also be used for caution boards.
- Suitable IS marked First Aid Fire Fighting equipments shall be kept available at a place where flammable paints are stored, handled or used.
- When painting work is done in a closed room or in a confined space, adequate ventilation shall be provided. Workers shall wear suitable supplied air type breathing apparatus. Work shall be carried out under a valid work permit.
- Epoxy resins and their formations used for painting shall not be allowed to come in contact with the skin. The workers shall use PVC gloves and / suitable barrier creams.
- Adequate ventilation shall be provided especially when working with hot resin mixes.
- Increased personal hygiene shall be practiced to control inadvertent contact with the resin and eliminate its effects.
- Workers shall thoroughly wash hands and feet before leaving the work. Work clothes shall be changed and laundered frequently.
- Care must be taken while carrying out painting inside confined space. There shall be safety devices to monitor the personnel working inside confined space like vessels during painting of internal surface. Suitable painting methods shall be adopted as specified elsewhere. It should not be clubbed with hot work and proper ventilation should be available to draw out the solvent vapours. Manual painting is to be adopted instead of spray painting.

## **12. LIFTING MACHINES TOOLS AND TACKLES :**

- Supplier's / Manufacturer's manual for operations / safety / periodical maintenance of all Cranes, winches, JCBs, Poclains, Excavators, Trucks, tractors, Vehicles, etc. MUST be made available at site from the moment it is brought at site and the same should be strictly adhere to.
  - Lifting machines, tools and tackles shall be of good mechanical construction, sound material, adequate strength, free from any defects and shall be kept in good working condition.
  - Lifting machines, tools, tackles, equipments etc. to have identification tags of steel plate of size 2"x 2" tied to it using steel wire of 4 mm size. The details like reference number, Safe Working Load (SWL), date of testing, next due date of testing, etc. to be punched on this plate.
  - Contractor must produce Competent Authority's (Authorised by The Directorate of Factories, Karnataka state) Certificate of testing in the prescribed form of Lifting Machines, Chains, ropes and lifting tackles well in advance. Only valid Lifting Machines, tools etc. to be used and to be re-certified before expiry of certificate. Also, these equipments will be inspected by Engineer In-Charge of MRPL as and when required. The same procedure is applicable for all other Electrical Equipments, tools, machines, D.G sets, compressors, etc.
- Lifting equipments for testing by competent authority to include JCB, Poclain, Excavators, etc.
- The ringer crane to be tested and certified every time by Competent Person it is dismantled and reassembled. This certification must also include stability of soil on which it is assembled.
- Use of Hydra is not permitted inside refinery/construction premises. Hydraulically jacked lifting machines to be used.
- Lifting machines, tools, tackles, equipments etc. to be inspected in addition to the Competent Authority's certification. This should be done fortnightly by experienced trained mechanical foreman and technicians and record of such inspection to be maintained.
  - Every rope and sling used in hoisting or lowering of materials or as a means of suspension shall be of good quality and adequate strength and free from any defect.
  - Every crane operator or lifting appliance operator shall have a driving License for Heavy Vehicle, proper physical fitness such as eye sight etc. and with adequate experience. No persons under the age of 21 years shall be in charge of any hoisting machine or give signal to operator of such machine.
  - In case of every lifting machine (and of every chain, ring, hook, shackle, swivel and pulley block used in hoisting or as means of suspensions) the safe working load shall be ascertained and clearly

marked. In case of a lifting machine having a variable safe working load, each safe working load and the conditions 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.

- The contractor shall notify the safe working load of the machine to the Engineer-In- Charge whenever he brings any machinery to site for work and get it verified by the Engineer-In-Charge, supported by a valid test certificate by the competent person.

- Motors, gearing transmission, couplings, belts, chain drives and other moving parts of hoisting appliances shall be provided with adequate safeguards. Hoisting appliances shall be provided with such means as to reduce to the minimum risk of any part on a suspended load becoming accidentally displaced or lowered.

- The contractor must have a team of Experienced Mechanical Personnel (having minimum of 5 yrs. experience in carrying out safety inspection and testing of Lifting machines, Tools and Tackles etc.), to conduct periodical (Daily, fortnightly, monthly and quarterly) inspection and testing of Lifting machines, Tools and Tackles and to maintain its records.

- Crane shall not be used as hoist. In case cranes are used as hoist then factory Inspector's permission to be taken in advance and to be subject to biannual testing by competent person as required for hoist under Factories Act 1948. Also, the design of cage to be got approved by the competent person well in advance. Two ropes or chains to be provided to the cage, separately connected with the cage, suspended independently and capable of carrying the whole weight of the cage.

- Contractor to maintain operation, inspection and maintenance logs for every lifting equipment, tool and tackle.

### **13. TEMPORARY SHEDS :**

- Before erecting temporary shelters like sheds or tents anywhere at site, written permission of the concerned Engineer In-charge must be obtained.

- Temporary sheds for site office should be avoided. Instead contractor shall arrange for portal cabins for site office / stores.

- Temporary shed should not be erected using scaffolding pipes. The shed should be made of safe construction material.

- The temporary shed should be erected after proper designing following engineering design practices in conformance with normal safety standards to ensure the stability and safety.

- Temporary shed should bear the contractor's name.
- Temporary piping, hose connections and electrical wiring to these temporary sheds must be laid in such manner that they do not cause tripping, hitting or electrocution hazards.

**14. ERECTION :**

- At the planning stage consideration should be given, by those responsible for the design, to the safety of the workers who will subsequently be employed in the erection of such structures. A detailed erection scheme / schedule shall be furnished well in advance for all the critical erections.
- Care should be exercised by design engineers and other professional persons, not to include anything in the design which would necessitate the use of unwarrantably dangerous structural procedures and undue hazards, which could be avoided by design modifications.
- Facilities should be included in the design for such work to be performed with the minimum risk.
- Detailed Safety Procedure should be submitted as a part of Heavy Equipment erection scheme. Heavy Equipment erection scheme must be submitted at least one month in advance.
- Erection engineer to conduct training on rigging before every heavy lift / erection for crane operator, foreman and riggers.
- Erection of structural platforms, gratings and hand rails to be done on priority. The procurement of gratings, structural members for hand rails to be done on priority.
- Prefabricated parts should be so designed and made that they can be safely transported and erected.
- As far as practicable the safety of prefabricated parts while erection should be ensured by appropriate means, such as provision and use of :
  - a) Ladders;
  - b) Gangways;
  - c) Fixed platforms;
  - d) Platforms, Buckets, boatswain's chairs, etc. suspended from lifting appliances;
  - e) Safety belts and lifelines; and
  - f) Safety nets or catch platforms.
- Ladders to be inspected fortnightly by experienced trained mechanical foreman and mechanical technicians and record of such inspection to be maintained.
- The boatswain's chairs/ platforms used in structural erection to be inspected and checked once in fortnight and record maintained.

- In addition to the conditions of stability of the part when erected, when necessary to prevent danger the design should explicitly take into account:
  - a) the conditions and methods of attachment in the operations of stripping, transport, storing and temporary support during erection; and
  - b) Methods for the provision of safeguards such as railings and working platforms, and, when necessary, for mounting them easily on prefabricated parts.
- The hooks and other devices incorporated in 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; and
  - b) not set up in the part stresses that could cause failures, or stresses in the building not provided for in the plans.
- Prefabricated parts made of concrete should not be stripped before the concrete has set and hardened sufficiently to ensure the safety of the operation.
- Store places should be so constructed that:
  - a) There is no risk of prefabricated parts falling or overturning; and
  - b) Storage conditions generally ensure stability having regard to the method of storage and atmospheric conditions.
- Prefabricated parts made of concrete should not be erected before the concrete has set and hardened to the extent provided for in the plans.
- While they are being stored, transported, raised or set down, prefabricated parts should not be subjected to stresses prejudicial to their stability.
- Trailers only to be used for transportation of pipes. Crane to be used for erection at site.
- Every lifting appliance should :
  - a) be suitable for the operation; and
  - b) be approved by a competent person, or tested under a roof load 20 percent heavier than the heaviest prefabricated part.
  - c) Ringer mode of a heavy crane **MUST** be inspected, checked and certified by competent person every time it is dismantled and erected. The report must bear the stability of the soil on which it is erected.
- Lifting hooks should have the maximum permissible load marked on them.
- Tongs, clamps and other appliances for lifting prefabricated parts should :

- a) be of such shape and dimensions as to ensure a secure grip without damaging the part ; and
- b) be marked with the maximum permissible load in the most unfavourable lifting conditions.
- Prefabricated parts should be lifted by methods or appliances that prevent them from spinning accidentally.
- The temporary basket cages / Platforms / Buckets / boatswain's chairs, etc. used for lifting / working at height suspended from lifting appliances or suspended from structures or beams MUST be certified by competent person and provisions or conditions as stipulated during certification to be adhere to.
- While prefabricated parts are being lifted measures should be taken to prevent workers from being struck by objects falling from a height and area around such site should be barricaded with cautionary signs.
- When necessary to prevent danger, before they are raised from the ground, prefabricated parts should be provided with safety devices such as railings and working platforms to prevent falls of persons.
- If workers are exposed to danger when releasing prefabricated parts from lifting appliances, adequate safety measures should be taken.
- At workplaces adequate instructions should be given to the workers on the methods, arrangements and means required for the construction, storage, transport, lifting and erection of prefabricated parts.
- When it is not practicable to install protective guardrails and toe boards the workers should be provided with and use safety belts and lifelines to limit the height of the fall.
- Overhead screens to be provided to prevent workers from being struck by falling objects.
- The safety devices (guard-rails, toe-boards, safety belts and lifelines) should not be removed so long as the risk remains.
- Precautions should be taken to prevent fires being caused by rivet-heating equipment.
- Rivet heaters should extinguish their fires before leaving work.
- Extra care should be taken to prevent fall of objects, tools, etc. from height.
- Before structural steel parts are lifted, care should be taken that any object that could fall is fastened or removed.
- Structural steel parts should not be dragged while being lifted if that could cause danger.



- Steel trusses that are being erected should be adequately shored, braced or guyed until they are permanently secured in position.
- While structural members are being moved into place the load should not be released from the hoisting rope until the members are securely fastened in place.
- 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.
- No load should be placed on open-web steel joists until they have been placed in position and secured.
- Erection of pipes to be done using web belts only. Web belts must be inspected and checked fortnightly internally by the contractor and records maintained. Damaged ones to be cut to pieces and record to be maintained.
- Nipples and other accessories used for hydrotest and subject to high pressures to be inspected, checked and tested by experienced trained mechanical foreman and mechanical technicians and records maintained. Damaged parts to be replaced immediately with the new ones.
- Discarding criteria of web belts to be procured from the supplier / manufacturer by the contractor and submitted to MRPL Engineer Incharge.

#### **15. WORK ON TALL CHIMNEYS :**

##### **SCAFFOLDS :**

- All workmen should be certified medically fit by medical practitioner before working at height. Mock up drills MUST be conducted by the contractor for all these workmen and issue Working at Height passes to only those who has experience of working at height, is declared medically fit and shows confidence during mock up drills.
- For the erection and repair / painting of tall chimneys and vertical structures scaffolding should be provided. Scaffolds after erection should be certified by competent mechanical engineer for its strength before use and be displayed with a tag "Certified for use".
- Scaffolds should confirm to relevant Indian Standards: Contractor MUST have a team of trained scaffolders including trained Scaffolding engineer.
- Fixed inside scaffolding should be securely anchored in the chimney wall.
- The scaffold floor should always be at least 65 cm (26 in) below the top of the chimney.
- Under the working floor of the scaffolding the next lower floor should be left in position as a catch platform.

- Suspended outside platform (inspection scaffolds) should be provided as per the relevant standards as stated above.
- Use of Catch platforms, stairs, ladders and Iron rung, lifting tools, tackles and work with hot asphalt, tar should be carried out as per the procedures outlined in relevant ILO manual.
- Full Body Safety Harness (Safety Belt) with lifelines (of various sizes 2', 5' and 9' double lanyards) and safety nets being used should conform to relevant standards and are to be inspected, tested, periodically and records be maintained. Damaged safety belts and nets should be discarded, taken out of service and disposed off.
- Safety belts must be used while working at height. The life lines (lanyard) MUST be tied to firm support. In case of absence of firm support provision of wire rope of adequate size tied with lifting tackles to be made to tie the safety belt life line (lanyard).
- All Safety belts to be inspected once in a month and damaged ones to be discarded. Suppliers / Manufacturers Discarding criteria of safety belts to be submitted to MRPL. The record of inspection and the results to be maintained. And a copy to be submitted to Engineer Incharge.
- The scaffolds to be inspected and certified by the competent mechanical Engineer before use and subsequently, at least once in a week.

#### **16. Safety of Electrical works:**

Before starting work in live electrical panels, proper electrical isolation shall be ensured. The same to be inspected by the electrical in charge and necessary isolation tag shall be attached. Proper electrical isolation permit system along with LOTO (Locking Out / Tagging Out) system shall be maintained by the contractor. Triplicate copy of such permits shall be submitted to MRPL.

#### **17. CATCH NETS :**

- Where workers cannot be protected against falls from heights by other means they should be protected by catch nets.
- Catch nets should be made of good quality fiber cordage, wire or woven fabric or material of equivalent strength and durability.
- The perimeter of catch nets should be reinforced with cloth-covered wire rope, manila rope or equivalent material.
- Catch nets should be provided with adequate means of attachment to anchorage.
- Catch nets to be inspected fortnightly, tested and records maintained. Damaged safety nets should be discarded and record maintained.

### **18. PROTECTION AGAINST MOVING VEHICLES :**

Workers who are regularly exposed to danger from moving vehicles should wear;

- a) distinguishing clothing, preferably bright yellow or orange in colour; or
- b) devices of reflecting or otherwise conspicuously visible material.

Light Vehicle shall have reverse horn and Heavy Vehicles shall have trained helpers with whistle and red and green flags for directing the driver.

### **19. HANDLING MATERIALS :**

- Mechanical means should be provided and used for lifting and carrying loads.
- Personnel should have knowledge of safe ways of material handling.

### **20. STACKING AND PILING :**

- Materials and objects should be so stacked and unstacked that no person can be injured by materials or objects falling, rolling, overturning, falling apart or breaking.
- Area earmarked for stacking and piling should be barricaded and only authorised personnel be allowed to carry out stacking and piling jobs.
- Proper stacking and piling should be done as per the guidelines of ILO.

### **21. WELDING AND GAS CUTTING :**

- Welding and gas cutting operations shall be done only by qualified and authorised persons and as per IS specification and code of practice.
- All the hoses used on compressed gas cylinders (Acetylene, Oxygen etc.) to be as per IS.
- Welding and gas cutting shall not be carried out in places where flammable or combustible materials are kept and where there is danger of explosion due to presence of flammable / gaseous mixtures. Contractor shall continuously monitor the area with Explosimeter / H<sub>2</sub>S meters.
- Welding and gas cutting equipments including hoses and cables shall be maintained in good condition. It should be checked daily by the user and fortnightly by the supervisor and recorded.
- Barriers shall be erected to protect other persons from harmful rays from the work. When welding or gas cutting is done in elevated positions / on trenches / inside refinery units, precautions shall be taken to prevent sparks or hot metals falling on persons or flammable materials (Welding booths shall be constructed).
- Use of proper PPEs by personnel involved in Gas cutting / Electric Arc welding should be ensured. Use of Welders Helmet with face shield by the welders is a MUST.

- Fire extinguisher shall be available near the location of welding operations. Valid permit shall be obtained before flame cutting / welding is taken up & comply with all the permit requirements.
- Contact of personnel with the electrode or other live parts of electric welding equipment shall be avoided.
- Extreme caution shall be exercised to prevent accidental contact of electrodes with ground.
- The welding cables shall not be allowed to get entangled with power cables. It shall be ensured that movement of materials does not damage the cables.
- Oxy-Acetylene cylinders must be mounted on trolley with chain holding the compressed gas cylinders. The compressed gas cylinders must have pressure gauges fitted over it and Oxy-Acetylene Gas cutting set should be fitted with flash back arrestor at both the torch and cylinder ends.
- Under no circumstance the compressed gas cylinder should be taken inside the confined space or excavated pits. Hydraulic test certificates of all compressed gas cylinders should be maintained and furnished as and when required.

## **22. GRINDING** :

- All portable grinders shall be used only with their wheel guards in position to reduce the danger from flying fragments should the wheel break during the use.
- Grinding wheels of specified diameter only shall be used on a grinder – portable or pedestal- in order not to exceed the prescribed peripheral speed.
- Helmet with face shield shall be used during grinding operation.

## **23. HOUSE KEEPING** :

- The contractor shall at times keep his work spot, site office and surroundings clean and tidy from rubbish, scrap, surplus materials and unwanted tools and equipment.
- Welding and other electrical cables shall be routed as to allow safe traffic by all concerned.
  - No materials on any of the sites of works shall be so stacked or placed as to cause danger or inconvenience to any person or the public. The Engineer-In-Charge may require the contractor to remove any materials which, are considered to be of danger or cause inconvenience to the public.
  - At the completion of the work, the contractor shall have removed from the work premises all scaffoldings, surplus materials, rubbish and all sheds and sanitary arrangements used / installed for his workmen on the site.

- House keeping of the workplace shall be done strictly by the Contractor on daily basis or as required by the Engineer-in-charge. Contractor to collect all debris/ scrap and dump at designated Scrap Yard as defined by MRPL authorities.
- A separate house keeping team to be formed and made available round the clock.

**24. FIRE SAFETY :**

- Adequate number of duly calibrated Explosimeters, Oxygen meters, Hydrogen Sulphide detectors (Portable / Fixed) or any other multiple gas detector should be made available at site by the contractor.
- Combustible materials like timber, bamboos, paints etc. shall not be used at MRPL site for scaffolding or for supports.

Containers of paints, thinners and allied materials shall be stored in a separate room, which shall be well ventilated, and free from excessive heat, sparks, flame or direct rays of the sun. The containers of paint shall be covered or properly fitted with lid shall not be kept open except while using.

- Fire extinguishers as approved by Engineer-In-Charge shall be located at the work site at appropriate places.
- Adequate number of contract workmen shall be given education and training in fire fighting and extinguishing methods.

**25. WORK PERMIT SYSTEM \_\_\_\_\_:**

- MRPL's Work Permit system (As per MRPL Safety Manual) to be strictly followed.
  - All jobs within refinery should be executed with a safety work permit only. These will be issued by the concerned operating personnel of MRPL (Refinery Shift Manager or any authorised person). However, he can withdraw the permit when the stipulated conditions are not complied with at the work spot.
  - Area is safe for performing the Work. Job is continuously supervised by qualified supervisor.
- Responsibility of Performing Authority :**
- To obtain an approved Work Permit duly filled and signed by authorities as per the MRPL's Work Permit System before starting the work in the area.
- To visit job sites and ensure that it is prepared accordingly.

- The person performing the job shall be in possession of the permit till the completion of the job. The permit should be produced for inspection at any time. The Work Permit shall be displayed at job site in the plastic folder.
- To understand the scope of the work and implications involved.
- To restrict the work to the area / equipment specified in the work permit.
- To comply with the instructions given on the Work Permit.
- To follow Plant Safety Rules and Procedures.
- To be alert at all times for the development of unexpected situations.
- To stop the work immediately on detecting any unsafe condition and promptly inform the Issuing Authority. Follow MRPL's Onsite Disaster Management Plan (DMP).
- To return the Permit duly signed after completion of the job to the Issuing Authority. Contractor must adhere to work permit system and other safety regulations.

**26. WORK IN AND AROUND WATER BODIES:**

When the work is done near any place, where there is a risk of drowning, all necessary rescue equipment such as life buoys and life jackets shall be provided and kept ready for use and all necessary steps taken for prompt rescue of any person in danger and adequate provision shall be made for prompt first-aid treatment of all injuries likely to be sustained during the course of the work. Persons who do not know swimming shall not be engaged alone for any work where risk of drowning exists. Sufficient number of life buoys or life jackets shall be provided.

**27. PUBLIC PROTECTION :**

The contractor shall make all necessary provisions to protect the public. He shall be bound to bear the expenses for defense of every action or other proceedings of law that may be brought by any person for injury sustained owing to neglect of any precaution required to be taken to protect the public. He shall pay the damage and cost which may be awarded in any such suit, action or proceedings to any such person, or the amount which may be fixed as a compromise by any such person.

**28. OTHER STATUTORY PROVISIONS :**

Notwithstanding the above clauses there is nothing in these to exempt the contractor from the provisions of any other Act or Rules or Indian Standards or OISD standards or OISD guidelines in force in the Republic of India. In particular all operations involving the transport, handling, storage and use of explosives shall be as per the standing instructions and conform with Indian Explosives

Act, 1884 and the explosives Rules, 1983. The Factories Act 1948 and The Karnataka Factories Rules, 1969, Handling, transport, storage and use of Compressed gas cylinders and Pressure vessels shall conform with the Gas Cylinders rules 1981 and Static and Mobile pressure Vessels (Unfired) Rules 1981. In addition, The Building and other construction workers (Regulation of Employment and conditions of service) Act 1996, The Indian Electricity Act, 1910 and Indian Electricity Rules 1956, The Atomic Energy Act 1962, The Radiation Protection Rules 1971, Radiation Protection Manual of Nuclear Facilities and the Atomic Energy (Factories) Rules 1988 and various rules and Act relevant to the activities being performed shall also be strictly complied with.

- No Child labour should be brought in for work.
- MRPL holds the right to issue warnings / Heavy penalties (monetary fine) / suspend work at any time or terminate the contract for a loss / damage and a pattern of frequent failure to adhere to Safety Laws, regulations and Onsite Safety procedures. In general a heavy monetary fine will be deducted straight from the contractor's bill for each violation of Safety Rules / Unsafe Act / Unsafe Condition observed, for each First-Aid injury, for each Lost Time injury / Near Miss Accident and for each fatality.

**29. GUIDELINES AND GENERAL PROCEDURES FOR SUPPLY AND USE OF,  
ELECTRICITY AT SITE :**

Following safety requirements shall be complied with before the contractor uses the power supply.

- The contractor shall submit a list of licensed electrical staff to be posted at site.
- It shall be the responsibility of the contractor to provide and maintain complete installation on the load side of the supply point with regard to the safety requirements at site. All cabling and installation shall comply with the appropriate statutory requirements given below and shall be subject to approval of the Departmental Engineer-In-Charge / Electrical Engineer.
  - (a) Indian Electricity Act, 1910
  - (b) Indian Electricity Rules, 1956
  - (c) National Electric code, 1985
  - (d) Other relevant rules of Local bodies and Electricity Boards.
- Where distribution boards are located at different places the contractor shall submit schematic drawing indicating all details like size of wires, overhead of cable feeders, earthing etc. The position and location of all equipment and switches be given.

- The contractor shall make his own arrangements for main earth electrode and tapings thereof. The existing earth points available at site can be used at the discretion of the Departmental Electrical Engineer with prior permission. Method of earthing, installation and earth testing results shall conform to relevant I.S. Specifications.
- Overhead High Tension (HT) cable routes to be marked and physically barricaded to prevent crane coming in contact with it.
- All three-phase equipment shall be provided with double earthing. All light fixtures and portable equipment shall be effectively earthed to main earthing.
- All earth terminals shall be visible. No gas pipes and water pipes shall be used for earth connection. Neutral conductor shall not be treated as earth wire.
- Every electrically operated machine or equipment to be independently earthed.
- Earth pits to be provided near DG sets, electrically operated machines, equipments etc. DG sets used in Refinery shall be installed inside acoustic enclosure to minimise noise pollution. Exhaust of DG sets shall be routed to safe height.
- Continuity and resistance of all earth connections to be inspected and checked and tested fortnightly and records to be maintained.
- The contractor shall not connect any additional load without prior permission of Departmental Electrical Engineer.
- Joints in earthing conductors shall be avoided. Loop earthing of equipment shall not be allowed. However, tapings from an earth bus may be done.
- The entire installation shall be subjected to the following tests before energisation of installation including portable equipment :
  - a) Insulation resistance test
  - b) Polarity test of switches
  - c) Earth continuity test
  - d) Earth electrode resistance
- The test procedures and their results shall conform to relevant IS specifications. The contractor shall submit a test report for his complete installation every 2 months or after rectifying any faulty section in the specimen test report. One such test report for the complete installation shall be submitted before onset of monsoon.



- Only persons having valid wireman's license shall be employed for carrying out electrical work and repair of electrical equipment installation and maintenance at site. The job shall be supervised by a qualified licensed supervisor.
- Electricians to be provided with red helmet for easy identification.
- Electrical equipment and installations shall be installed and maintained as to prevent danger from contact with live conductors and to prevent fires originating from electrical causes like short circuits, overheating etc. Installation shall not cause any hindrance to movement of men and materials.
- Materials for all electrical equipment shall be selected with regard to working voltage, load and working environment. Such equipment shall conform to the relevant Indian Standards.
- The minimum clearance to be maintained for all overhead lines along roads and across roads shall be as per the statutory requirements.
- Grounding conductor of wiring system shall be of copper or other corrosion-resistant material. An extra grounding connection shall be made in appliances / equipment where chances of electric shock is high.
- Electric fuses and / or circuit breakers installed in equipment circuits for short circuit protection shall be of proper rating. It is also recommended that high rupturing capacity (HRC) fuses are used in all circuits. The Earth Leakage Circuit Breaker (ELCB) of 30mA max capacity shall be provided in the circuits. (ELCB) of 30mA max shall be provided on each Extension board.
- Wherever cables or wires are laid on poles, a guard wire of adequate size shall be run along the cables / wire and earthed effectively. Metallic poles as a general rule, shall be avoided and if used shall be earthed individually. Anticlimbing guards and danger notices shall be provided on poles. Each equipment shall have individual isolating switches.
- Wires and cables shall be properly supported and an approved method of fixing shall be adopted. Loose hanging of wires and cables shall be avoided. Lighting and power circuits shall be kept distinct and separate.
- Reinforcement rods or any metallic part of structure shall not be used for supporting wires and cables, fixtures, equipment, earthing etc.
- All cables and wires shall be adequately protected mechanically against damages. In case the cable is required to be laid underground, it shall be adequately protected by covering the same with

- bricks, Plain Cement Concrete (PCC) tile or any other approved means and provided with cable markers.
- All armored cables shall be properly terminated by using, suitable cable glands. Multistranded conductor cables shall be connected by using cable lugs/sockets. Cable lugs shall preferably be crimped. They shall be of proper size and shall correspond to the current rating and size of the cable. Twisted connections will not be allowed.
  - All cable glands, armoring and sheathing of electric cables, metal circuits and their fittings, metallic fittings and other non-current carrying parts of electrical equipment and apparatus shall be effectively grounded.
  - All the Distribution Boards, switches, fuse units, bus bar chambers, ducts, cubicles etc. shall have MS enclosures and shall be dust, vermin and water proof. The Distribution Boards, switches etc. shall be so fixed that they shall be easily accessible, change shall be done only after the approval of the Departmental Electrical Engineer. Distribution Boards used inside the process units shall be of Flame Proof type (Intrinsically safe type).
  - Each Distribution Board shall have ELCB of 30mA max capacity.
  - The contractor shall provide proper enclosures / covers of approved size and shape for protection of all the switchboards, equipment etc. against rain. Exposed live parts of all electrical circuits and equipment shall be enclosed permanently. Crane trolley wires and other conductors which cannot be completely insulated shall be placed such that they are inaccessible under normal working conditions.
  - Iron soclad industrial type plug outlets are preferred for additional safety.
  - Open type Distribution Boards shall be placed only in dry and ventilated rooms; they shall not be placed in the process units, vicinity of storage batteries or otherwise exposed to chemical fumes.
  - Isolating switches shall be provided close to equipment for easy disconnection of electrical equipment or conductors from the source of supply when repair or maintenance work has to be done on them.
  - In front of distribution boards a clear space of 90cm shall be maintained in order to have easy access during emergency.
  - Adequate working space shall be provided around electrical equipment, which require adjustment or examination during operation.

- As far as possible electrical switches shall be excluded from a place where there is danger of explosion. All electrical equipment such as motors, switches and lighting fittings installed in workroom where there is possibility of explosion hazard shall be explosion proof.
- All connections to lighting fixtures, starters or other power supplies shall be provided with PVC insulated, PVC sheathed twin/three/four core wires to have better mechanical protection for preventing possible damage to equipment or injury to personnel. Taped joints shall not be allowed. Electric starter of motors, switches shall not be mounted on wooden boards. Only sheet mounting or iron framework shall be used.
- All the lighting fixtures and lamp holders shall be of good quality and in good condition. Badly repaired or broken holders, etc. shall not be used.
- Only PVC insulated and PVC sheathed wires or armoured PVC insulated and sheathed cables shall be used for external power supply connections of temporary nature. Weatherproof rubber wires shall not be used for any temporary power supply connections.
- Taped joints in the wires shall not be used. In case joints are required on electrical cables then only heat shrinkable PVC sleeves will be allowed.
- The bulbs/lamps used for illumination and testing purpose shall have cover or guard to protect them from accidental breakages. Only 24V supply system shall be used for hand lamps etc. while working inside metallic tanks or conducting vessels(Confined spaces).
- After installation of new electric system and or other extensive extensions to existing installations, thorough inspection shall be made by Contractor's Electrical Engineer before the new system or new extension is put in use.
- All persons who work with electrical installation/equipment shall be aware of the electrical hazards, use of protective devices and safe operational procedures. They shall be given training in fire fighting, first aid and artificial resuscitation techniques, location of isolation switches, etc.
- The supervisor shall instruct the workers in the proper procedure, specify and enforce the use of necessary protective equipment such as adequately insulated pliers, screw drivers, fuse pullers, testing lamps and similar hand tools. Only wooden ladders shall be used to reach the heights in electrical work.
- No material or earthwork shall be allowed to be dumped below or in the vicinity of the bare overhead line conductors.

- Separate work permits shall be issued for individual group leaders working on the same system which shall be returned after the completion of the work to the Engineer-In-Charge.
- Before any maintenance work is commenced on electrical installations/equipment, the circuits shall be de-energised and ascertained to be dead by positive test with an approved voltage testing device. Switches shall be tagged or the fuse holders withdrawn before starting the work. Adequate precautions shall be taken in two important aspects viz. LOTO system to be followed.
- That there shall be no danger from any adjacent live parts and
- That there shall be no chances of re-energisation of the equipments on which the persons are working. (Tag out and lock out LOTO system to be strictly followed).
- While working on or near a circuit, whenever possible the use of one hand may be practiced even though the circuit is supposed to be dead. The other hand may preferably be kept in pocket.
- When it is necessary to touch electrical equipment (for example when checking for overload of motors) back of the hand may be used. Thus, if accidental shock were to cause muscular contractions, one would not "freeze" to the conductor.
- Operation of electrical equipment shall be avoided when standing on wet floor or when hands are wet. Rubber mats should be placed in front of Panels / Distribution Boards as per Indian Standards.
- Before blown fuses are replaced, the circuit shall be locked out and an investigation shall be made for the cause of the short circuit or overload.
- When two persons are working within reach of each other, they shall never work on different phases of the supply.
- When structural repairs, modification or painting work are to be undertaken, appropriate measures shall be taken for the protection of persons whose work may bring them into the proximity of live equipment / circuit.
- It shall be ensured that the insulation and wire size of extension cords is adequate for the voltage and current to be carried.
- While tapping electricity from the socket, plug top must be used. It shall be ensured that no extension boards are over loaded while tapping. Only standard three pin plugs (Naked Wire is prohibited ) shall be used for tapping electricity. Broken sockets/plugs shall be replaced immediately with good ones. Only joint free cables shall be used for connecting equipment/Use of apparatus.
- Floors shall be kept free from trailing electrical cables to avoid tripping hazard.

- Power supply to all the machines and lighting fixture shall be switched off when not in use.
- Temporary electrical connections shall be removed as soon as the stipulated work is over. After completion of the works, the contractor shall dismantle the distribution boards and the other facilities he may have erected.
- Unauthorised tapping of power by others from distribution boards under the control of the contractor shall be prohibited at all circumstances.
- No flammable materials shall be stored in any working area near the switchboards.
- Safety work permits shall be used for switching off the main feeder and equipment by the contractor.
- "MEN ON LINE" "DO NOT SWITCH ON" "DANGER" or "CAUTION" boards as applicable shall be used during maintenance works on the electrical equipment.

### **30. PORTABLE ELECTRICAL EQUIPMENT :**

- Portable electrical tools must be examined, maintained and tested daily, fortnightly and quarterly so that the equipment and its leads are in good order. Register shall be maintained for inspection recording the testing dates and results of the equipments. Inspection checklists to be formed to that effect. The recertification of lifting tools, tackles, equipments etc. must be carried out well before the expiry of its validity period.
- All portable appliances shall be provided with three core cable and three pin plugs. The third pin of the plug shall invariably be earthed. It shall be ensured that the metal part of the equipment shall be effectively earthed.
- All connections to portable equipment or machines from the panel/distribution board/extension board shall be taken using 3 core double insulated PVC flexible copper wire in one length. No joints shall be allowed in this flexible wire. In case length of wire is not sufficient for a particular location then the supply can be tapped by providing another extension board comprising of switch, socket and ELCB of 30mA max..
- Flexible cables for portable lamps, tools and apparatus shall be regularly examined, tested periodically and maintained to ensure safety.
- For excavations, one time clearance from electrical is required for a particular area.
- Contractor shall get their welding machine / Stress Relieving (SR) electrical equipment / all

- portable machine certified by MRPL / MRPL authorised contractor and seal will be fixed on machine to that effect. Certificate from third party mentioning the checks carried out, repairs carried out and safe to use to be submitted to Engineer Incharge.
- Revalidation to be done once in 4 months. Incase contractor does not comply, it will be done by MRPL and four times the cost of repair will be back charged to contractor.
- Incase of welding, separate return cable from job piece to welding machine to be connected. Wires not to be used. PVC insulated cables only to be used.
  - All lighting circuits/temporary connections for portable machine should have ELCB's of 30mA capacity max.
  - All ELCBs to be tested once in 15 days using ELCB testers (and not by the lamp with open wires) and record maintained. Also separate register for ELCB trips (TRIP REGISTER) shall be maintained. It shall be daily signed by the site Incharge of the contractor.
  - Earthing of Neutral, which will act as return path, is not allowed.
  - Electricians should have wireman license.
  - During monsoons, monsoon protection for electrical equipment to be done.
  - All feeders in contractor distribution panel to be clearly lettered with load details for isolation incase of emergency.
  - Insulated tools like screwdriver, cutting plier, tester to be used.
  - Each contractor should have one set of multimeter, ELCB tester and tong tester.
  - First aid kit to be available.
  - The contractor must have a team of Experienced Electricians (having minimum of 10 yrs. experience in carrying out safety inspection and testing of Electrical Equipments, tools, portable electrical machines and appliances etc.). to conduct periodical (Daily, fortnightly, monthly and quarterly) inspection and testing of Electrical Equipments, tools and portable electrical machines, tools and appliances and to maintain its records.
  - All power cable ends should have industrial plug on one side and other end directly into the machine. (No naked end pinning into will be permitted).
  - For any job within MCC / SRR a work permit will be issued by MRPL operation. Job should not be started without these permits.

**31. ROLE OF CONTRACTOR INCASE OF EMERGENCY AND SIREN :**

- Contractor shall instruct his workers to follow instructions strictly in case of fire siren / emergency or if advised or felt necessary by Engg. In-charge. If evacuation is ordered they must leave the work site and proceed towards the nearest designated assembly point. The contractor and its employees MUST follow specific instructions (Roles and Responsibilities incase of fire / onsite emergency) that will be given during training from time to time. All contractor employees MUST undergo such training, before their deployment at the work site. Contractor shall arrange & conduct such trainings for his employees and also employees of sub-contractors.
- Contractor shall instruct his workers to stop all jobs immediately incase release of liquid/gas/toxic/hazardous chemicals etc, and inform the concerned MRPL personnel available at site.

**32. TRAINING :**

- The contractor to conduct Induction training of all employees and record maintained.
- The contractor will have to depute all his employees (including Engineers, supervisors and workmen), before they commence work for the first time at MRPL site and subsequently once in a year, to undergo Safety training. They will get photo gate passes only after the completion of the training. Contractors MUST have and get conversant with Material Safety Data Sheets of all the Chemicals in MRPL. It is a MUST for them to carry the photo passes with them and produce it when demanded at site.
- Tool box talks to be conducted every day before starting of each shift and before commencing of work after lunch break by the concerned Engineer.

**33. LIST OF PERSONAL PROTECTIVE EQUIPMENTS**

The contractor must poses the following minimum safety Items cum Personal Protective Equipments. All Personal Protective Equipments used at site to be of approved make.

**34. MANDATORY FOR THE CONTRACTOR EMPLOYEES WHILE WORKING INSIDE REFINERY :**

\* Deployment of adequate nos. of safety officers as per table above and making available the mandatory items as per the minimum list below is a MUST as a part of mobilization activity.

1. Safety Helmet.
2. Safety shoes (Conforming to IS standards with ankle protection, steel toe and anti-skid / acid, alkali and water proof soles).

3. Hand gloves (Leather impregnated cotton hand gloves).
4. Spectacle type goggles with toughened glass lenses, plain face shields with and without chin guards.

The contractor must use the "ISI" marked Personal Protective Equipments specific to the job . It is mandatory to have minimum backup stock of all the PPEs in addition to what is already in use at site.

### **35. SPECIFICATIONS FOR SAFETY HELMETS-HDPE.**

- 1) Helmet Safety Industrial HDPE white colour.
- 2) Contractor's Logo at front side.
- 3) Conforming to IS 2925, ISI marked & DGMS approved.
- 4) Nape strap type adj. type 6 point adj. head band & sweat band with 3/4" Cotton Chin strap.

\* Green helmets for Safety Personnel and Red helmets for electricians to be provided and used by them.

### **36. SPECIFICATION FOR FULL BODY SAFETY HARNESS) SAFETY BELT**

Full Body Safety Harness (Safety belts) must be double lanyard type with scaffolding hook having self closing latch (spring type).

Different type of hooks to be available based on the nature of job / type of support. Safety belts should be ISI marked and should conform to IS 3521 and DGMS approved and stamped. Safety belts, safety straps, lifelines, permanent anchors and connections should both separately and when assembled :

- a) be capable of supporting safely a suspended load of at least 450 kg (1,000 lb) ; and
- b) have a breaking strength of at least 1,150 kg (2,500 lb).

If hooks are used for attaching safety belts to fixed anchors, they should be self closing safety hooks of various types and sizes.

When a lifeline or safety strap is liable to be served, cut, abraded or burned, it should consist of a wire rope or a wire-cored fiber rope.

Safety straps should be so fastened to safety belts that they cannot pass through the belt fittings if either end comes loose from its anchorage.

Metal thimbles should be used for connecting ropes or straps to eyes, rings and snaps. Safety belts, safety straps and lifelines should be so fitted as to limit the free fall of the wearer to 1m (3ft 3in).



### **37. SPECIFICATION FOR FALL ARRESSTOR DEVICE**

Fall arresstor device with self-retracting cable integrating locking mechanism combined with an energy deception element fully automatic having cables of various lengths, ISI and DGMS and or any international approval. Only Poly Amide rope shall be used.

### **38. SPECIFICATION FOR DUST MASK**

Dust Mask made of superior quality non-aging chemical-resistant rubber half face piece with reflex sealing flaps for protection against nuisance dust, (<0.5 micron) toxic dusts, gases and vapours with replaceable filters.

### **39. SPECIFICATION FOR REPLACEABLE FILTERS**

For protection against nuisance dust, toxic dusts, gases and vapours upto a concentration of 500 ppm. To be fitted on aforesaid Dust Mask.

### **40. SPECIFICATION FOR SAFETY SHOES**

1. Safety Shoes, Jodhpury style- as per IS 11226- 1985 with guarantee for 1 & 1/2 years (all weather).
2. Acid/ alkali/ waterproof heat resistant, antiskid green PVC Nitrile sole.
3. Steel toe cap as per relevant "IS".
4. Upper plain leather, high ankle, with metallic 4 eyelets.
5. ISI marked.
6. The supplier should give guarantee of use of safety shoes during rainy season.

### **41. STANDARD SPECIFICATION FOR PVC HAND GLOVES**

Hand contoured for greater comfort & feature an embossed nonslip grip for handling wet or greasy objects cotton flock lining absorbs perspiration maximises easy on/off black with straight cuff each pair pack.

### **42. SPECIFICATION FOR ELECTRICAL PPE (SHOCK PROOF)**

Hand gloves used for live electrical works shall be of proper electrical rating.

Electrical (shoek proof) Safety Shoes (Jodhpury type) with acid/ alkali/ water proof, heat resistant, antiskid sole with guarantee for 1 & 1/2 years (all weather).

1. Upper plain leather.
2. ISI marked & latest certificate of testing from any of the govt. recognised institution for electrical resistance.

GUMBOOTS with steel toe should be used by personnel during rainy season.  
The aforesaid guidelines are the minimum safety requirements and the contractor should exceed them so as to achieve "ZERO ACCIDENT" which is our MOTO.

**43. TYPE SAFETY VIOLATIONS AND PENALTY SYSTEM:**

All the contractors working for MRPL shall strictly follow the safety norms as per the rules and regulations of MRPL. Contractors who violate safety norms while executing the jobs will be penalized financially.

The details of penalty amount against each safety violations is enclosed as Annexure-B.

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**Annexure B**

SL no	Type of Safety Violations	Amended, New penalty
1	No Lost Time Incident (NLTi) - Reporting back to duty within 48 hrs	First occasion Rs2500/- Second occasion Rs 5000/- Third occasion Rs 10000/- In addition to other expenses borne by contractor towards treatment. Existing Policy : none
2	Reportable Lost Time Incident (RLTI)- No reporting to duty within 48 hrs	First occasion Rs10000/- Second occasion Rs 25000/- Third occasion Rs 50000/- In addition to other expenses borne by contractor towards treatment. Existing Policy : none
3	Disability	Rs. 1,50,000/- per person Existing Policy : none
4	Fatal	Rs. 5,00,000/- per person Existing Policy : none
5	Vehicle Accident -Vehicle damaging Property or Vehicle to Vehicle Accident.	Rs 25000/- and Repairs/damage/restoration Existing Policy : none
6	For not using Personal Protective Equipment like (Safety Helmet, Safety Goggles, Safety Shoes, Hand gloves, Boiler suit, etc)	Rs. 500/- Per day / per item / per person for first violation. Rs. 1000/- for second onwards.
7	Working without permit / Clearance (Cold Work)	Rs.5,000/- per occasion After 3 violations, holiday listing for 6 months.
8	Hot work without proper permit / Clearance	Rs. 10,000/- per occasion. After 3 violations, holiday listing for 6 months.
9	Non-use of safe electricity at work site (non installation of ELCB, using poor joints of cables, using naked wire without top plug into socket, laying wire / cables on the roads, etc.	Rs. 3,000/ per item
10	Working at heights without safety belt (Full Body Safety Harness), using non-standard scaffolding and not arranging fall protection arrangement as required.	First occasion Rs2500/- Second occasion Rs 5000/- Third occasion Rs 10000/- After three occasions, holiday listing for 6 months.
11	Unsafe handling of compressed gas cylinders (No trolley, jubilee clips, double gauge regulator, Improper storage / handling).	Rs 500/- per occasion.
12	Non fencing / barricading of excavated	Rs. 1,000/- per occasion.

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	areas,	
13	Use of domestic/commercial LPG cylinder for cutting purpose	Rs. 1,000/- per occasion.
14	Non-display of name board, permit, etc. at site.	Rs. 500/- per occasion.
15	Not providing shoring / strutting / proper slope and not keeping the excavated earth at least 1.5 m away from the excavated area.	Rs. 2000/- per occasion.
16	Wrong parking of vehicles or parking the vehicles at non-designated places inside refinery.	Rs. 1,000/- per occasion.
17	Absence of contractor representative in refinery safety meetings whenever called.	Rs. 3,000/- per meeting.
18	Non-deployment of safety supervisor / supervisor responsible for safety at work site required as per Special Safety Conditions.	Rs. 3,000/- per day.
19	Failure to maintain safety register and records by contract Safety Supervisor or the Supervisor responsible for safety.	Rs. 1,000/- per day
20	Failure to have daily safety site inspection / audits, monthly safety meetings and maintain records (by contractors themselves).	Rs. 1,000/- for each occasion
21	Failure to submit monthly safety report by the 5 <sup>th</sup> of the next month to the Engineer - in - Charge.	Rs. 1,000/- per occasion
22	Poor Housekeeping.	Rs. 1,000/- per site / per day.
23	Failure to follow injury reporting system.	Rs. 10,000/- per occasion.
24	Violation of safety condition as per Job Safety Analysis (JSA)	Rs. 10,000/- per Occasion
25	Over-speeding of vehicle i.e speed > 16 KMPH while driving inside refinery.	1. The driver will be removed and gate pass will be withdrawn. 2. Contract will be cancelled upon repeated three violations.
26	Overtaking of vehicles while driving inside refinery.	1. The driver will be removed and gate pass will be withdrawn. 2. Contract will be cancelled upon repeated three violations.



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27	Driving of vehicle without valid license.	First occasion Rs1000/- Second occasion Rs 2000/-  1. The driver will be removed and gate pass will be withdrawn. 2. Contract will be cancelled upon repeated three violations.
28	Driving vehicle without PPSO approved or PPSO approved but damaged spark arrester.	1. The driver will be removed and gate pass will be withdrawn. 2. Contract will be cancelled upon repeated three violations.
29	Driving vehicle on "NO ENTRY ROADS".	1. The driver will be removed and gate pass will be withdrawn. 2. Contract will be cancelled upon repeated three violations.
30	Denying to produce the photo Gate Pass on demand.	1. Rs.500/- per person per occasion
31	Contract worker found drunk/intoxicated state inside the refinery	1. Rs.15000 / - per person per occasion.

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	<b>MRPL Marketing Terminal Project at Devangonhi, Bangalore</b> <b>Marketing Infrastructure Projects, MRPL</b>				
	Part – A	CONSTRUCTION QUALITY	Tender No :		3200000490
	Section – A-1	MANAGEMENT AND QUALITY	Document No:		20005-GEN-G-DOC-9128
Subsection – A-1.3	CONTROL	Rev :	0		

<b>A-1</b>	<b>REQUIREMENT DURING CONSTRUCTION</b>
<b>A-1.3</b>	<b>CONSTRUCTION QUALITY MANAGEMENT AND QUALITY CONTROL</b>

## MRPL Marketing Terminal Project at Devangonhi, Bangalore



**PROJECT :** Marketing Infrastructure Projects, MRPL

**OWNER :** MANGALORE REFINERY AND PETROCHEMICALS LTD

**PMC :** Nauvata Engineering Pvt. Ltd.

**JOB NO. :** JBG20005

0	05-Feb-2021	Issued for Bid	JT	ASN	ASN
Rev. No.	Date	Description	Prepared By	Checked By	Approved By



	<b>MRPL Marketing Terminal Project at Devangonhi, Bangalore</b> <b>Marketing Infrastructure Projects, MRPL</b>				
	Part – A	CONSTRUCTION QUALITY MANAGEMENT AND QUALITY CONTROL	Tender No :		3200000490
	Section – A-1		Document No:		20005-GEN-G-DOC-9128
Subsection – A-1.3		Rev :	0		

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### ATTACHMENT

- I. ATTACHMENT – I : INDICATIVE INSPECTION & TEST PLAN FOR CIVIL & STRUCTURAL WORKS

	<b>MRPL Marketing Terminal Project at Devangonhi, Bangalore</b> <b>Marketing Infrastructure Projects, MRPL</b>				
	Part – A	CONSTRUCTION QUALITY MANAGEMENT AND QUALITY CONTROL	Tender No :		3200000490
	Section – A-1		Document No:		20005-GEN-G-DOC-9128
	Subsection – A-1.3		Rev :		0

## 1. PURPOSE

This document is for understanding and implementation of quality management and quality control by CONTRACTOR to produce the product by combination of various activities and role of OWNER/PMC in verification during Construction.

The management of quality shall also cover co-ordination, review, approval audit and proper documentation of the works performed. Visual Inspection and Test Plans (ITP's) are forming part of this document as attachments.

## 2. SCOPE

The document shall be applicable for all construction works to be executed by CONTRACTOR's as well as OWNER/PMC for achieving overall objective of quality of various activities during construction.

## 3. RESPONSIBILITY

It is CONTRACTOR's prime responsibility to arrange / produce the product conforming to contract specifications and inspect all equipment, materials and works at various stages of execution as per the approved QA Plans.

In addition, they are to coordinate all efforts in this regard directly with the OWNER/PMC and other involved agencies to give adequate confidence that the activities have been performed as per agreed ITPs and necessary documentation are available. Verification and /or Approvals by OWNER/PMC at any stage shall not relieve CONTRACTOR of his responsibility for the quality of the product.

## 4. METHODOLOGY



The management of construction quality control is divided into the following categories:

- Procurement of materials required for the construction works.
- Execution of works.
- Documentation.

## 5. PROCUREMENT OF MATERIALS REQUIRED FOR EXECUTION OF WORKS

The CONTRACTOR shall develop list (s) defining the items to be procured by the CONTRACTOR along with likely vendors for approval of OWNER/PMC. The list of these items shall comprise of all the items necessary for execution & completion of construction works except the items like vessels, equipment, pumps, electrical panels etc. that may be available directly or requiring small fabrication as per requirement like bolts, nuts. The vendor list shall be in line with the contract document. In case vendor list is not available in the contract for a particular item, the CONTRACTOR can propose list of vendors. CONTRACTOR has to satisfy himself with the capacity of the vendor to deliver the product in time with quality. CONTRACTOR shall submit the QA/QC plans for all major items and carry out their procurement in line with approved plans. The CONTRACTOR can either provide his own adequate qualified staff for inspection or employ a separate third-party inspection. Involvement of OWNER/PMC in the quality control plan if required, shall be defined during approval of the same.



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## 6. EXECUTION OF WORKS

**6.1** The QA plans for execution shall be developed by the CONTRACTOR well before start of the works and OWNER/PMC approval shall be taken. The final inspection & Test Plans (ITP's) on the lines of indicative ITPs enclosed, as attachments shall be developed by CONTRACTOR as per contract specs for approval by OWNER/PMC. The activities that are identified as witness or Hold point, specific inspection call shall be raised by CONTRACTOR with OWNER/PMC in the requisite format well before time. It is intended that the CONTRACTOR shall be completely responsible for management of approved quality plans and OWNER/PMC involvement will be only of surveillance in nature to check at selective /critical junctures. Their role shall be to monitor that the CONTRACTOR is executing the quality plans as per the approved drawings employing adequately qualified staff and other resources for various items of works. Any deviation to the specification shall be brought to the notice of OWNER/PMC in proper formats by CONTRACTOR for approval.



**6.2** It is likely that the CONTRACTOR may engage SUB-CONTRACTOR(s)/vendors for performance of the work. CONTRACTOR shall be responsible for ensuring the implementation of approved QA plan, contract specifications and contract conditions through their SUB-CONTRACTOR's to achieve the quality during all stages of construction. It shall be the responsibility of the CONTRACTOR to ensure proper co-ordination between his sub- CONTRACTOR(s), vendor(s) and other agencies. The SUB-CONTRACTOR(s)/vendors selection shall be done after evaluation by the CONTRACTOR in line with contract requirements and shall be got approved by OWNER/PMC before engaging for the works.

### 6.3 SOURCE SELECTION /VENDOR APPROVAL

**6.3.1** For all the material which are naturally available and which will be used in the respective works shall be identified and approved by OWNER/PMC on the request of the CONTRACTOR. The source(s) shall be capable of giving good quality materials meeting to the requirement of Contract document and various relevant code/ standards and supplying without interruption of the entire quantity required for the works. After the source(s) are identified the samples shall be collected and the same shall be got tested in a reputed laboratory. The test results shall be reviewed and approved. Only after getting the approval for the source / vendor, material shall be brought to the work site. Without approval of the source/ material/ vendor, the same shall not be procured by the CONTRACTOR.

**6.3.2** Other materials preferably shall be bought from approved vendors given in the contract only. If there is change from the approved vendor list given in the contract, specific approval from OWNER/ PMC shall be taken in the format.

In case for the bought out items where approved vendors are not given and which are readily available in market, reputed vendors/brand/product shall be identified by CONTRACTOR and approval for the same shall be taken before hand from OWNER/PMC. Wherever the case demands samples of manufacturer's products shall also be produced for inspection and approval by OWNER/PMC.

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## 6.4 STORAGE



- 6.4.1** All the material shall be stored/stacked as per the standard norms specified by the supplier/ manufacturer and/ or as recommended in various clauses of relevant I.S. and contract document. The storage of material shall be such as to avoid damage to life/properties (physical and chemical) of the material and impact on environment. The storage shall not cause deterioration, rusting, mix-up etc. and hamper the other related works. The colour coding and markings shall be provided by CONTRACTOR for piping and other fittings. PMI for alloy steel materials shall be done on receipt at stores. CONTRACTOR shall submit his detailed warehouse plan for OWNER/PMC approval to manage the above in open/covered areas.
- 6.4.2** The cement bags shall be stored in a leak proof room with minimum openings. The bags shall be kept sufficiently away from the wall and some gap shall be maintained from floor to keep the moisture away from it. Not more than 10 cement bags shall be kept one above another. The bags, which have hardened, shall be rejected and removed from godown/stores.
- 6.4.3** Reinforcement steel, structural steel, piping materials, cable drums etc shall be kept in a separate yard. Wooden/Concrete sleeper support shall be provided below structural steel members and also for piping materials.
- 6.4.4** Aggregates shall be stacked separately to avoid intermixing of different sizes and to allow proper drainage of water.
- 6.4.5** Chemicals for anti-termite treatment shall be kept separately.
- 6.4.6** The materials susceptible to fire shall be kept away in a separate protected place.
- 6.4.7** In general, the materials shall be kept systematically in order of the class, batch number and identification number, so that it is accessible to the inspection by OWNER/PMC as well as the mix up in those materials avoided in all cases.
- 6.4.8** Materials with expire date, if any, shall be disposed-off after the due date. The disposal of expired materials shall be done as per the manufacturer's instructions and/or as per local rules & regulations /standards.

## 6.5 USE

- 6.5.1** The material shall be stacked in such a way that the lot, which is procured, first will be consumed first. No material beyond its expiry date shall be used. If any material expiry date has elapsed or its properties have changed, it shall be removed from site or wherever there is any doubt, with the consent of PMC/OWNER it shall be sent to a reputed approved laboratory for testing and acceptance.

## 6.6 INSPECTION



- 6.6.1** Before collecting the samples of naturally available materials the sources shall be identified by CONTRACTOR and on their request inspected by Engineer - in - charge or his representative team. The samples shall be collected in good clean bags, containers etc in sufficient quantities, sealed and sent to reputed approved laboratory for testing.
- 6.6.2** The testing, selection of source/vendor/brand for each material shall be done as per relevant code. Frequency of testing during the course of the work shall be identified and documented as per specs/code and strictly adhered.

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- 6.6.3** If any of the test is done in the field laboratories, the entire stage of testing shall be done in presence of CONTRACTOR's representative and test results shall be reviewed by PMC/OWNER.
- 6.6.4** The frequency and type of tests listed out in various specs are the minimum for which the material shall be tested. However, if at any time OWNER/PMC feels that the quality of any particular lot of material is not good or deteriorated, the same material shall be sent for testing as directed by OWNER/PMC. Until such time the result comes and duly reviewed, that particular lot of material shall not be used in works. The cost of tests shall be borne by CONTRACTOR. In case of any defect/discrepancy is observed in the materials, the CONTRACTOR has to replace the same with a good one without any financial implications.
- 6.6.5** As and when asked by OWNER/PMC the CONTRACTOR shall arrange at their own cost for witnessing the testing process of the materials, which are being sent to the reputed outside laboratories approved by OWNER/PMC.
- 6.6.6** OWNER/PMC shall at any time inspect the storage yard of different materials. As and when required, OWNER/PMC reserves the right to check the store records.
- 6.6.7** All the bought out items, which are accompanied with manufacturer's test certificate (MTC), OWNER/PMC shall check at any time for the co-relation of lot/ heat/ Identification No. as shown in the MTC and as marked over the materials. Records of supplier, total quantity supplied etc shall be maintained for review by PMC/OWNER. In case it is not possible to co- relate the material with MTC, challan etc. to the satisfaction of Engineer-in-charge, tests as per relevant codes shall be arranged by CONTRACTOR at his own cost as per defined frequency for acceptance of material.
- 6.6.8** Wherever MTC is required it should cover all the properties of the materials, validity and/or expiry date (if applicable) in accordance with relevant Codes/Specifications.
- 6.6.9** CONTRACTOR shall prepare MRR (material receipt report) of each material. It shall also include any third party inspection report on behalf of CONTRACTOR, supplier's name, total quantity received, date of receipt, expiry date site inspection report covering physical verification of quantity and quality and acceptance thereof.
- 6.6.10** All MRR (material receipt report), MTC (material test certificates), test results shall be reviewed by CONTRACTOR first and then offered to OWNER/PMC for final review and acceptance along with its copies.

## **6.7 IN PROCESS AND FINAL INSPECTION**

- 6.7.1** CONTRACTOR shall be responsible to arrange verification of product during in process and final inspection. Relevant checks and tests shall be arranged for the works performed and records maintained. Tolerances with respect to contract specification and execution drawings for various activities/processes shall be ascertained and submitted to OWNER/PMC for approval. Efforts shall be made to keep checks to avoid getting the non-conforming product. In case the tolerances are varying beyond the acceptable values given in the contract, non- conformation / resolution / waiver need to be got approved from OWNER/PMC. For Alloy and special piping materials and welds, PMI (positive material identification) shall be arranged by CONTRACTOR in position before final acceptance.

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## 7. DOCUMENTATION

7.1 The documentation plays a very important role in quality management including quality control. Necessary documentation shall be maintained by CONTRACTOR during completion of project and handed over to OWNER/PMC. Area(s) wherever PMC personnel are directly involved, particularly in witness and hold point, the copies of the same shall also be provided to them on inspection of those activities.

The documentation shall include the following but not limited to:

- a) Approved Quality Assurance Plan.
- b) Approved inspection and Test Plans.
- c) Inspection and test documents covering:
  - Manufacturer’s Test Certificate.
  - Material Receipt Report including Inspection Release Note applicable and site inspection and acceptance report on quality and quantity of material.
  - Site test/laboratory test report reviewed by CONTRACTOR for acceptance vis-à-vis to contract/code requirements of materials/ including PMI report at warehouse.
  - In process verification reports of CONTRACTOR representative to OWNER/ PMC as applicable.
  - Final verification report including any test checks done for compliance.
  - As-built vis-à-vis to contract/drawings including tolerances.
  - As-built for erection.
  - Non-conformance resolution raised by CONTRACTOR/OWNER/PMC.
  - Deviation approval by OWNER/ PMC.
  - Waiver / approval by OWNER/PMC in case there is variation from contract/drawings.

## 8. CONSTRUCTION QUALITY AUDIT

8.1 The PMC will carry out a Construction Quality Audit of the project facility near mechanical completion of the project by independent group of PMC personnel. The audit will utilize special tools such as positive material identification through alloy analysers, which shall be arranged by CONTRACTOR. PMC’s piping specialist groups will also carry out an additional audit of total piping system.



## 9. GENERAL NOTE AND LEGEND

### 9.1 GENERAL NOTE

Before start of work, the CONTRACTOR shall develop and submit for approval of OWNER / PMC, a detailed stage wise micro level Inspection & Test Plan depending upon the construction Process/technology to be deployed.

### 9.2 LEGEND

HP : Hold Point

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A point, which requires inspection/verification and acceptance by OWNER/PMC before any further processing is permitted.

The CONTRACTOR shall not process the activity /item beyond a Hold Point without written approval by OWNER/PMC except where prior written permission for further processing is available.

**W** : Witness Point

An activity which requires witnessing by OWNER/PMC when the activity is performed After proper notification has been provided (notification modalities and period shall be finalized beforehand) the CONTRACTOR is not obliged to hold further processing if OWNER/PMC is not available to witness the activity or does not provide comments before the date notified. Basis of acceptance shall be as per relevant technical specification.



**Rw** : Review of CONTRACTOR's Documentation

**S** : Surveillance Inspection by OWNER/PMC

Monitoring or making observations to verify whether or not material/items or services conform to specified requirements. Surveillance activities may include audit inspections, witness of testing, review of quality documentation & records, personnel qualifications etc.



**WC** : 100 % Examination by CONTRACTOR.

(Prime responsibility for execution of the inspection is with the CONTRACTOR. OWNER/PMC only)

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**ATTACHMENT – I**  
  
**TO**  
**REQUIREMENTS OF CONSTRUCTION QUALITY MANAGEMENT AND**  
**QUALITY CONTROL**



**INDICATIVE INSPECTION & TEST PLAN FOR CIVIL & STRUCTURAL**  
**WORKS**

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## 1. PRELIMINARY CIVIL WORKS

Format No. : QAP.CONST/C/01

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Sl. No	Activity Description	Contractor	PMC
<b>A</b>	<b>Surveying</b>		
1	Boundary markings and submission of drawings/sketches.	WC	S
2	Black levels, contour plan, establishing permanent benchmarks (PBM) with reference to Survey of India benchmarks by check levels and submission of relevant drawings and records.	WC	S
3	Protection of control points and regular rechecking.	WC	S
4	Submission of Master Plan showing monuments, structures exposed rocks, weirs, water works, ponds etc.	WC	S
<b>B</b>	<b>Field Testing Equipments</b>		
1	Laboratory equipments.	WC	Rw
2	Calibration of Surveying Instruments	WC	Rw
3	Calibration of Field Testing Instruments	WC	Rw
	<b>Inspection and test documents</b>		
	Review Test and Inspection Document.	WC	Rw





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## 2. SOIL INVESTIGATION

Format No. : QAP.CONST/C/02

Rev : A

Sl. No	Activity Description	Contractor	PMC
1	Bore hole data, collection of soil samples.	WC	S
2	Standard Penetration Test.	WC	Rw
3	Dynamic Cone Penetration Test.	WC	Rw
4	Pile Load Test and others (as applicable).	WC	W
5	Classification of soil.	WC	Rw
	<b>Inspection and test documents</b>		
	Review Test and Inspection Document.	WC	Rw



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### 3. SITE GRADING

Format No. : QAP.CONST/C/03

Rev : A

Sl. No	Activity Description	Contract or	PMC
1	Clearing and stripping of soil including disposal of unsuitable materials	WC	S
2	Taking and plotting of initial joint levels at specified intervals for cutting as well as filling areas.	WC	S
3	Classification (Levels of strata) and testing of filling soil for suitability including preparation of Lead Charts to filling/disposal areas.	WC	S
4	Proper warning of explosions, misfires and storage of explosive materials (As applicable).	WC	S
5	Breaking up of clods, lumps, etc. at the time of filling and compaction.	WC	S
6	Identification and suitability of borrow areas for filling soil/murram including verification of payments for royalty, etc.	WC	Rw
7	Proctor compaction test for earth filling in specified layers including finished areas.	WC	S
8	Record of final finished grade levels.	WC	Rw
9	Computation of Earth works.	WC	Rw
10	Record of tree cuttings, stacking of blasted rocks and other quarry materials.	WC	Rw
11	Preparation of "As built drawings" indicating culverts, other open drainage facility etc.	WC	Rw
12	Removal of Surplus earth / excavated material and leveling in disposal areas.	WC	S
	<b>Inspection and test documents</b>		
	Review Test and Inspection Document.	WC	Rw



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#### 4. EXCAVATION

Format No. : QAP.CONST/C/04

Rev : A

Sl. No	Activity Description	Contract or	PMC
1	Layout checking.	WC	S
2	Slopes of excavation, benching, overburden, shoring & strutting, barricading (in case of deep excavation)	WC	S
3	Check for sub-soil water, dewatering requirements as per specifications.	WC	S
4	Bottom level of excavation and compaction.	WC	S
5	List of obstacles encountered (cables, pipes, conduits, etc)	WC	S
6	Barricading of excavated Pits for Safety	WC	S
	<b>For Hard Rock</b>	WC	S
1	Obtaining license from district authorities for undertaking blasting operations.	WC	Rw
2	Storing of explosive material as per explosive rules.	WC	S
3	Prominent display of red flags around the area to be blasted.	WC	S
4	Check the dimensions of bore holes.	WC	S
	<b>Inspection and test documents</b>		
	Review Test and Inspection Document.	WC	Rw



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## 5. BACK FILLING

Format No. : QAP.CONST/C/05

Rev : A

Sl. No	Activity Description	Contract or	PMC
1	Selection of material / selected earth	WC	S
2	Check for treatment of soil, if any.	WC	S
3	Filling in specified layers, consolidating, watering.	WC	S
4	Proctors compaction tests for layers.	WC	S
5	Filling to required levels.	WC	Rw
6	Selection of material / selected earth	WC	S
	<b>Inspection and test documents</b>		
	Review Test and Inspection Document.	WC	Rw



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## 6. ANTITERMITE TREATMENT

Format No. : QAP.CONST/C/06

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Sl. No	Activity Description	Contract or	PMC
1	Preparation of surface for taking dosage of emulsion by ramming of each layer of soil by roding the earth at specified intervals.	WC	S
2	Check testing of material & spraying devices including personal protective equipments like facemask, gloves, shoes, etc.	WC	S
3	Backfilling and compaction in specified layers along with application of emulsifier along the sides of masonry & RCC structures.	WC	S
4	Check compaction of top surface for taking dosage of emulsifier by roding the earth at specified intervals for the entire floor area before concreting.	WC	S
5	Check for consumption of emulsifier utilized.	WC	S
	<b>Inspection and test documents</b>		
	Review Test and Inspection Document.	WC	Rw



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## 7. PLAIN CEMENT CONCRETE

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Sl. No	Activity Description	Contract or	PMC
1	Checking of layout and materials.	WC	S
2	Mix Proportion.	WC	S
3	Check for shuttering if any.	WC	S
4	Concreting, Consolidation.	WC	S
5	Checking of top level of PCC.	WC	S
6	Curing.	WC	S
	<b>Inspection and test documents</b>		
	Review Test and Inspection Document.	WC	Rw



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## 8. UNDER GROUND PIPING WORKS

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Sl. No	Activity Description	Contract or	PMC
1	Checking of material.	WC	S
2	Adequate slope, benching in excavation for safety purpose (if required)	WC	S
3	Layout, line & level.	WC	S
4	Laying & jointing, grouting at manholes/chambers	WC	S
5	Check for supports / firm bed / sub soil water level.	WC	S
6	Testing for leakages by blocking pipe ends.	WC	W
7	Hydro testing and other tests & flushing of system.	WC	HP
8	Backfilling in layers.	WC	S
9	Check for MS rungs in proper position, inlet / outlet pipe levels in manholes.	WC	S
10	Preparation of "As-built drawings".	WC	W
	<b>Inspection and test documents</b>		
	Review Test and Inspection Document.	WC	Rw

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## 9. REINFORCED CEMENT CONCRETE (SUB-STRUCTURE)

Format No. : QAP.CONST/C/09

Rev : A

Sl. No	Activity Description	Contract or	PMC
1	Approval of source of materials.	WC	Rw
2	Checking of layout.	WC	S
3	Checking of materials.	WC	S
4	Design of mix.	WC	HP
5	Check for line & level of shuttering.	WC	S
6	Reinforcement & covers to reinforcement.	WC	S
7	Inserts, Anchor bolts and pipe sleeves, pockets, dowels etc.	WC	S
8	Pour Card.	WC	W
9	Check for obstacles encountered (Electrical conduits, pipe lines etc)	WC	S
10	Concreting, W/C Ratio, bulkage, compaction & finishing.	WC	S
11	Casting of cubes.	WC	S
12	Curing.	WC	S
13	Testing of cubes.	WC	S
14	Removal of shuttering.	WC	S
15	Check for water tightness, rendering, if any.	WC	W
	<b>Inspection and test documents</b>		
	Review Test and Inspection Document.	WC	Rw





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## 10. REINFORCED CEMENT CONCRETE (SUPERSTRUCTURE)

Format No. : QAP.CONST/C/10

Rev : A

Sl. No	Activity Description	Contract or	PMC
1	Approval of source of materials.	WC	Rw
2	Checking of layout.	WC	S
3	Checking of materials.	WC	S
4	Design of mix.	WC	HP
5	Check for line & level of shuttering and supports stayings.	WC	S
6	Reinforcement & covers to reinforcement.	WC	S
7	Inserts, bolts, pipe sleeves, MS rungs, concealed electrical conduits, fan hooks, dowels, etc. including welding if any.	WC	S
8	Pockets / Openings.	WC	S
9	Expansion joints, if any.	WC	S
10	Check for water stops, slopes and stoppers, if any.	WC	S
11	Pour Card.	WC	S
12	Concreting, W/C Ratio, compaction & finishing.	WC	S
13	Casting of cubes.	WC	S
14	Curing.	WC	S
15	Testing of cubes.	WC	S
16	Removal of formwork / Stayings.	WC	S
17	Verification of dimensions viz. AFC drawings and tolerances.	WC	W
18	Check for water tightness, rendering, if any.	WC	W
19	Preparation of As built scheme for erection.	WC	W
	<b>Inspection and test documents</b>		
	Review Test and Inspection Document.	WC	Rw



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## 11. REINFORCED CEMENT CONCRETE - CRITICAL STRUCTURES (COMPRESSOR FOUNDATION, TOWERS ETC.)

Format No. : QAP.CONST/C/11

Rev : A

Sl. No	Activity Description	Contractor	PMC
1	Approval of source of materials.	WC	Rw
2	Checking of layout.	WC	S
3	Checking of materials.	WC	S
4	Soil strata below PCC.	WC	W
5	Design of mix.	WC	HP
6	Check for line & level of shuttering and supports staging.	WC	S
7	Reinforcement & covers to reinforcement.	WC	S
8	Inserts, bolts, pipe sleeves, MS rungs, concealed electrical conduits, fan hooks, dowels, etc. including welding if any.	WC	W
9	Pockets / Openings.	WC	S
10	Expansion joints, if any.	WC	S
11	Check for water stops, slopes and stoppers, if any.	WC	S
12	Detailed work plan including equipment, manpower & other resources.	WC	Rw
13	Pour Card.	WC	HP
14	Concreting, W/C Ratio, compaction & finishing.	WC	S
15	Casting of cubes.	WC	S
16	Curing.	WC	S
17	Testing of cubes.	WC	W
18	Removal of formwork / Stayings.	WC	S
19	Verification of dimensions viz AFC drawings and tolerances.	WC	W
20	Check for water tightness, rendering, if any.	WC	W
21	Preparation of As built scheme for erection.	WC	HP
	<b>Inspection and test documents</b>		
	Review Test and Inspection Document.	WC	Rw



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## 12. BRICK WORK

Format No. : QAP.CONST/C/12

Rev : A

Sl. No	Activity Description	Contract or	PMC
1	Cleaning of surface.	WC	S
2	Checking and curing of bricks.	WC	S
3	Cement mortar proportion.	WC	S
4	Hacking of concrete surface.	WC	S
5	Check for bond/closers, thickness of joints.	WC	S
6	Line level & plumb.	WC	S
7	Racking out joints, keys in brick work, if any.	WC	S
8	Check for RCC bonds / Reinforcement / PCC flooring, in case of partition brickwork.	WC	S
9	Curing.	WC	S
	<b>Inspection and test documents</b>		
	Review Test and Inspection Document.	WC	Rw



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### 13. PLASTERING

Format No. : QAP.CONST/C/13

Rev : A

Sl. No	Activity Description	Contractor	PM C
1	Check for completeness of all hidden jobs like piping, conduiting etc.	WC	S
2	Mix Proportion.	WC	S
3	Sample preparation for finish and its approval.	WC	W
4	Neeru application on plaster (As applicable)	WC	S
5	Hacking and cleaning the surface, removing loose particles, wetting the surface.	WC	S
6	Checking of plaster thickness, plumb & even surface.	WC	S
7	Check for grooves, openings, rounding off the corners and hollowness in plaster.	WC	S
8	Curing.	WC	S
	<b>Inspection and test documents</b>		
	Review Test and Inspection Document.	WC	Rw



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#### 14. FLOORING AND PAVEMENT

Format No. : QAP.CONST/C/14

Rev : A

Sl. No	Activity Description	Contract or	PMC
1	Layout checking.	WC	S
2	Mix Proportion.	WC	S
3	Check for proper back filling / completion of sub-Structure works.	WC	S
4	Check for edges of shuttering, alternate panels.	WC	S
5	Check for slopes, thickness of flooring.	WC	S
6	Shuttering, reinforcement, if any.	WC	S
7	Check for expansion joints / Construction joints.	WC	S
8	Check for concealed pipe embedments, earthing, if any	WC	S
9	Check for dividing strips, if any.	WC	S
10	Concreting, consolidating, test cubes.	WC	S
11	Checking for line, levels, slopes, joints and thickness of flooring viz. AFC drawings.	WC	S
12	Curing.	WC	S
13	Grinding & Polishing.	WC	S
14	Testing of concrete cubes (as applicable)	WC	S
	<b>Inspection and test documents</b>		
	Review Test and Inspection Document.	WC	Rw



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## 15. DOORS, WINDOWS AND VENTILATORS

Format No. : QAP.CONST/C/15

Rev : A

Sl. No	Activity Description	Contractor	PMC
1	Checking of material.	WC	S
2	Check for section & dimensions.	WC	S
3	Line, level & plumb.	WC	S
4	Section joinery details.	WC	S
5	Grouting with lugs dash fasteners.	WC	S
6	Check for fixtures & fittings.	WC	S
7	Check for thickness & type of glazing.	WC	S
8	Check for rubber gasket, anodizing (As applicable)	WC	S
9	Brand / shade of paints and no. of coats including surface preparation.	WC	S
	<b>Inspection and test documents</b>		
	Review Test and Inspection Document.	WC	Rw



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## 16. PAINTING (BUILDING WORKS)

Format No. : QAP.CONST/C/16

Rev : A

Sl. No	Activity Description	Contract or	PM C
1	Completion of surface preparation.	WC	S
2	Checking of material.	WC	S
3	Confirmation of colour, shade & brand.	WC	S
4	Check for number of coats and thickness.	WC	S
5	Curing, if any.	WC	S
	<b>Inspection and test documents</b>		
	Review Test and Inspection Document.	WC	Rw

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## 17. SANITARY FITTINGS

Format No. : QAP.CONST/C/17

Rev : A

Sl. No	Activity Description	Contract or	PMC
1	Checking of material (approved vendor)	WC	S
2	Checking of sample (as applicable)	WC	W
3	Check completeness of finishing works.	WC	S
4	Check proper fixing of the sanitary fittings to give aesthetic appeal.	WC	S
5	Check for leakage.	WC	S
	<b>Inspection and test documents</b>		
	Review Test and Inspection Document.	WC	Rw





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## 18. WATER PROOFING ROOF

Format No.: QAP.CONST/C/18

Rev : A

Sl. No	Activity Description	Contract or	PMC
1	Surface preparation for screeding / waterproof plastering.	WC	S
2	Mix proportion, thickness of screeding / plastering & slope towards rain water pipes.	WC	S
3	Formation of groove at specified height in parapet wall.	WC	S
4	Check for material, no. of coats, application procedure and consumption.	WC	S
5	Termination of material in groove in vertical plane.	WC	S
6	Check for hollowness, bubbles in water proofing, if any	WC	S
7	Conducting a sample of water proofing test by flooding the area for specified interval (as applicable)	WC	W
8	Cleaning of surface.	WC	S
9	Submission of Guarantee in the requisite Performa.	WC	S
	<b>Inspection and test documents</b>		
	Review Test and Inspection Document.	WC	Rw



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## 19. STRUCTURAL WORKS

Format No. : QAP.CONST/C/19

Rev : A

Sl. No	Activity Description	Contract or	PMC
<b>A</b>	<b>Prior to fabrication</b>		
1	Materials Contractor's supply.	WC	S
2	Filler material tests.	WC	S
3	WPS / PQR.	WC	S
4	Welders Performance qualification.	WC	W
5	Layout checking.	WC	S
6	Welding equipment and accessories.	WC	S
7	Preparation and approval of Fabrication drawings.	WC	S
<b>B</b>	<b>During fabrication</b>		
1	Materials as per design drawing.	WC	S
2	Dimensional and fit-up checks.	WC	S
3	Visual check for welding.	WC	S
4	Grinding, cleaning & priming.	WC	S
5	Application of specified paint, if applicable.	WC	S
<b>C</b>	<b>Erection</b>		
1	Lifting arrangements.	WC	S
2	Correctness of location.	WC	S
3	Orientation of bracing, lugs.	WC	S
4	Alignment & levels.	WC	S
5	Field welding (if any)	WC	S
6	Grouting.	WC	S
7	Total Painting.	WC	S
8	Preparation of As-built drawings.	WC	S
	<b>Inspection and test documents</b>		
	Review Test and Inspection Document.	WC	Rw

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## 20. ROOFING ACCESSORIES



Format No. : QAP.CONST/C/20

Rev : A

Sl. No	Activity Description	Contract or	PMC
1	Check for material and sequence of sheeting.	WC	S
2	Check for mitring, Overhang, laps, etc.	WC	S
3	Slopes line, levels of sheets, bargeboards, ridges & gutters, over hang of sheets.	WC	S
4	Bolting by drilling only, length of bolts nos., anodising and type of washers.	WC	S
5	Check for slopes of rain gutters, down take pipes, north lighting curves / supports for gutters.	WC	S
6	Check for leakage passing of light.	WC	S
	<b>Inspection and test documents</b>		
	Review Test and Inspection Document.	WC	Rw

### Note:

1. Fixing arrangements have to be reviewed with respect to contract specifications also.



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## 21. CONCRETE ROADS

Format No. : QAP.CONST/C/21

Rev : A

Sl. No	Activity Description	Contract or	PM C
1	Layout checking.	WC	S
2	Checking of material and road crossings.	WC	S
3	Filling (if any), compaction, providing cambers in sub-base including levels.	WC	S
4	Spreading metal to required thickness, line & levels, dry rolling including spreading of screening material.	WC	S
5	Check for camber and levels over metalling.	WC	S
6	Check testing thickness and rectification thereof.	WC	Rw
	<b>Inspection and test documents</b>		
	Review Test and Inspection Document.	WC	Rw



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## 22. TREE CUTTING

Format No. : QAP.CONST/C/22

Rev : A

Sl. No	Activity Description	Contract or	PMC
1	Mark and Number the Trees	WC	S
2	Classify the Trees	WC	S
3	Preparation of document listing classified trees	WC	S
4	Storage of Cut Trees	WC	S
5	Check whether soil is free from tree roots, tree remains, etc.	WC	S
	<b>Inspection and test documents</b>		
	Documentation.	WC	Rw



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### 23. MICRO GRADING

Format No. : QAP.CONST/C/23

Rev : A

SI. No	Activity Description	Contractor	PMC
1	Clearing of extra soil, debris, etc. from site	WC	S
2	Removal of extra soil, debris, etc. by transportation	WC	S
3	Verification of gradient of ground	WC	S
4	Finishing of ground surface by hand compactor/ roller (As applicable)	WC	S
5	Visual final inspection	WC	S
	<b>Inspection and test documents</b>		
	Review Test and Inspection Document.	WC	Rw

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<b>A-2.1</b>	<b>PLANNING, SCHEDULEING AND MONITORING PROCEDURE</b>

## MRPL Marketing Terminal Project at Devangonhi, Bangalore



**PROJECT :** Marketing Infrastructure Projects, MRPL

**OWNER :** MANGALORE REFINERY AND PETROCHEMICALS LTD

**PMC :** Nauvata Engineering Pvt. Ltd.

**JOB NO. :** JBG20005



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## 1.0 OVERVIEW

Mangalore Refinery & Petrochemicals Ltd (MRPL) operates a 15 MMTPA crude processing refinery with secondary units and Petrochemical complex at Mangalore. MRPL is in possession of a 20 acres plot of land in Devangonhi near Bengaluru. MRPL proposes to utilize this land for setting up a Petroleum storage & Marketing Terminal to enhance and grow in its marketing business activities.

The proposed Terminal would cater to requirements of petroleum products for its own expanding Industrial & Retail business, primarily in the state of Karnataka & Kerala. The Terminal would receive finished petroleum products (MS, HSD & ATF) through the existing 363 Km long PMHB pipeline from MRPL. Suitable facilities would be provided in the Devangonhi Terminal. There will be a receipt & dosing of Ethanol with MS and Biodiesel with HSD. The supplies of petroleum products to the retail outlets / customer / aviation stations would be met through road tankers. The entire Terminal operations would comply with the applicable statutory regulations and QC guidelines.

In order to setup the Marketing Terminal within required schedule, entire scope of work is split into Four Separate LSTK Contracts details of which are as below.

1. Tender A: Tankage and its associated work including tank foundation, Dyke area Scope, all infield piping till Loading arm, MOV's, ROSOV, DBBV, all pumps and mechanical packages, Pipeline and FOC cables – LSTK basis.
2. Tender B: Civil/ structural / Architectural – for all roads, drain, Buildings (including Plumbing), Compound wall and Arch, providing permanent power sanction letter from BESCOM substation to BESCOM metering in terminal – LSTK basis.
3. Tender C: Electrical Distribution (from external source point), Transformers, 11 KV HV Panels, LV Panels, VFD Panels, APFCR panels. DG sets, Lighting system for the plant. Earthing and Lighting protection system. Instrumentation system such as DCS, SIL3 PLC, CCTV system, PAGA system, Wireless network, Telephone system, Control room panels for TFMS, LRCS, Terminal Automation System, Hydrocarbon detection system, Fire detection and Alarm system. Inline instrumentation, tankage instrumentation, Loading arm – LSTK basis.
4. Tender D: Mangalore refinery modification works – LSTK basis.

## 2.0 INTRODUCTION

This document 'Project Control Requirements', for the following Project control activities: Planning, Scheduling, Progress Measurement and Reporting for LSTK Tender B.

The CONTRACTOR shall develop project specific procedures to cover all Project Planning, Scheduling and Reporting activities well before the start of the relevant activities. PMC / MRPL shall receive all the procedures for comments and approval. CONTRACTOR shall then implement the procedures during the execution of the Project.

## 3.0 DEFINITIONS AND ABBREVIATIONS

### 3.1 DEFINITIONS



For the purposes of this specification, the following definitions shall apply.

OWNER – MRPL (Mangalore Petrochemicals & Refinery Ltd.)

PMC – Project Management Consultant (Nauvata Engineering Pvt. Ltd.)

CONTRACTOR – a party contracted to MRPL to carry out work or services to the Project.

FIELD Services – is CONTRACTOR'S performance of construction and commissioning at the SITE

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SITE – geographical area designated for MRPL Marketing Terminal at Devangonhi, Bengaluru

HOME OFFICE Services – is CONTRACTOR’s performance of engineering, procurement and construction services

PROJECT – means the Setting up of MRPL Marketing Terminal at Devangonhi, Bengaluru

SHALL AND MUST – indicates a mandatory requirement

SUBCONTRACTOR – means any sub-supplier of any tier on whom the Vendor has directly or indirectly placed a suborder. If used in a Purchase Order the term sub-supplier shall have the same meaning as Subcontractor

VENDOR – means the firm, company or other corporate entity (including its successors and / or permitted assigns) contracted through a Purchase Order

CONTRACT – means the CONTRACT between the CONTRACTOR / VENDOR and MRPL for the supply of the equipment / Services

TREND – is defined as a potential alteration in work scope or process which will result in a change

VARIATION – variation is defined as any and all changes in or relative to the services, and amendments to the Agreement

CONTRACT TREND NOTICE – is the formal documentation that records the trend basis, scope, cost and schedule

### 3.2 ABBREVIATIONS



MC - Mechanical Completion  
RFSU – Ready for Start Up  
WBS – Work Breakdown Structure  
FOB – Free On Board  
CPM – Critical Path Method  
ROS – Required On Site  
MS – Motor Spirit  
HSD – High Speed Diesel  
ATF – Aviation Turbine Fluid  
MRPL - Mangalore Petrochemicals & Refinery Ltd.

### 4.0 PROJECT CONTROL AND REPORTING

CONTRACTOR shall provide the project schedule, milestones and project schedule narrative in accordance with the Project Control requirements, and tender documentation.

CONTRACTOR shall note that the Schedule and the Milestones submitted by the CONTRACTOR shall form part of the CONTRACT.

CONTRACTOR shall provide Schedules, Histograms, Progress Measurement System, and Progress ‘S’ Curves, as covered in sections 5 and 6 as a part of bid document.

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CONTRACTOR shall provide the following Project Control documents upon award of project:

- Progress Measurement System
- Schedule – Level 1 and 2
- Milestones – key milestones for Engineering, Procurement, Construction, Commissioning, Hydraulic Guarantee and Closeout
- Schedule Narrative
- Progress ‘S’ Curves
- Procurement Tracking Schedule
- Manpower Histogram for Home Office Services
- Manpower Histogram for Construction Works
- Construction Plant / Equipment Deployment Schedule
- CONTRACTOR shall provide a statement of compliance with PMC / MRPL’s Project Control requirements and associated procedures

Description of CONTRACTOR’S Project Control Organisation

- Contractor shall provide a description of the Project Control organisation, its main functions, and the responsibilities and duties of the principal assigned individuals, including their CV’s. This shall include the Planning, Scheduling, Progress Control, Cost Control and Reporting functions as a minimum. Description shall explain how the organisation will ensure the integration of Project Control function between the Home Office, other WORK locations, the SITE, SUBCONTRACTORS and VENDORS.

Description of Contractor’s Project Control procedures/ systems

- CONTRACTOR shall submit details of its proposed Planning, Scheduling and Progress Measurement and Progress Reporting procedure, along with the unpriced technical offer.

Description of CONTRACTOR’S Project Control computer software/ applications

- CONTRACTOR shall use PRIMAVERA (P6.0 or later) computer software / applications for Planning, Scheduling, Progress Control and Reporting.

Description of CONTRACTOR’S Document Control and Materials Management interfaces with Project Control systems



- CONTRACTOR shall provide a description of how CONTRACTOR’S Document Control and Materials Management functions interface with the planning and progress measurement and payment systems within the Work Breakdown Structure and Organisation Breakdown Structure. CONTRACTOR shall provide sample reports from the systems proposed.

## 5.0 PROJECT PLANNING REQUIREMENTS

The Scope of Project Planning, Scheduling and Monitoring Services to be performed by CONTRACTOR shall include, but not be limited to the functions as described under the following.

- Planning
- Scheduling
- Monitoring
- Updating
- Reporting

CONTRACTOR’s Project Planning team shall be responsible for submitting CONTRACTOR’s project Planning, scheduling and Monitoring procedures, establishing project measurement systems, and mobilising a suitably qualified and experienced project control team to execute the project Planning, Scheduling, Monitoring and reporting requirements. CONTRACTOR shall use computerised systems to the maximum extent possible for the Project Planning, Scheduling,

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Monitoring and Reporting Services. Such systems shall be capable of electronic interface between CONTRACTOR's Home Offices and SITE and PMC / MRPL offices. CONTRACTOR shall provide PMC / MRPL with access to Planning & Scheduling data as requested. CONTRACTOR shall also provide PMC / MRPL, as required, with updated Schedules, networks, planning and Change databases via electronic and hard copies throughout the duration of the Project. CONTRACTOR shall develop detailed procedures for each of the functions described in this section for review and approval by PMC / MRPL. Procedures shall be completed and submitted for PMC / MRPL approval within **Two (2) weeks** of Contract award.

## 6.0 PROGRESS PLANNING, MEASURING AND REPORTING

The purpose of this section is to define the PMC / MRPL's requirements for the CONTRACTOR'S method of planning and scheduling. It is provided to the CONTRACTOR as a guideline for the specification and definition of the PMC / MRPL's minimum requirements for the works. CONTRACTOR is to use this guideline to develop the procedure required for PMC / MRPL's approval.

- Planning and Scheduling
- Progress Planning
- Progress Measurement
- Progress Reporting
- Progress Review and Certification

### 6.1 PLANNING AND SCHEDULING

#### 6.1.1. Planning Hierarchy

CONTRACTOR shall use, as a minimum, the following hierarchical basis for planning and scheduling. This shall apply to both Design office and Field planning efforts, and conform to the following structure.

- Level 1 - Project Management Schedule
- Level 2 - Master Schedule
- Level 3 - Detail Engineering, Procurement and Construction CPM Network
- Level 4 - Registers

#### 6.1.2. Level I - Project Management Schedule



The Level I Project Management Schedule shall be in sufficient detail to demonstrate how the CONTRACTOR plans to execute the WORK within the Milestone dates. It shall be based on the CONTRACTOR'S approved WBS structure and shall identify the Major Project Milestones.

Additional activities, key dates and interfaces shall be shown where this aids the demonstration of critical or high-risk elements of the WORK.

The Level I Project Management Schedule shall include construction and commissioning activities in sufficient detail to demonstrate how CONTRACTOR expects construction and commissioning activities to be planned based on the release of 'Issued for Construction' engineering documents and FOB delivery of equipment and materials.

Typically, the Level I Project Management Schedule shall be a logical presentation on a single sheet, suitable for reduction to A3 or A4 format, containing 50 to 60 lines. It shall summarise for each Level I WBS element the main phases of the Level II WBS. The format of the Level I Project management schedule shall be agreed with PMC / MRPL.



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The Level I Project Management Schedule shall be front lined with a status line representing the remaining duration of the activities in progress determined from the lower level schedules. The Level I shall be included in the monthly progress report.

Once established as a baseline, the Level I schedule shall not be changed without PMC / MRPL approval. Actual and forecast variances from the schedule shall be shown clearly in a format acceptable to PMC / MRPL.

#### 6.1.3. Level 2 – Master Schedule

The SCHEDULE submitted along with the Tender, shall be updated to reflect the modifications agreed with PMC / MRPL prior to award of CONTRACT and the actual effective date for the Project. This will become the Master Schedule.

#### 6.1.4. Level 3 – Detail Engineering, Procurement and Construction CPM Network



A Level III schedule in the form of detailed precedence CPM networks and based on the approved WBS shall be prepared by CONTRACTOR and submitted for PMC / MRPL review within **Four (4) weeks** of CONTRACT award. Once agreed with PMC / MRPL, this schedule shall be “baselined” and set as a target against which CONTRACTOR shall compare all subsequent reporting.

The Level 3 CPM Network shall be based on the Contract Master Schedule for the WORKS and shall be in greater detail to reflect the milestones sequence and inter-relationships between various activities and sub-activities related to each Area / Phase / Discipline of work. The Network / Bar chart shall ensure integration of engineering, procurement & delivery, subcontracting, construction, pre-commissioning, commissioning, closeout and all other activities required for completion of the WORK in line with PMC / MRPL priorities and agreed sequence. Responsibilities and resources required to carry out the execution of each activity shall be identified. The Network / Bar Chart shall be construction driven and shall include all sub-activities up to the lowest level, under each category/group of activities by Area / Phase / Discipline etc. as per the scope of work. The Network shall be coded to highlight all external interface requirements outside the control of the CONTRACTOR. These interface activities shall be updated along with each schedule update cycle and any changes with regard to their availability shall be communicated to PMC / MRPL along with their impact if any.

The integrated time scaled logic network which will be prepared by using ‘PRIMAVERA’ software shall be self-explanatory and the activity coding structure shall provide reference to Area / Phase / Discipline / Subcontract etc. as per the approved Work Breakdown Structure (WBS) to enable effective organizing and report sorting. Activity coding structure shall also enable filtering of all activities / sub activities related to the following:

- Interface activities
- Engineering, Procurement and Construction activities related to long lead items (LLIs)
- High Risk / Critical Activities (< 2 weeks float)
- Milestones

CONTRACTOR shall continue to develop and maintain the Detailed Schedule throughout the engineering, procurement and construction period, taking into consideration latest philosophies, strategies, design, material, access and manpower requirements. The Detailed Schedule shall also be used by CONTRACTOR as the prime vehicle for constructability planning exercises such as heavy lift crane movements scheduling etc.

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The extent of detailing of the Schedule shall meet PMC / MRPL requirements such that the effect of any significant delay or change in the course of the execution of the WORKS can be clearly explained, evaluated and controlled. CONTRACTOR will, on request by PMC / MRPL, expand the Schedule logic in key areas, and provide copies of logic diagrams and Schedule reports for all or any part of the Detailed Schedule.

#### 6.1.5. Level 4 - Registers

The control tools included in this level are primarily documents used to track and measure progress of the work at an identifiable deliverable level including, but not limited to, the following:

- Engineering Deliverables Status Reporting
- Procurement Status Reporting
- Subcontracts Schedule
- Three Week Look ahead Schedule
- Systems Completion Schedule

#### 6.1.6. Three Week Look ahead

During the Construction phase, Three-week Look-Ahead Schedules shall be prepared for all disciplines, to indicate specific items of work to be accomplished over the forthcoming three weeks and activity completed in the previous week. This Schedule shall form part of CONTRACTOR's Weekly Progress Report and updated weekly. This Schedule shall clearly show any internal or external information flow or decision constraints that are hindering progress.

#### 6.1.7. Systems Completion Schedule

CONTRACTOR shall prepare a SYSTEMS Completion Schedule for review and approval by PMC / MRPL. The SYSTEMS Completion Schedule will be used to establish MECHANICAL COMPLETION (MC), READY FOR COMMISSIONING (RFC) and READY FOR START-UP (RFSU) dates for each SYSTEM and will supplement the Detailed Schedule as the working tool. The SYSTEMS Completion Schedule will be put in place prior to the transition to SYSTEMS Completion in the FIELD and must support the requirements of the agreed START-UP Schedule.

#### 6.1.8. Minimum Requirements for Scheduling



LSTK Contractor shall follow below mentioned minimum requirements while preparing the Detail Schedule.

1. Schedule shall be developed using Precedence Diagram Method.
2. Schedule shall be built using logical sequencing of activities.
3. Duration of any activity shall not exceed more than 40 days.
4. Lag / Lead shall not exceed more than 20 days.
5. Start to Finish (SF) linkage shall not be used while developing the schedule.
6. Hard Constraints shall not be used while developing the schedule. Only Soft Constraint shall be used.
7. All activities shall have at least one predecessor and one successor activity as a minimum except for Project Start and Project Finish Activities.
8. Schedule shall be resource loaded.
9. All Long lead items shall be identified and scheduled so that receipt of such long lead items at site is on time so as not to affect downstream activities.

#### 6.1.9. Critical Path

LSTK Contractor shall identify all the critical paths on the project while developing the Baseline Schedule. All activities with float < 2 weeks shall be considered as Critical activities. Any change in the critical paths along with its impact on the overall Project completion shall be highlighted to PMC



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/ MRPL by Contractor immediately during the project execution. A narrative shall be furnished indicating the reasons for variation of critical path, the critical activities, the reasons thereof and remedial / additional measures proposed to be taken to bring back the project on to the original critical path and any assistance needed by the PMC / MRPL. Any hindrances which may affect the work / Critical path may be notified to PMC / MRPL in advance. The status of critical activities which may affect the critical path needs to be identified at least a week in advance and initiate corrective / preventive actions under intimation to the PMC / MRPL. Any corrective actions by PMC / MRPL also needs to be anticipated and informed at least a week in advance to provide sufficient time for corrective / preventive actions.

## 6.2 REVISION OF PLANNING AND SCHEDULING DOCUMENTS

CONTRACTOR shall use appropriate software and computerised systems, which will be flexible enough to accommodate any changes in the scope of WORK, basis of scheduling and reporting etc. However, all such changes will be reflected in the Planning and Scheduling documents only after PMC / MRPL approval.

CONTRACTOR shall note that the submission of revised programmes by the CONTRACTOR and subsequent approval of the same by PMC / MRPL during the period of PROJECT implementation shall not relieve the CONTRACTOR from his Contractual obligations. All such revisions shall only be treated as a part of the control mechanism for effective monitoring so as to arrest/minimize progress slippages during the period of implementation.

## 6.3 GENERAL REQUIREMENTS

CONTRACTOR shall submit to PMC / MRPL updated Level 1 Project Management Schedule, Level 3 Detail Engineering, Procurement and Construction CPM Network and all other Working Schedules in requisite copies along with soft copies of the same at the time of initial submission as well as during periodic updation. All soft copies shall be in their native formats (not in pdf. Formats). Contractor shall also in addition refer to Documentation requirements stated elsewhere in the tender documents.

## 6.4 REVIEW TIME FOR PLANNING AND SCHEDULING DOCUMENTS



PMC / MRPL shall require ten (10) working days for review of all Planning and Scheduling related documents. CONTRACTOR shall accommodate for this duration in the Level III CPM Schedule.

## 7.0 PROGRESS PLANNING

Throughout the duration of the WORK, CONTRACTOR shall establish and report against a series of progress control curves and equivalent manpower histograms. The baseline curves shall show the planned monthly progress, and be developed using planned dates from the Level III schedule. During the execution of the WORK, the actual weekly and monthly progress shall be compared with the planned.

The CONTRACTOR shall develop a method for the measurement of physical progress to report actual progress against a series of progress control curves. CONTRACTOR is required to develop the detailed progress measurement system based on this procedure. Once approved, the progress control curves and associated weightage will remain fixed unless changes are approved by OWNER.

CONTRACTOR shall provide PMC / MRPL with unlimited access to CONTRACTOR's progress measurement data for the purposes of verification of progress through all phases of the WORK as required in the Progress Review and Certification Procedure.

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## 7.1 LEVEL I PROGRESS S-CURVES

### 7.1.1. Overall Progress S-Curves

Overall progress curves shall be developed to monitor progress of the WORKS. The curves shall be based on the approved SCHEDULE and weighted in accordance with PMC / MRPL's progress weightage, refer Section 6. Progress figures shall be shown in graphical and tabular format and compare actual progress with the planned progress baselines. Contract progress curves shall be prepared for the following:

- Overall Progress
- Engineering Progress
- Procurement and Subcontracting Progress
- Overall Construction Progress
- Overall Commissioning progress

### 7.1.2. Manpower Histograms

Manpower histograms shall be developed showing the planned manpower for the entire duration of the WORKS, separately for Engineering, Procurement & Subcontracting, Construction, Pre Commissioning & Commissioning and overall. Actual mobilised manpower shall be indicated to show comparison with plan. In the case of major rescheduling of the WORKS, the revised manpower loading shall be based on any agreed changes to the Master Schedule.

## 7.2 DETAILED PROGRESS S-CURVES

### 7.2.1. Progress Curves

Based on the Summary Schedule, CONTRACTOR shall provide Progress Curves showing planned, actual and forecast data for each of the following.

Engineering progress

- Major Disciplines

Procurement, Subcontracting and Expediting Services

- Equipments / Items / Materials
- Bulk Materials

Construction progress curves

- Major Discipline
- Subcontract
- Area / Unit



Completion progress curves

- Pre Commissioning
- Commissioning

### 7.2.2. Manpower Histograms

For each of the Detailed Progress S-Curves CONTRACTOR shall prepare compatible manpower histograms. For Engineering, histograms shall be prepared for each discipline; for Construction, histograms shall be prepared showing trades within a subcontract. During the execution of the WORK, the actual equivalent staffing shall be compared to the planned and a forecast shall be produced to support any progress curves as necessary. Equivalent staffing calculations shall be based on the standard working hours/week at the work location.

### 7.2.3. Engineering Manpower Schedule

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CONTRACTOR shall submit in the Monthly Report the “Manpower Schedule for Engineering Services” along with “Manpower Histogram for Engineering Services” in a tabular form.

CONTRACTOR shall note the following requirements while preparing the details in the above formats:

- Designations indicated in the enclosed formats are only indicative and may be changed as required, to suit to CONTRACTOR’s own
- PMC / MRPL Organization Structure. However, CONTRACTOR shall not change the grouping of personnel identified in the above formats.
- Designations indicated in the proposed Organization Chart, Manpower Schedule and all other related documents shall be identical.
- “Manpower Schedule for Engineering Services” shall reflect only the manpower required for HOME OFFICE Services, including Subcontractors’ manpower for specialty services required if any, for the entire duration of contract.



#### 7.2.4. Construction Manpower Schedule

CONTRACTOR shall submit in the Monthly Report the “Construction Manpower Schedule” along with “Manpower Histogram for Construction Works” in a tabular form as per the formats enclosed in Attachments 4 & 5.

Construction works (Field activities) also include activities related to workshop, fabrication yard and other activities.

CONTRACTOR shall note the following requirements while preparing the details in the above formats.

- Designations indicated in the enclosed formats are only indicative and may be changed as required, to suit to CONTRACTOR’s own Organization Structure. However, CONTRACTOR shall not change the grouping of personnel identified in the above formats.
- Designations and number of persons indicated in the Proposed Organization Chart, Manpower Schedule and all other related documents shall be identical.
- “Direct Manpower (Field Supervision staff)” shall include all Engineers (Supervisory personnel), who are directly involved in the supervision of construction and pre-commissioning works as well as yard activities etc. (viz. Construction Manager, Engineers, Superintendents and other Engineers connected with Construction and Pre-commissioning, Survey, HSE, QA/QC etc.) Manpower details shall be furnished separately against each discipline (viz. Civil, Piping, Mechanical, Electrical, Instrumentation etc.)
- “Direct Manpower (Non-Supervisory staff)” shall include all Non-Supervisory personnel below the level of Foremen (including Foremen) who are directly involved in the field activities (viz. Foremen and below including skilled / semi-skilled / unskilled workmen, Equipment Operators, Heavy Equipment Drivers, etc.).
- Indirect Manpower (Field Management) shall include all personnel who are essentially office based and are not directly involved in the construction supervision activities (viz. Project Manager, Project Control Engineers, Procurement / Material Control/ Expediting Engineers, Contract / Subcontract Administrators / Engineers, Field Engineering Personnel, Warehousing personnel etc.)
- Subcontractor manpower shall be indicated separately against each of the proposed subcontracts (if any)

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- Other Office Staff including Administration / Personnel, Finance / Accounts and Camp staff (Viz. catering, maintenance, janitorial services, etc.) shall not be included in the Manpower Schedule.
- Construction Manpower Schedule shall reflect only the Manpower required for construction services, including subcontractors' manpower (separately against each subcontract) and Vendor Engineers if any, for the entire duration of project.

### 7.3 PROGRESS MEASUREMENT SYSTEM

Progress S curves identified in the sections above shall be updated with progress and issued within the Monthly Reports.

CONTRACTOR is to submit the proposed progress measurement system that will be used throughout the duration of the project.

CONTRACTOR is to establish suitable computer software to track and update the status of each deliverable, with the ability to roll up progress to the respective reporting levels. CONTRACTOR's progress measurement system shall satisfy at the least the criteria contained within 6.4 and 6.5.

### 7.4 PROJECT PROGRESS WEIGHTAGE

The overall weightage established will remain fixed unless there are changes in total work scope of a large magnitude, or the basis originally assumed is agreed to have changed significantly. Any change will require PMC / MRPL's approval prior to implementation.

Overall Progress Weightage Physical progress shall be assessed for the total scope of the WORKS, i.e. Engineering, Procurement & Subcontracting, Construction, Pre commissioning & Commissioning, As-built and Project Closure.

Weightage for Engineering, Procurement & Subcontracting, Construction, Pre commissioning & Commissioning, As-built and Project Closure are to be tabulated as given below. Weightage shall be evaluated based on either estimated man-hours or costs by CONTRACTOR and shall be approved by OWNER before implementation.

CATEGORY	WEIGHTAGE (%)
Engineering	
Procurement, Subcontracting & Expediting	
Construction	
Pre Commissioning and Commissioning	
As built	
Project Closeout	
Overall	



### 7.5 PROGRESS MEASUREMENT SYSTEM

CONTRACTOR's Progress Measurement System shall establish suitable tools to track and measure the progress of the work.

#### 7.6.1. Engineering Progress

##### Engineering Deliverable Register

A database shall be prepared listing all engineering deliverables to be developed disciplinewise. Based on the detailed schedule, requirement dates shall be incorporated for each deliverable.

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The register shall include all procedures, studies, reports, data sheets, specifications, drawings, material requisitions or other documents to be produced during Engineering phase.

CONTRACTOR's system shall be capable of producing Summary and Discipline level reports to meet PMC / MRPL's requirements and made available to PMC / MRPL as required.

This database shall be capable of generating reports to meet PMC / MRPL requirements such as,

- Summary table by discipline and by type of deliverable planned together with actual achievements for the period and cumulative.
- Deliverables already completed and issued.
- Deliverables planned for completion but not completed.
- Deliverables due for issue in next period.

Guidelines for the format of these reports are provided in Attachments 7 and 8.

#### Progress Evaluation

Weightage shall be established for each deliverable based on the estimated manhours. CONTRACTOR shall follow the percentage stage progress as below for various stages for each types of documents (Specifications, Datasheets, Reports, MTOs, etc.) and drawings for PMC / MRPL review and approval.

##### a) Approval Category documents

Activity	Progress (%)	
	Incremental	Cumulative
Start	10%	10%
Draft Complete	10%	20%
Issue for IDC	25%	45%
IDC Closure	0%	45%
Issue for PMC / MRPL review	15%	60%
Receive PMC / MRPL comments	0%	60%
Issue for PMC / MRPL Approval	30%	90%
Receive PMC / MRPL Approval	0%	90%
Issue as IFC / AFC	10%	100%



##### b) Review Category documents

Activity	Progress (%)	
	Incremental	Cumulative
Start	10%	10%
Draft Complete	10%	20%
Issue for IDC	25%	45%
IDC Closure	0%	45%
Issue for PMC / MRPL review	15%	60%
Receive PMC / MRPL comments	0%	60%
Issue for Information	40%	100%

##### c) Documents for Safety Studies (HAZOP, etc.)

Activity	Progress (%)	
	Incremental	Cumulative
Start	10%	10%
Draft Complete	10%	20%
Issue for IDC	25%	45%



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IDC Closure	0%	45%
Issue for PMC / MRPL review	15%	60%
Receive PMC / MRPL comments	0%	60%
Issue for HAZOP	10%	70%
Receive HAZOP Recommendation	0%	70%
Issue for PMC / MRPL Approval	20%	90%
Receive PMC / MRPL Approval	0%	90%
Issue as IFC / AFC	10%	100%

d) Information Category documents

Activity	Progress (%)	
	Incremental	Cumulative
Start	10%	10%
Draft Complete	10%	20%
Issue for IDC	25%	45%
IDC Closure	0%	45%
Issue for Information	55%	100%

e) MTOs

Activity	Progress (%)	
	Incremental	Cumulative
1 <sup>st</sup> MTO Submission	50%	50%
2 <sup>nd</sup> MTO Submission	30%	80%
3 <sup>rd</sup> MTO Submission	20%	100%

## 7.6 PROCUREMENT

CONTRACTOR shall report progress for raising requisitions and awarding subcontracts with progress, equipment fabrication and supply of bulks to receipt of items at site.

### 7.7.1. Procurement Register



The Procurement Register shall track all Goods / Equipments / Materials / Items / Bulks for the Works, from RFQ stage through Purchase Order issue, Material Shipment and Receipt at jobsite. For each requisition the Required On Site (ROS) date shall also be established based on the Detailed Schedule and the requirement dates incorporated for each stage of the procurement chain up to placement of order and receipt of vendor data. Actual dates shall be shown for each stage to show progress accomplished, and wherever Schedule dates cannot be met, a forecast shall be indicated.

Where a forecast date exceeds the ROS date, a recommended recovery plan shall be indicated by CONTRACTOR. Such system shall also be capable of producing summary reports to meet PMC / MRPL's requirements. It shall also provide the means to review the status and evaluate potential project schedule delays on account of material delivery.

Guidelines for the format of these reports are provided in Attachments 9 and 10.

### 7.7.2. Procurement Progress Evaluation

Procurement Services progress will be evaluated at the Control Level by weighting each Material Requisition (MR) by the estimated cost of Equipment / Item / Material and monitoring progress from a series of progress milestones from RFQ through to close-out.

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Distribution of percentage at various stages of procurement for each individual Material Requisition will be kept same, for calculating procurement progress. The number of Requisitions / Purchase Orders shall be estimated initially and will be updated as the Procurement Plan is finalized.

A fixed milestone and percent complete pattern shall be determined for each Material Requisition / Purchase Order, starting with Prequalification stage and finishing with Purchase Order close-out as detailed in the following table. Progress against each Material Requisition will be measured under various major stages.

Description	Equipments	Bulk Materials
Issue MR / RFQ to Vendors	20%	20%
Issue Final TBE	30%	30%
Place PO on Vendor	40%	40%
Vendor Drawings Approval Completion	50%	-
FAT Successfully Conducted	85%	85%
Dispatch from Vendor's Premises	90%	90%
Receipt of Material at Site	100%	100%

#### Subcontracts Schedule

The Subcontract status report shall show for all subcontracts the required dates for the key stages of the subcontract chain and track progress from initial prequalification stage through award of subcontract. The number and types of subcontract shall be determined as part of the Subcontracting Plan.

Guidelines for the format of these reports are provided in Attachment 11.

#### Subcontract Progress Evaluation

CONTRACTOR shall distribute the total budgeted man-hours for subcontracting services and each contract shall be assigned a weighted value based on the complexities. Achieved progress shall be reported based on the progress milestone pattern and fixed percent completions for all milestones as detailed in the following table. Progress shall be evaluated by monitoring each SUBCONTRACT package according to milestones.



Issue RFQ to Subcontractors	35%
Bid Analysis and Clarifications	90%
Subcontract Award	100%

### 7.7 CONSTRUCTION PROGRESS

The Construction / Pre-Commissioning / Mechanical Completion / Commissioning Progress measurement basis shall be developed by CONTRACTOR and submitted for PMC / MRPL's approval.

A detailed Construction Progress Measurement System shall be developed by CONTRACTOR in such a way that physical progress can be reported both by area or discipline or by subcontract. CONTRACTOR shall prepare back-up documentation such as quantities / resources, etc to support the suggested weightage. In each area physical quantities of work involved shall be indicated. Additional guidelines are provided in Attachments 15 & 16 to this procedure.

Pre-Commissioning / Commissioning Progress Measurement shall be developed and weighted on a system basis, and provided for PMC / MRPL's review and approval.

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## 7.8 COMMISSIONING PROGRESS MONITORING

At a mutually agreed stage of the construction Schedule, CONTRACTOR shall transition from Area / Unit erection to a Systems approach. Suitable tools to plan and control the transition shall be in place prior to the move to Systems. CONTRACTOR's field progress reporting system shall be capable of measuring and reporting progress on a discipline basis for the defined Systems.

### 7.10.1. START-UP Schedule and Systems Completion Schedule

Requirements for these schedules are contained within the Planning and Scheduling Procedure.

### 7.10.2. Punch List Reporting

CONTRACTOR shall prepare and maintain a databased punch-listing system that incorporates all punch list items from the start of Discipline Acceptance, to control punch lists and system exception lists as part of the process for Acceptance of the Work.

## 8.0 PROGRESS MEASUREMENT

### 8.1 GENERAL

Throughout the duration of the WORK, CONTRACTOR shall develop, maintain, update and report against a series of progress control curves and manpower histograms. The baseline curves shall show the monthly planned vs. actual progress, which shall be generated directly from the approved schedules and shall form the basis of the physical progress measurement system. During the execution of the WORK the actual monthly progress shall be compared with the planned. A forecast shall be introduced if there is any negative deviation from the plan.

### 8.2 ENGINEERING PROGRESS

Progress is a key factor in the control of engineering and procurement schedules. An accurate measurement of progress serves as a basis for office manhour forecasts as well as an indicator for performance against the project schedule and budget.

CONTRACTOR is to establish suitable computer software to track and update the status of each deliverable, with the ability to roll up progress to the respective reporting levels.



Progress (percent complete) is measured by using a weighted average method of computing "earned" hours or work units. The progress reporting system will be set up as soon as a reasonable breakdown of drawings, specifications and other activities is available for the various design disciplines.

The Control Level Schedules provide a listing/grouping of all deliverables (drawings, specifications, etc.) and activities required for the project. Estimated hours or work units are allocated to each line item, thus assigning a "weight" relative to the respective discipline control budget. By determining the "percent complete" for each item at the end of a reporting period, the earned hours are calculated as follows.

$$\text{Percent Complete} \times \text{Budget Hours} = \text{Earned hours}$$

The total earned hours from work completed, divided by the total control budget hours determines the "percent complete" or physical progress for each discipline. Utilising this same weighted average method based on "earned" hours, progress is then summarised by unit / system / discipline and total project.



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- 8.2.1. Engineering Performance  
Home office performance is calculated using the following formula.

$$Performance = \frac{Earned\ hours}{Expended\ Hours}$$

Thus, performance is a measure of work accomplished versus actual expenditures and is calculated on both an incremental and cumulative basis at the end of each reporting period. A calculation greater than 1.00 indicates work is being performed more efficiently than that defined by the control budget, whereas a performance less than 1.00 is an indication of less efficient work. Significant Changes either way will be cause for a potential deviation.

- 8.2.2. Procurement Progress  
Progress shall be a measure of the completion of each step in the procurement plan. A percentage completion shall be established for each step in the procurement chain through to delivery at the work site. The relative weightage, based on value, shall be allocated to all Equipment / Items / Materials and Bulk Material orders defined in the Material Control System. The progress for each order shall be aggregated to the appropriate summary level.

### 8.3 CONSTRUCTION PROGRESS

Progress achieved is the measurement of progress on individual activities based on the achievement of interim progress milestones for the activities, and/or actual quantities of work installed by the CONTRACTOR. The milestones are a guide for progress, and credit is given to work that has progressed beyond a milestone, but has not yet achieved the next milestone. The earned values shall be accumulated by material type, plant area, to calculate actual progress percentages at the different levels of detail, with the figures rolling up to a total project actual percent complete.

### 9.0 PROGRESS REPORTING

CONTRACTOR shall prepare and issue Monthly Progress Reports and Weekly Progress Reports to inform PMC / MRPL of the status of the WORKS.



Reports shall be issued both in hard copy and electronic format.

CONTRACTOR shall report to and discuss with PMC / MRPL the status of the WORKS at Weekly Progress meetings, Monthly Progress Meetings and Review Meetings as required.

These reporting requirements shall not relieve CONTRACTOR of its obligations to promptly report to PMC / MRPL any matters that significantly affect completion of the WORK. CONTRACTOR shall provide adhoc report and/or presentations as required by PMC / MRPL to address specific issues eg. action plans to recover schedule slippage. Reports requested by PMC / MRPL and not contained within the body of the Monthly Report shall be issued either by electronic transfer or by covering transmittal.

### 9.1 MONTHLY PROGRESS REPORT

The Monthly Progress Report shall be issued to OWNER each month, in line with the Project Calendar. Formal monthly progress meetings will be held at which CONTRACTOR will be expected to make presentations highlighting achievements, problems and recovery measures, as recorded in the Monthly Report.

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CONTRACTOR is required to prepare the report with an Executive Summary and detailed sections as defined below:

- Executive Summary
- Detailed Report
- Overall Safety / HSE
- Engineering
- Procurement Services
- Subcontracting Services
- Construction
- Pre-commissioning / Commissioning
- Quality
- Areas of Concern
- Progress Photographs

Executive Summary, shall include

- Summary narrative highlighting major activities accomplished during the month including Project Milestones achieved, progress achieved compared with plan, areas of concern and remedial actions.
- Updated Project Level I schedule with analysis highlighting any delay in progress with particular reference to the project critical path and achievement of Project Milestones. Narrative shall describe any recovery actions required.
- Safety summary reporting achievements in the month, current objectives, and incident/accident statistics in a format to be agreed with MPRL's HSE department. Any serious incidents, results of investigations and remedial actions should be addressed in this section.
- Summary Progress Reports comprising;
  - Progress S-Curves updated with actual versus plan
  - Manpower histograms updated with actual versus plan
  - Quantity Reporting Summary showing the relevant key progress indicators for the stage of the project (refer below)
  - Summary status and progress for each subcontract
  - Summary of CONTRACT changes

Detailed Report, shall include

Each Detailed Report section shall contain a narrative of the major activities undertaken during the month, planned activities for the next month, areas of concern and recovery actions.



CONTRACTOR shall provide the following specific progress reports, with the respective sections:

#### 9.1.1. HSE

This section will highlight the activities in the area of HSE, and shall address key activities that have taken place during the month

- Narrative addressing for the month, actions taken to enhance and encourage HSE awareness.
- Tabulation of SITE HSE statistics, by subcontractor, in a format to be agreed with MRPL's HSE department.
- Statement of overall accident-free manhours for the WORKS.

#### 9.1.2. Engineering Services

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- Summary status for engineering deliverables, represented as a comparison of the number of deliverables planned/actual/forecast. Broken down by discipline and type, the number of deliverables shall be shown for each key step in the development and approval process.
- Progress curves and manpower histograms for overall engineering and each major discipline, showing planned, actual and forecast progress.

#### 9.1.3. Procurement and Subcontracting Services

- Summary status for equipment and materials, represented as a comparison of the number of purchase orders planned/actual/forecast.
- Progress curves for overall Procurement Services, and split by equipment/bulks, showing planned, actual and forecast progress.
- Progress curves for overall Subcontracting Services.

#### 9.1.4. Construction

- Summary progress by major discipline and subcontract
- Progress curves for overall Construction, and for each area and subcontract, showing planned, actual and forecast progress.
- Construction manpower histograms, indicating direct/indirect labour, and plan versus actual, each subcontract.

#### 9.1.5. Pre-Commissioning/Commissioning

- Summary status by system showing the key stages of each system as it progresses from MC to RFSU.
- Progress curves for PRECOMMISSIONING and COMMISSIONING activities showing planned, actual and forecast progress.

### 9.2 PROJECT CONTROLS

This section shall address planning matters, with particular reference to the overall Project Schedule. The cut-off date to be used in the preparation of data shall be as per the Project calendar.

#### 9.2.1. Planning



- Narrative summary of the overall Project Schedule status with particular reference to slippages, critical path activities and other areas of Schedule sensitivity.
- Overall progress summary, curves and histograms for the WORKS, Engineering, Procurement & Subcontracting, Construction, Pre Commissioning & Commissioning, As Built and Project Closure. Planned, actual and forecast progress shall be shown.
- Contract Master Schedule, updated for progress through the report period.
- MILESTONE status showing Scheduled/actual/forecast dates.

#### 9.2.2. Quality

This Section will highlight activities in the area of Quality Control (QC) and Quality Assurance (QA) for engineering, procurement and field activities.

- Status of Audits
- Quality Control Report showing main activities, statistics and disposition of Non-Compliance Reports (NCR)
- Status of key QC indications, eg. compaction tests, concrete tests, NDE results (including welder qualification records and performance/rejection rates), pressure tests etc.

#### 9.2.3. Areas of Concern

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- Narrative of major areas of concern facing the Project, plus CONTRACTOR's proposed courses of action.
- Status of outstanding areas of concern and those cleared since the previous month's report.

#### 9.2.4. Progress Photographs and 3D CAD views

CONTRACTOR shall take regular photographs of the WORKS as a record of its progress within the Monthly Report. Photographs shall be taken every month at a minimum of six locations to be directed by PMC / MRPL.

### 9.3 WEEKLY PROGRESS REPORT

The weekly progress report shall be submitted to PMC / MRPL on the second working day of the following week. The minimum contents shall be as follows:

- Brief narratives of the activities performed during the week by each discipline or in the case of construction each subcontract, with highlights on specific achievements.
- Areas of concern and proposed corrective action.
- Construction reporting shall include, equipment and bulk materials received, tables indicating planned and actual quantities for key construction indicators eg steelwork erected, equipment erection, piping erection, electric cable installed.
- Weekly man-hour summary table showing Home Office manhours expended for the week and actual manpower, or in the case of construction each subcontractors manhours expended for the week, to date, and actual site manpower.
- Major activities planned for next week.
- List of outstanding documents and correspondence requiring response by either PMC / MRPL or CONTRACTOR.

### 9.4 DAILY CONSTRUCTION REPORTS

CONTRACTOR shall maintain a daily field log sheet giving a brief description of the WORK in progress. CONTRACTOR shall provide daily labour and equipment sheets detailing CONTRACTOR's, Subcontractors and vendors equivalent direct and indirect staffing by trade and major construction equipment employed, material received, key milestones achieved, lost time accidents and other major activities of the day.

### 9.5 FINAL CLOSE-OUT REPORT

CONTRACTOR shall prepare a Final Close-out Report for the Works which shall be submitted to PMC / MRPL no later than one month after Provisional Acceptance. The format of the Final Close-out Report is to be agreed with PMC / MRPL no later than six (6) months prior to the planned Provisional Acceptance.



### 9.6 PROGRESS MEETINGS

CONTRACTOR shall report to and discuss with PMC / MRPL the status of the Project Progress at Weekly Progress Meetings and Monthly Progress Meetings.

### 9.7 WEEKLY PROGRESS MEETINGS

The main purpose of the Weekly Progress Meeting shall be to discuss the Weekly Progress Report. Particular attention shall be directed towards any recovery actions required. Other topics may be introduced at the request of PMC / MRPL or CONTRACTOR. The location, timing, attendees and agenda shall be agreed with PMC / MRPL.

### 9.8 MONTHLY PROGRESS MEETINGS

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The main purpose of the Monthly Progress Meeting shall be to discuss the Monthly Progress Report. Other topics may be introduced at the request of PMC / MRPL or CONTRACTOR. The location, timing, attendees and agenda shall be agreed with PMC / MRPL.

#### 9.9 SUBCONTRACTORS' AND VENDORS' PROGRESS MEETINGS

PMC / MRPL has the right to attend all progress meetings with Subcontractors' and Vendors' and shall be notified of such meetings and receive a copy of the minutes within four (4) working days of the meeting.

#### 9.10 RECORDS

CONTRACTOR shall maintain records of all weekly and monthly progress report statistics and supporting databases which shall be available to PMC / MRPL personnel.

#### 10.0 PROGRESS REVIEW CERTIFICATION

##### 10.1 PROGRESS DOCUMENTATION

CONTRACTOR shall perform progress measurement in accordance with Progress Planning Section 6.0. CONTRACTOR shall submit all supporting documentation for the progress claimed each month, to enable progress certification / approval by PMC / MRPL. Progress Review / Verification sheets to be submitted by CONTRACTOR shall cover the details of progress achieved during the month as per the details given below.

1. Physical Progress and Milestone Completion Certificate
2. Milestone Certificate
3. Milestone Summary Status
4. Overall Progress Summary
5. Engineering Progress
6. Procurement Progress
7. Subcontracting Progress
8. Construction Progress
9. Commissioning Progress

Above details shall be submitted every month for progress certification as per the enclosed sample formats, Attachments 17 to 23. CONTRACTOR shall ensure that the MILESTONES achieved during the month are agreed by PMC / MRPL prior to submission of above details for progress certification.

##### 10.2 REVIEW AND CERTIFICATION

PMC / MRPL shall return the above progress verification sheets to CONTRACTOR duly approved / certified, within 10 working days after receipt of same by PMC / MRPL with correct details. In case any portion of the progress claimed to have been achieved is found to be incorrect, the same shall be communicated by PMC / MRPL to the CONTRACTOR within 10 working days after receipt by PMC / MRPL, for necessary rectification and resubmission of above documents.

#### 11.0 SCHEDULE CHANGE



##### 12.1 PROCEDURE

This procedure defines the system for identification of potential changes and approval of Schedule changes. Changes are to be prepared for events that potentially impact the cost, schedule and / or have detrimental impact on quality.

##### 12.2 CHANGE IDENTIFICATION

###### 12.2.1. Contractor Identified Changes



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CONTRACTOR is required to promptly notify PMC / MRPL of potential changes to the CONTRACT scope through the Schedule Change system. CONTRACTOR documents the Schedule change, recording the change basis and change impacts on manhours, cost and schedule. The originator should clearly describe the Change and provide backup and reference documents including the relevant portion of the project specification that is affected. CONTRACTOR must notify PMC / MRPL of a Change within ten (10) working days of identification.

If during performance of services, CONTRACTOR is of the opinion that any instruction received from PMC / MRPL or any other developments affecting the services should be treated as a variation, CONTRACTOR shall notify PMC / MRPL in writing within five (5) days and shall await PMC / MRPL's further instructions.

#### 12.2.2. PMC / MRPL Initiated Trend

PMC / MRPL initiated changes will be communicated to CONTRACTOR under a Change Note. CONTRACTOR shall prepare the full Change assessment and submit for PMC / MRPL's review within ten (10) working days after receipt.

CONTRACTOR shall provide information on cost, schedule etc. on these Change Notes.

#### 12.2.3. Cost of Trend Preparation

The full cost of evaluating and processing of a Change notes, whether ultimately approved or rejected by PMC / MRPL shall be borne by the CONTRACTOR and shall not be reimbursed by PMC / MRPL.

#### 12.2.4. Schedule Effects

The trend section applicable to schedule will be completed by CONTRACTOR. CONTRACTOR shall endeavor to maintain the schedule as contained in the Baseline schedule.

In the event of a potential schedule deviation, CONTRACTOR shall evaluate the extent of change in any Milestone and/or Overall Completion Date.

PMC / MRPL requires CONTRACTOR to provide all relevant schedule data, related to the change, in order to demonstrate that the work cannot be executed within the agreed time frame. CONTRACTOR shall supply PMC / MRPL with a CPM Network including the basis for original and revised logic and durations.

### 12.3 PMC / MRPL ASSESSMENT

PMC / MRPL will perform an assessment of all Change Notes and raise clarifications to the CONTRACTOR if required. PMC / MRPL will then either, approve the Change Note and proceed to issue a Variation, or notify the change Note is rejected.

### 12.4 IMPLEMENT CHANGE

When CONTRACTOR has been notified of a Change, CONTRACTOR's Project Management will instruct the task force to proceed. CONTRACTOR will update the Change Log and revise the reports.









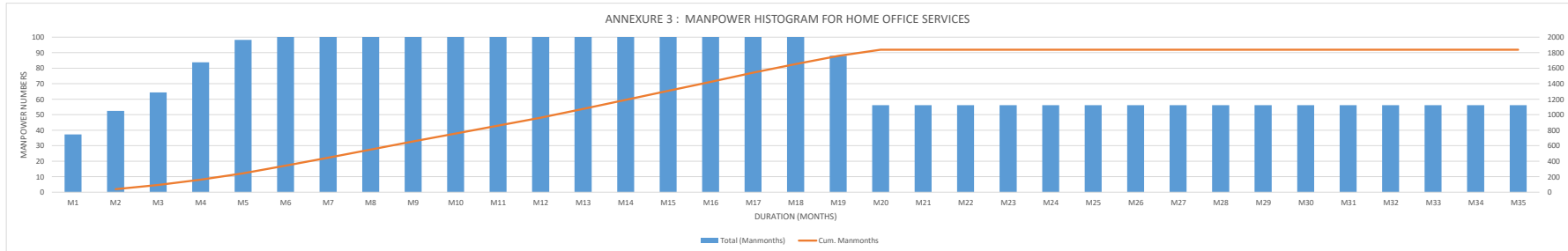
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Subsection - A-2.1

PLANNING, SCHEDULING AND MONITORING PROCEDURE

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DOCUMENT NO.  
REV.

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Description	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18	M19	M20	M21	M22	M23	M24	M25	M26	M27	M28	M29	M30	M31	M32	M33	M34	M35	Total Manmonths	Total Manhours	
Project Management Services	3	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Engineering Services	27.2	31.1	40	50	60	60	60	60	60	60	60	70	70	70	70	70	65	60	50	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	
Procurement Services	2	4	6	6	6	8	8	8	8	8	8	8	8	8	8	8	8	8	8	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	
Contracting Services	0	0	0	2	3	4	4	4	4	4	4	4	4	6	6	6	6	6	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
Construction & Commissioning Services	0.1	0.1	1.1	1.5	3	4	6	6	6	6	3	3	3	3	3	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Design/ Drafting Services	4	10	10	14	16	16	16	16	16	16	16	16	18	18	18	18	18	16	16	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12		
Document Control Services	2	3	4	4	4	4	4	4	4	4	4	6	6	6	6	6	6	6	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
Other services	1	0.2	0.2	0.3	0.3	0.3	0	0	2.3																													
<b>Total (Manmonths)</b>	<b>37.3</b>	<b>52.4</b>	<b>64.3</b>	<b>83.8</b>	<b>98.3</b>	<b>102.3</b>	<b>104</b>	<b>104</b>	<b>106.3</b>	<b>101</b>	<b>101</b>	<b>115</b>	<b>115</b>	<b>117</b>	<b>117</b>	<b>117</b>	<b>112</b>	<b>105</b>	<b>88</b>	<b>56.2</b>	<b>56.2</b>	<b>56.2</b>	<b>56.2</b>	<b>56.2</b>	<b>56.2</b>	<b>56.2</b>	<b>56.2</b>	<b>56.2</b>	<b>56.2</b>	<b>56.2</b>	<b>56.2</b>	<b>56.2</b>	<b>56.2</b>	<b>56.2</b>	<b>56.2</b>			
<b>Total (Manhours)</b>	<b>6681</b>	<b>9248</b>	<b>11271</b>	<b>14246</b>	<b>17051</b>	<b>17391</b>	<b>17680</b>	<b>17680</b>	<b>17680</b>	<b>17170</b>	<b>17170</b>	<b>19550</b>	<b>19550</b>	<b>19890</b>	<b>19890</b>	<b>19890</b>	<b>19040</b>	<b>17850</b>	<b>13600</b>	<b>13600</b>	<b>13600</b>	<b>13600</b>	<b>13600</b>	<b>13600</b>	<b>13600</b>	<b>13600</b>	<b>13600</b>	<b>13600</b>	<b>13600</b>	<b>13600</b>	<b>13600</b>	<b>13600</b>	<b>13600</b>	<b>13600</b>	<b>13600</b>			
<b>Cum. Manmonths</b>		<b>39.3</b>	<b>93.7</b>	<b>160</b>	<b>243.8</b>	<b>344.1</b>	<b>446.4</b>	<b>550.4</b>	<b>654.4</b>	<b>758.4</b>	<b>859.4</b>	<b>960.4</b>	<b>1075</b>	<b>1190</b>	<b>1307</b>	<b>1424</b>	<b>1541</b>	<b>1653</b>	<b>1758</b>	<b>1838</b>	<b>1838</b>	<b>1838</b>	<b>1838</b>	<b>1838</b>	<b>1838</b>	<b>1838</b>	<b>1838</b>	<b>1838</b>	<b>1838</b>	<b>1838</b>	<b>1838</b>	<b>1838</b>	<b>1838</b>	<b>1838</b>	<b>1838</b>			

The above is indicative only. Contractor may modify the list as per the Project scope and requirements





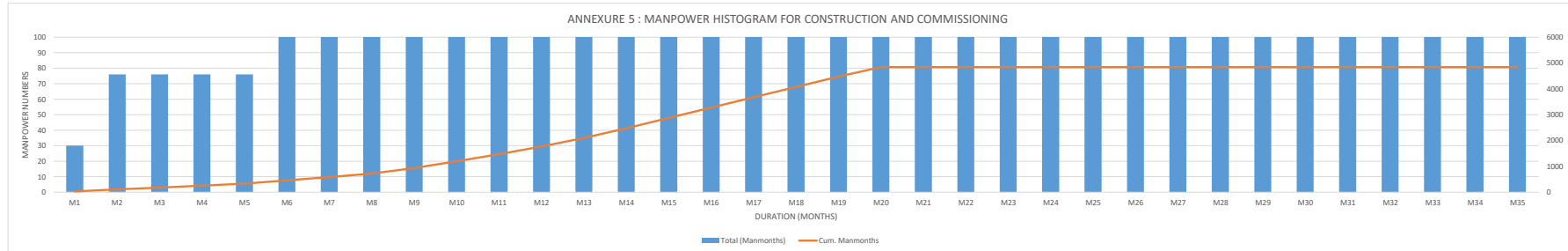
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Description	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18	M19	M20	M21	M22	M23	M24	M25	M26	M27	M28	M29	M30	M31	M32	M33	M34	M35	Total Manmonths	Total Manhours	
Direct Manpower Nos ( Field Supervision Staff )	5	15	15	15	15	20	20	20	40	40	40	40	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	1435	
Indirect Manpower Nos ( Field Supervision Staff )	1	3	3	3	3	4	4	4	8	8	8	8	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	287	
Direct Manpower Nos ( Non Supervisory Staff )	20	50	50	50	50	70	75	80	120	140	160	180	200	220	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	6715	
Subcontractor Manpower Nos	0	0	0	0	0	20	20	20	40	60	60	60	60	80	80	80	80	80	80	80	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	1620	
Other Manpower Nos	4	8	8	8	8	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	336		
<b>Total (Manmonths)</b>	<b>30</b>	<b>76</b>	<b>76</b>	<b>76</b>	<b>76</b>	<b>124</b>	<b>129</b>	<b>134</b>	<b>218</b>	<b>258</b>	<b>278</b>	<b>298</b>	<b>330</b>	<b>370</b>	<b>400</b>	<b>400</b>	<b>400</b>	<b>400</b>	<b>400</b>	<b>400</b>	<b>370</b>	<b>370</b>	<b>370</b>	<b>370</b>	<b>370</b>	<b>370</b>	<b>370</b>	<b>370</b>	<b>370</b>	<b>370</b>	<b>370</b>	<b>370</b>	<b>370</b>	<b>370</b>	<b>370</b>	<b>10393</b>		
<b>Total (Manhours)</b>	<b>6600</b>	<b>16720</b>	<b>16720</b>	<b>16720</b>	<b>16720</b>	<b>27280</b>	<b>28380</b>	<b>29480</b>	<b>47960</b>	<b>56760</b>	<b>61160</b>	<b>65560</b>	<b>72600</b>	<b>81400</b>	<b>88000</b>	<b>88000</b>	<b>88000</b>	<b>88000</b>	<b>88000</b>	<b>88000</b>	<b>81400</b>	<b>81400</b>	<b>81400</b>	<b>81400</b>	<b>81400</b>	<b>81400</b>	<b>81400</b>	<b>81400</b>	<b>81400</b>	<b>81400</b>	<b>81400</b>	<b>81400</b>	<b>81400</b>	<b>81400</b>	<b>81400</b>	<b>81400</b>		
<b>Cum. Manmonths</b>	<b>30</b>	<b>106</b>	<b>182</b>	<b>258</b>	<b>334</b>	<b>458</b>	<b>587</b>	<b>721</b>	<b>939</b>	<b>1197</b>	<b>1475</b>	<b>1773</b>	<b>2103</b>	<b>2473</b>	<b>2873</b>	<b>3273</b>	<b>3673</b>	<b>4073</b>	<b>4473</b>	<b>4843</b>	<b>4843</b>	<b>4843</b>	<b>4843</b>	<b>4843</b>	<b>4843</b>	<b>4843</b>	<b>4843</b>	<b>4843</b>	<b>4843</b>	<b>4843</b>	<b>4843</b>	<b>4843</b>	<b>4843</b>	<b>4843</b>	<b>4843</b>			

The above is indicative only. Contractor may modify the list as per the Project scope and requirements





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**ATTACHMENT 7: ENGINEERING DOCUMENT AND DELIVERABLE REGISTER**

Sl. No.	WBS Number	Discipline	Document Number	Document Description	Document Category / Class	Weightage (%)	Plan / Act / For	Start	Draft Complete	Issue for IDC	IDC Complete	Issue for PMC / MRPL review	Receive PMC / MRPL Comments	Issue for PMC / MRPL Approval	Receive PMC / MRPL Approval	Issue as AFC / IFC	Earned Progress	Plan (%)	Act (%)	Remarks		
Incremental Progress (%)																						
Cumulative Progress (%)																						
							Plan															
							Act															
							For															
							Plan															
							Act															
							For															
							Plan															
							Act															
							For															
							Plan															
							Act															
							For															

- Note:
- a All Engineering Deliverables such as Drawings, Reports, Specifications, Datasheets, etc. shall be listed using this template.
  - b All Bulk Quantities (MTOs) shall be listed using this template
    - i. Preliminary MTO (1st Issue) shall be indicated under "Issue for PMC / MRPL review" column
    - ii. Intermediate MTO (2nd Issue) shall be included under "Issue for PMC / MRPL Approval" column
    - iii. Final MTO (3rd Issue) shall be included under "Issue as AFC / IFC" column





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ATTACHMENT 9: PROCUREMENT SERVICES STATUS REGISTER

TENDER NO.  
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Sl. No.	WBS Number	Discipline	Document / PO Number	Item / Material / Equipment Description	Weightage (%)	Plan / Act / For	Start RFQ / MR	Issue MR / RFQ to Vendors	Receive Vendor Offers	TQ / TQ Closure	Issue TBE for PMC / MRPL review	Receive PMC / MRPL Comments on TBE	Issue Final TBE	Vendor Nomination	Issue PS for PMC / MRPL review	Receive PMC / MRPL Comments on PS	Issue Final PS	Place PO on Vendor	Pre-Inspection Meeting	Receive & Approve Vendor Drawings	Ready for Inspection	FAT	Closure of Punch Points	Dispatch from Vendor's Premises	Receipt of Material at Site	Earned Progress	Plan (%)	Act (%)	Remarks	
<b>Incremental Progress (%)</b>																														
<b>Cumulative Progress (%)</b>																														
						Plan																								
						Act																								
						For																								
						Plan																								
						Act																								
						For																								
						Plan																								
						Act																								
						For																								
						Plan																								
						Act																								
						For																								

Note:  
a Weightages shall be based on the estimated cost of each item / material / equipment







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DOCUMENT NO. 20005-GEN-G-DOC-9105  
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**ATTACHMENT 11: SUBCONTRACTING SERVICES STATUS REGISTER**

Sl. No.	Discipline	Item Description	Weightage (%)	Plan / Act / For	Finalise Bidders List		Issue Tender for Bid	Receive Bids	Submit Bid Evaluation to Company	Receive Company Approval	Award Sub Contract	Earned Progress	Plan (%)	Act (%)	Contractor's Name	Contract Completion Date	Remarks		
					Submission	Approval													
Incremental Progress (%)																			
Cumulative Progress (%)																			
				Plan															
				Act															
				For															
				Plan															
				Act															
				For															
				Plan															
				Act															
				For															
				Plan															
				Act															
				For															



Notes:

- a Weightages shall be based on the estimated manhours of each subcontract







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Attachment 15  
Guideline on Progress Measurement System for Construction

A Typical Example is as below.

This example illustrates the various progress levels interacting to formulate an overall progress figure, the lowest levels, levels 5 and below, will generally utilize standardised weightings that will be formulated in the manner shown below.

Level 1	Level 2	Level 3	Level 4	Level 5	Weightage (%)
Overall Construction					100%
	Main Construction				92%
		Civil			
		Structural			
		Piping			
		Mechanical			
			Tanks		
				Bottom Plates	
				Shell	
				Roof	
			Pumps		
			Miscellaneous Equipments		
		Electrical			
		Instrumentation			
	Pre Commissioning				3%
	Commissioning				3%
	As Built / Closeout				2%

General guidelines on weighting stages for level 5 and lower  
CONTRACTOR will develop progress weighting system for further levels (Level 5 onwards).  
CONTRACTOR will submit the proposed weightings for EMPLOYER review and approval prior to implementation. Weight factors for Level 5 onwards shall reflect Measurable Elements of works for each type of work. The Measurable Elements shall be weighted by manhours for each category of

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work to enable aggregation to the summary progress reporting levels.

The work volume of each Progress Measurable element shall be measured using appropriate Yard Sticks. Physical progress of the Work Element shall be obtained by dividing the work volume completed by the estimated total work volume. Typical examples of yard sticks are as below.



- number of piles installed
- m length of buried linepipe installed
- m<sup>3</sup> of concrete poured
- m<sup>3</sup> of soil excavated
- m length of trenching completed
- m<sup>2</sup> of paving
- tonnage of steelwork fabricated
- tonnage of steelwork erected
- number of pipe welds complete (qty or dia/ins)
- number, tonnage and meters of spools fabricated
- number, tonnage and metres of spools installed, straight pipe installed,
- number of field welds complete split by large bore, small bore, under and above ground.
- number and diametric millimetres of welds, by material type, passed and failed.
- number of equipment items installed.
- number of instruments and control elements installed and connected.
- m cable length installed and connected.
- m cable tray/rack installed
- metres of steam/electric tracing installed.
- number of hydrostatic tests complete.
- Number of systems flushed and reinstated.
- m<sup>3</sup> or m<sup>2</sup> of pipe length insulated.
- m<sup>2</sup> of area painted.
- number of loop checks completed

Some examples of level 5 progress stages

CONTRACTOR shall establish planned installation curves for the major categories of WORK as follows, based on the detailed schedule. During the construction phase, CONTRACTOR shall measure the physical progress made for its WORK and that of SUBCONTRACTORS

Equipment Foundation	
Excavation	15%
Formwork / rebar	40%
Concreting	40%
Strip Formwork &	5%
	100%

Building / Superstructure Concreting	
Formwork / rebar	60%
Concreting	35%
Removal of Formwork	5%
	100%

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Drainage	
Precast manholes	35%
Place manholes	15%
Drainage	50%
	100%

Precast Cable Trenches	
Precast Units	30%
Install precast units	20%
Completed Trench in precast	50%
	100%



Rotating Equipment Installation	
Install	15%
Level / Align	25%
Grout	15%
Coupling / Guards	35%
Testing & Precommissioning	10%
	100%

Spooled Piping	
Fabrication	30%
Erection	30%
Weld out / bolt up	10%
Supports	5%
Testing	15%
Reinstatement	5%
Final Inspection	5%
	100%

Electrical Cabling	
Cable Laying / Pulling	60%
Termination	35%
Testing	5%
	100%

#### Construction Progress Evaluation



CONTRACTOR shall report each month both the productivity in terms of expended jobhours per unit of each WORK item installed and the actual quantity achievement against the quantity planned for each of the major categories of WORK. Performance factors, based on earned (or achieved) jobhours divided by actual (or expended) jobhours, shall be used by CONTRACTOR to demonstrate the performance of the WORK and to substantiate that adequate manning levels are being provided to meet the WORK schedule.

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Attachment 16  
Construction Quantities

Craft	Document Type	Units	Total Quantity	Installed Quantities			
				For the Month		Cumulative till Date	
				Planned	Actual	Planned	Actual
Piling	Piling	No.					
Civil	Concrete	m <sup>3</sup>					
	Paving	m <sup>2</sup>					
	Concrete Structures	Tons					
	Steel Fabricated	Tons					
	Steel Installed	Tons					
Mechanical / Piping	U/G Piping	LM					
	Spools Fabricated	No.					
	Spools Fabricated	DI					
	Spools Fabricated	LM					
	Spools Installed	No.					
	Spools Installed	LM					
	Straight Pipe Installed	No.					
	Straight Pipe installed	LM					
	Field Weld – Underground	No.					
	Field Weld – Large Bore	No.					
	Hydrostatic Tests	No.					
	Equipment Installed	No.					
Electrical / Instrumentation	Instruments / Controls Installed	No.					
	Terminations	No.					
	Cable Tray	LM					
	Cable	LM					
Others	Systems Flushed	No.					
	Systems Re-instated	No.					
	Pipe Length Insulated	m <sup>2</sup>					
	Area Painted	m <sup>2</sup>					



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Attachment 17  
Physical Progress and Milestone Completion Certificate

Project Number				
Project Name				
Month				Invoice No.
Invoicing Period		Upto		Date

**A. PHYSICAL PROGRESS**

Description	Monthly Progress (%)	Cumulative Progress (%)
Progress Planned		
Progress Achieved (Actual)		
Variance = Plan – Actual		

**B. MILESTONE SCHEDULE**

**1. \*MILESTONE SCHEDULED FOR COMPLETION DURING INVOICING MONTH**

Milestone Reference	Description	Date Achieved	Transmittal Number	# Not Achieved or Comments

**2. \*PRIOR MONTHS MILESTONES ACHIEVED DURING INVOICING MONTH**

Milestone Reference	Description	Date Achieved	Transmittal Number	# Not Achieved or Comments

**3. \*MILESTONES OUTSTANDING FROM PREVIOUS MONTHS**

Milestone Reference	Description	Date Achieved	Transmittal Number	# Not Achieved or Comments

The above Milestones and Stated Approved Physical Progress are Confirmed as Correct.



\_\_\_\_\_  
Contractor

\_\_\_\_\_  
PMC / MRPL

**Notes**

\*ADDITIONAL SHEETS TO BE USED IF NECESSARY

#COMPLETE IF APPLICABLE

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Attachment 18  
Milestone Certificate

Project Number	
Project Name	
<b><u>MILESTONE CERTIFICATE</u></b>	
Milestone Number	
Description	
Date Planned	
Date Achieved	

\_\_\_\_\_

Contractor

\_\_\_\_\_

PMC / MRPL

\_\_\_\_\_

Date

\_\_\_\_\_

Date





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**ATTACHMENT 20: OVERALL PROGRESS SUMMARY**

Project Number	
Project Description	

Month	
Cutoff Date	

CATEGORY	WEIGHTAGE (%)	CUMULATIVE PROGRESS (%)		INCREMENTAL/ MONTH PROGRESS (%)		CERTIFIED		REMARKS
		PLAN	ACTUAL	PLAN	ACTUAL	BY	SIGN	
PROJECT MANAGEMENT & GENERAL								
ENGINEERING								
PROCUREMENT & SUBCONTRACTING								
CONSTRUCTION								
PRE COMMISSIONING & COMMISSIONING								
AS BUILT DOCUMENTATION								
PROJECT CLOSURE								
<b>OVERALL</b>								

APPROVED BY	
SIGN	
NAME	
DATE	



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**ATTACHMENT 21: ENGINEERING PROGRESS SUMMARY**

Project Number	
Project Description	

Month	
Cutoff Date	

DESCRIPTION	WEIGHTAGE (%)	CUMULATIVE PROGRESS (%)		INCREMENTAL/ MONTH PROGRESS (%)		REVIEWED		REMARKS
		PLAN	ACTUAL	PLAN	ACTUAL	BY	SIGN	
GENERAL								
PROCESS								
SAFETY (HSE)								
PIPING								
CIVIL / STRUCTURAL / ARCHITECTURAL								
MECHANICAL								
ELECTRICAL								
INSTRUMENTATION								
TELECOMMUNICATION								
PIPELINES								
<b>OVERALL ENGINEERING</b>								

CERTIFIED BY	
SIGN	
NAME	
DATE	



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Subsection – A-2.1**

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**ATTACHMENT 22: PROCUREMENT / SUBCONTRACTING PROGRESS SUMMARY**

Project Number		Month	
Project Description		Cutoff Date	

DESCRIPTION	WEIGHTAGE (%)	CUMULATIVE PROGRESS (%)		INCREMENTAL/ MONTH PROGRESS (%)		REVIEWED		REMARKS
		PLAN	ACTUAL	PLAN	ACTUAL	BY	SIGN	
GENERAL								
PROCESS								
SAFETY (HSE)								
PIPING								
CIVIL / STRUCTURAL / ARCHITECTURAL								
MECHANICAL								
ELECTRICAL								
INSTRUMENTATION								
TELECOMMUNICATION								
PIPELINES								
<b>OVERALL ENGINEERING</b>								

CERTIFIED BY	
SIGN	
NAME	
DATE	



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<b>A-3</b>	<b>CONTRACT CLOSING</b>
<b>A-3.1</b>	<b>CONTRACT CLOSING</b>

**PROJECT: MARKETING TERMINAL PROJECT**

**OWNER : MANGALORE REFINERY AND PETROCHEMICALS LTD**

**PMC : NAUVATA ENGINEERING PVT LTD**



**JOB NO. : JBG20005**

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00	01-02-2021	ISSUED FOR BID	ASN	CD	CD
Rev. No	Date	Purpose	Prepared By	Checked by	Approved by



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	<b>MRPL Marketing Terminal Project at Devangonhi, Bangalore</b> <b>Marketing Infrastructure Projects, MRPL</b>				
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## 1. GENERAL

Contractor after completing the works in all respects as specified elsewhere in the Tender documents, is required to complete the following activities as a minimum but not limited to the same for closing of the contract.

Payment against Contractor's Final Bill shall be released upon the satisfactory completion of activities pertaining to closing of the Contract.



## 2. REQUIREMENT OF CONTRACT CLOSING

The Contractor shall be required to submit the following documents but not limited to the same on Completion of work along with the final bill.

- i. Certificate of successful completion of Commissioning
- ii. Certification of submission of certified As-built documents
- iii. Reconciliation of Free Issue Material, if any.
- iv. Site clearing as per Contract
- v. Handing over of spaces and surplus materials after reconciliation, codification & acceptance
- vi. Supply and acceptance of special tools and tackles
- vii. Submission of Operating / Maintenance manuals
- viii. Submission of Final Technical Documents As-built for all supply items in bound volumes and soft copies
- ix. Submission of any balance documents to PMC / MRPL for claiming Tax benefits, as applicable
- x. Requisite approvals for Statutory Authorities and Government bodies
- xi. No dues certificate from Statutory Authorities and Government bodies
- xii. Settlement of all extra claims with PMC / MRPL, if any.
- xiii. No claims certificate
- xiv. Contractor Demobilization checklist as per Annexure I of this document
- xv. Completion of Contract Closeout checklist as per clause 2.1
- xvi. Detailed contract closeout report
- xvii. Any other documents to be submitted as specified elsewhere in the contract
- xviii. No liability certificate: Self – certification from Contractor that no payment is balance to their subcontractors and suppliers on account of service rendered / materials supplied by them or provide list of balance payments due indicating reason for non-payment / time frame for payment

### 2.1 CHECKLIST FOR CONTRACT CLOSEOUT

The broad checklist is enclosed in Annexure II. However, Contractor shall prepare his own exhaustive checklist including detailed procedure for contract closeout and get it reviewed & approved by PMC / MRPL before implementation.

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### 3. DOCUMENTATION

Documents as specified under clause no. 2.0 of this document and other documentation requirement specified elsewhere in the tender documents, are to be submitted to PMC / MRPL along with the final bill.

### 4. TIMEFRAME FOR CONTRACT CLOSURE

Contractor shall be required to submit all the documents **within Six (6) months from Mechanical Completion** to PMC / MRPL for the Contract Closing. Contractor shall take care of the following while preparing the schedule.

- Documents related to statutory authorities (like IBR, CCOE, etc.) approvals and QC documents shall be submitted at least one month before Mechanical Completion.
- Other documents for such activities, which are completed before Mechanical Completion shall be submitted within Six (6) Months from Mechanical Completion.



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**ANNEXURE I**  
**CONTRACTOR DEMOBILIZATION CHECKLIST**

DATE: \_\_\_\_\_

PROJECT :  
 OWNER / MRPL :  
 NAME OF CONTRACTOR :  
 PMC :  
 CONTRACT NO. :

ACTIVITY DESCRIPTION	SIGNATURE WITH COMPLETION DATE		
	CONTRACTOR	PMC	MRPL
Free issue Material reconciliation, if any			
Removal of temporary facilities viz. site office, etc.			
Clearance of site viz. debris construction material, tools & tackles, equipment, etc.			
Reconciliation of entry passes for men / materials			



	<b>MRPL Marketing Terminal Project at Devangonhi, Bangalore</b> <b>Marketing Infrastructure Projects, MRPL</b>				
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**ANNEXURE II**  
**CHECKLIST FOR CONTRACT CLOSING**

DATE: \_\_\_\_\_

PROJECT :  
 OWNER :  
 NAME OF CONTRACTOR :  
 PMC :  
 CONTRACT NO. :

ACTIVITY DESCRIPTION	SIGNATURE WITH COMPLETION DATE		
	CONTRACTOR	PMC	MRPL
Final Completion Certificate issued			
All deficiencies corrected			
All types of special tools & tackles delivered			
Handing over of spares & surplus materials completed			
As Built drawings including Drawing Index received			
Operation & Maintenance Manuals received			
QC documents submission completed			
Submission of Statutory / Govt. Bodies approval completed			
Final Documents submission completed			
No outstanding claims			
Back charges / recoveries Accepted			
Validity of Performance BGs checked and found acceptable			
All safety incidents resolved			
Demobilization checklist approved			

	<b>MRPL Marketing Terminal Project at Devangonhi, Bangalore</b> <b>Marketing Infrastructure Projects, MRPL</b>				
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<b>A-4</b>	<b>COST CONTROL</b>
<b>A-4.1</b>	<b>COST CONTROL</b>

**PROJECT: MARKETING TERMINAL PROJECT**

**OWNER : MANGALORE REFINERY AND PETROCHEMICALS LTD**

**PMC : NAUVATA ENGINEERING PVT LTD**

**JOB NO. : JBG20005**



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	<b>MRPL Marketing Terminal Project at Devangonhi, Bangalore</b> <b>Marketing Infrastructure Projects, MRPL</b>				
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Subsection – A-3.11	Rev :		00		

## 1. INFORMATION REQUIRED WITH BID

Contractors are required to submit along with their technical bids the quantum of work separately for the package in detailed formats of the same are enclosed elsewhere in the tender. The information being sought is specifically for the purpose of assessment of understanding the bidders with respect to defined scope.

## 2. BILLING SCHEDULE

Contractor shall furnish the Billing schedule in line with the Schedule of Price (SOP) within one month of award of Contract to PMC / MRPL for Approval.

## 3. MASTER CASHFLOW SCHEDULE

Contractor shall submit a quarter-wise Master cash flow schedule based on billing schedule for entire duration of contract within a month of Placement of LOI / NOA. The cash flow schedule / projections from zero date shall be made on the basis of Billing Schedule. Thereafter, breakup of quarter-wise projection for each cost head as per billing schedule shall be furnished on quarterly basis with details of monthly projections for current plus next month.

## 4. CHANGE ORDER / DEVIATION PERMIT

For Change Order / Deviation Permit, Contractor shall prepare and submit necessary supporting documents containing reason for change / deviation, estimated cost along with rate analysis and quotation / documentary support, sketches and drawings and impact on schedule to PMC / MRPL.

Contractor shall maintain Change Order / Deviation Permit registers that will list all the change orders / deviation permits and indicate their approval, cancellation or rejection status.

Methodology for change order & deviation permit to be raised for consideration of PMC / MRPL and shall be finalised after award of contract.

All the deviation permits are required to be submitted by the contractor through Contractor's Online Document Management System.

## 5. PROJECT COST CONTROL AND MONITORING

Contractor shall include a chapter on Cost Control in the Monthly Progress report which shall have the following sections.



### 5.1 COST STATUS SUMMARY

Cost Status of the Contract shall be furnished with a breakup of costs under the heads of the original contract value and Estimated / Actual value, approved change orders, pending change orders, approved deviation permits, invoice to-date and payment to-date.

### 5.2 CHANGE ORDER / DEVIATION PERMIT

The status of all change orders / deviation permits.



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### 5.3 CASH FLOW STATUS

Quarter- wise cash flow with monthly breakup for current + 2 months status in the monthly report with following details.

- Actual / Likely invoiced
- Actual / Likely received
- Actual / Likely net cash flow

### 5.4 EXTRA ITEMS

Contractor shall furnish the status of extra items. Bunching on such issues are not allowed. Contractor if failed to submit the details of extra items within a month of identification, no claim on the same will be entertained in subsequently.

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<b>A-6</b>	<b>SPARE PARTS PHILOSOPHY</b>
<b>A-6.1</b>	<b>MANDATORY SPARE PARTS</b>

## MRPL Marketing Terminal Project at Devangonhi, Bangalore



**PROJECT :** Marketing Infrastructure Projects, MRPL

**OWNER :** MANGALORE REFINERY AND PETROCHEMICALS LTD

**PMC :** Nauvata Engineering Pvt. Ltd.



**JOB NO. :** JBG20005

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## 1. INTRODUCTION

This document covers general overview of mandatory spares for different facilities envisaged in this Tender.

## 2. SCOPE OF MANDATORY SPARES

- a) Contractor shall get the mandatory spare list Vetted by OEM, for the coverage of entire Guarantee Period.
- b) Contractor shall provide all pre-commissioning, commissioning, testing and start-up spare parts necessary for Contractor-Supplied Equipment to achieve Full Completion and shall, prior to and as a condition precedent to achieving Mechanical Completion, deliver such spare parts to the Site.
- c) The Contractor shall include cost associated with all Work related to such pre-commissioning, commissioning, testing and start-up spare parts is included in the Guaranteed Maximum Price, including all Work related to procuring such spare parts and the purchase price for such spare parts, deliver parts to the Site.
- d) The cost associated with all Work related to such pre-commissioning, commissioning, testing and start-up spare parts is included in the Guaranteed Maximum Price, including all Work related to procuring such spare parts and the purchase price for such spare parts.
- e) Contractor shall supply all spares requires during GUARANTEE period.
- f) This Mandatory spare part list provided in this document is minimum. The Vendor/Integration Contractor shall verify at his end the requirement. Any additional requirement must be supplied free of cost based on equipment vendors recommendation.
- g) The spares provided shall cover the commissioning spares that may be required during plant guarantee period of 2 years.

## 3. MECHANICAL MANDATORY SPARE LIST

% - Shall mean as % of Total installed quantity

Set – Implies one complete set of components that form part of an assembly or sub-assembly in a given tag (not considering standby)( Ex: 1 Set of Radial Bearings for tags XXXA/B shall mean 1 DE Bearing & 1 Non Drive end bearings).

Item Required	Quantity	Remarks
<b>Rotating Machinery</b>		
<b>Centrifugal Pump –horizontal (Single &amp; Two Stage)</b>		
Shaft with impeller & keys	1 No	For a set of interchangeable pumps
Casing & impeller wearing	1 Set	For a set of interchangeable pumps
Shaft sleeve	1 Set	For a set of interchangeable pumps
Mechanical Seal Cartridge	1 No	Of Each Type (NDE & DE Separately) per pump tag (excluding standby)



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**Part – A**

**Section – A-6**

**Subsection – A-6.1**

**MANDATORY SPARE PARTS**

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Mechanical Seal Faces	100%	
Mechanical Seal Packings	200%	
Pump Gaskets	200%	Including O rings (if any)
Radial Bearings	1 Set for DE & NDE separately.	Only for Hydrodynamic/Hydrostatic bearings. Not applicable for anti-friction bearings.
Thrust Bearings	1 Set of Pads	Only for Hydrodynamic/ Hydrostatic bearings. Not applicable for anti-friction bearings. Active & Inactive Separately
Filters/Strainers	400%	One strainer to be with fine mesh
Bearing Isolator	1 No	Of each size interchangeable across pumps
Coupling Disc Pack/ Transmission Element	100%	
Coupling Bolts, Washers Etc.	100%	
<b>Motor</b>		
Set of Bearings (NDE + DE)	1 Set	For a set of interchangeable pumps
Set of Cooling Fans (Only for M.V. Motor)	1 No	For a set of interchangeable pumps
<b>Centrifugal Pumps – General Purpose, Water Service</b>		
Shaft with impeller & keys	1 No	
Casing & impeller wearing	1 Set	
Shaft sleeve	1 Set	
Mechanical Seal Faces	100%	
Mechanical Seal Packings	200%	
Pump Gaskets	200%	Including O rings (if any)
Coupling Disc Pack/ Transmission Element	100%	
Coupling Bolts, Washers Etc.	100%	



**MRPL Marketing Terminal Project at Devangonhi, Bangalore  
Marketing Infrastructure Projects, MRPL**



Part – A

Section – A-6

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**MANDATORY SPARE PARTS**

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<b>Motor</b>		
Set of Bearings (NDE + DE)	1 Set	For a set of interchangeable pumps
Set of Cooling Fans (Only for M.V. Motor)	1 No	For a set of interchangeable pumps
<b>Controlled volume Pump</b>		
Diaphragm	200%	
Relief and Replenishing Valve	100%	
Suction & Discharge Valves	100%	
Set of Gaskets	200%	Including O rings(if any)
Bearing	Specified by Contractor	
Power end spares	50%	As per Manufacturer Recommendation
<b>Motor</b>		
Set of Bearings (NDE + DE)	1 Set	For a set of interchangeable pumps
Set of Cooling Fans (Only for M.V. Motor)	1 No	For a set of interchangeable pumps
<b>Centrifugal &amp; Axial Fans</b>		
Impeller & Shaft	100% of one fan	
Bearings /Bearing Blocks	100% of one fan	Other than anti-friction (except 4 point bearings)
Coupling spares	100% of one fan	
<b>Motor</b>		
Set of Bearings (NDE + DE)	1 Set	For a set of interchangeable pumps
Set of Cooling Fans (Only for M.V. Motor)	1 No	For a set of interchangeable pumps
<b>Air Fin Cooler Fans</b>		
Bearing Block	1 No	For each block type, completely assembled with shaft, bearings etc
Fan blades	1 set	1 set For each model
TLB Drive pulley	1 set	1 set For each model





**MRPL Marketing Terminal Project at Devangonhi, Bangalore  
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<b>Part – A</b>	<b>MANDATORY SPARE PARTS</b>	Tender No :	3200000490
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Belts	20% (Min 2 Nos)	For each type
<b>Motor</b>		
Set of Bearings (NDE + DE)	1 Set	For a set of interchangeable pumps
Set of Cooling Fans (Only for M.V. Motor)	1 No	For a set of interchangeable pumps
<b>Material handling equipment</b>		
<b>Chain Pulley block</b>		
Spare	Specified by Contractor	
<b>Monorail Hoist (Electric/ Manual)</b>		
Spare	Specified by Contractor	
<b>STATIC EQUIPMENTS</b>		
<b>1 Vessels &amp; Columns</b>		
Gaskets	Two sets for each installed gasket.	
Fasteners	10% (Minimum two in each size) of installed fasteners other than standard sizes of B7/2H	
Sight/Light Glass	4 sets for each installed glass.	
<b>2 Air Coolers</b>		
Gasket for header cover & nozzles with blind flange	400%	
Gaskets for plugs	200%	
Plug	20%	
Belts	100%	
Bearings	100%	
Bolts & Nuts for all nozzle with BF & Cover plate	20%	
Diaphragm Actuator with positioner for each type of auto variable pitch fan	1 Set	(Alternatively vendor recommended spares for his type of auto variable pitch fans)
<b>3 Filtration Systems</b>		

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5.2 Coalescer		
Coalescer Elements	200%	
Separator Elements	200%	Where installed
5.2 Bag Filters		
Filter Bags	200%	
5.3 Basket Filters		
Filter Baskets	100%	



#### 4. ELECTRICAL

Item Required	Quantity	Remarks
<b>1. LIGHTING FITTINGS AND CABLES</b>		
Low-voltage lighting cables	Specified by Contractor	
Lamp fittings (complete)	Specified by Contractor	
Lamps and tubes	Specified by Contractor	
Starters	Specified by Contractor	

#### 5. INSTRUMENTATION

Package Instruments for Clean Agent System and Water Treatment Units shall be provided by the Contractor.



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<b>A-7.1</b>	<b>DOCUMENTS/ DRAWINGS FOR OWNER’S/ PMC’S REVIEW</b>
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**PROJECT :    MARKETING TERMINAL PROJECT**

**OWNER     :    MANGALORE REFINERY AND PETROCHEMICALS LTD**

**PMC         :    NAUVATA ENGINEERING PVT LTD**

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## 1. PREAMBLE

The following section deals with the Project Execution Plan to Plant / Units covered in this Package on LSTK concepts. Scope of work is attached as in part B of tender document to be read in conjunction with all the parts of the contract document for complete details. The Project Execution Plan describes the methodologies to be adopted for various activities required to be carried out for the successful completion of the package. The project implementation philosophy for the contract performance shall be followed by the LSTK.

Contractor keeping in view the parameters defined in the various sections of the project execution plan and as per Special Conditions of Contract. However, these are not limited to the Project and construction management procedure and technique as enumerated in various sections under project execution plan but favored as an adoption of constructive and affirmative approach to the whole action plan by adapting the conceptual and professional skill to achieve project completion in sequential and phased manner within contract schedule.

The LSTK Contractor shall firm up their action plans and develop various information as asked for in Instructions to Bidders depending upon the requirements of project implementation philosophy to be adopted to achieve the stipulated completion of the project as per time schedule under the contract provision(s).

The units / facilities are located in Marketing Terminal with well-defined battery limits as shown in overall plot plan. It is envisaged that the activities of the Contractor would be confined within the battery limits and all utilities and process lines would be made available to the LSTK.

Contractor at the battery limits as defined.



## 2. INTRODUCTION

MRPL a government of India schedule A, CPSE and a subsidiary of Oil and Natural Gas Corporation Limited (ONGC) is a State of Art Grass root Petroleum Refinery located in a beautiful hilly terrain, north of Mangalore city, in Dakshina Kannada region, Karnataka State. The Refinery has got a versatile design with high flexibility to process Crudes of various API and with high degree of Automation. MRPL has high standards in refining and environment protection matched by its commitments to society. MRPL has also developed a Green Belt around the entire Refinery with plant species specially selected to blend with the local flora.

## 3. GENERAL

This chapter details out various drawings and documents to be generated at various stages during the course of execution of the project by the Contractor for different project activities. An endeavor has been made to distinctly categorize each document and the purpose for which they are required by either agency.

The Contractor recognizes that efficient handling of drawings and documents to be prepared by him under the contract is the key to the timely completion of the plant. The Contractor undertakes to ensure

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that all drawings and documents to be submitted by him to the PMC and / or owner shall be of professional quality and conforming to the contractual requirements. Contractor also undertakes to institute a formal drawing / document control system which will be documented and submitted to the Owner / PMC for review or approval.

Compliance of this chapter on drawings and documents is mandatory and is non-negotiable.

The drawings / documents are generated by Contractor at various stages of the project covering different activities. The drawings / documents generated will be in the category of Approval / Review / Information. The drawings and documents required under different categories is enclosed. However, this will in no way relieve Contractor of responsibility to conform to drawings, standards, specification, codes and contractual requirements.

Computer aided design and drafting shall only be used. Standard approved and well established P.C. based computer programs / software packages, available in market shall only be used by the Contractor / his Sub-Contractors / vendors etc. In home developed packages shall not be used. Contractor shall bring out the list of all such packages in the offer for each discipline for evaluation of bid. Every time a computer aided design is submitted for review / approval to Owner / PMC, It shall accompany with input / output data on CD's along with the name of the software package and operable on any IBM compatible PC system along with the requisite no. of hard copies (specified elsewhere in the Bidding Document).

In case this condition is not fulfilled, the Contractor shall have to supplement / replace the computer aided design with long hand calculation to the satisfaction of Owner / PMC with any time and cost implications solely to Contractor's account.



All documents before forwarding to Owner / PMC will have to be wetted in detail by Contractor / duly approved engineering Sub-Contractor appointed by the Contractor. Document received without wetting will be returned. Also any inaccuracies / mistakes found will not only be rectified by the Contractor but the contractor shall also remain liable for bearing charges towards efforts spent by Owner / PMC for discussing the same. Delay owing to these shall be to the account of Contractor.

Approval / review of the drawings / documents by Owner / PMC would be only limited to the review of computability with basic designs and concepts. The approval / review by the Owner / PMC shall not be construed by the Contractor as limiting any of his responsibilities and liabilities for mistakes and deviations from the requirements, specified under these specifications and drawings.

Contractor shall furnish 3D modeling of plant & piping with dynamic walk-through facility to check any interference, requirement of safety, operation and maintenance for getting approval from Owner / PMC atleast 6 months before completion & after incorporation of vendor data and Code-1 drawings. Details of 3D Modeling shall be as per the requirement specified in scope of work for piping.

Such modeling shall be done by an agency who have proven track record for 3D modeling of process unit with similar complexity.

Each drawing submitted by the Contractor shall be clearly marked with the name of the Owner & PMC, the unit designation, the specifications, title, the specification number and the name of the Project with revision No. and data if standards catalogue pages are submitted, the applicable items shall be indicated therein. All titles, noting, markings and writings on the drawings shall be in English.

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All the dimensions should be in metric units. Upon receiving comments on Drawings / Documents by the Contractor, the subsequent submission should give compliance report, separately on each of the comments, document-wise. Comments given by Owner / PMC shall be discussed, if required, and finalized within the agreed schedule.

The schedule of submission of Drawings / Documents shall be in accordance with project plans only. The detailed list under different category document-wise, shall be prepared by Contractor for approval / review of Owner / PMC. This activity is to be to Contractor's account and shall be submitted during kick- off meeting.

Sequence of submission of drawings is essential for proper review of documents and timely completion of the project and is to be strictly adhered to. In case sequence is not maintained, the documents submitted will not be reviewed by Owner / PMC and responsibility of timely execution of plant / unit shall be to Contractor's account.

The Contractor shall maintain up-to-date record of drawings and document status and make regular issue of drawings / documents index discipline wise, on fortnightly / monthly basis as agreed with copies to PMC Site, H.O and Owner, indicating schedule date of submission, submission data of various revisions and data of review with code.

#### **4. REVIEW OF CONTRACTOR'S DOCUMENTS BY OWNER / PMC**

##### **4.1. OWNER / PMC REVIEW**

4.1.1. For the purpose of review in respect of Contractor's engineering and other documentation, the documents are classified into 3 categories.



Class 1. APPROVAL category

Class 2. REVIEW Category

Class 3. RECORDS Category

Class 1. Approval by PMC is required before proceeding with the work. PMC to intimate the EPCC Contractor in case of any anticipated delays in issuing the approvals.

Class 2. Contractor can proceed, if Owner / PMC comments are not received within 10 working days of the date of Owner / PMC receipt of document. However if major deviations to contract specifications or any design deficiency is detected in the course of review after the stipulated period, it shall be the responsibility of the Contractor to see that such deviations and deficiencies are corrected to ensure compliance to contract specifications. In case Contractor's personnel are not available at PMC office, approval / review time shall be 15 days. However, Owner / PMC reserves the right to comment within 45 days of receipt of drawings and it is Contractor's responsibility to correct deviations if any without cost and time implication.

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Class 3. Contractor shall submit documents for Owner / PMC's information and proceed with the work. Owner / PMC comments if any which relate to inadequacy or inaccuracy may be brought to the attention of Contractor at any stage for incorporation without any cost or time impact to Owner.

4.1.2. For the purpose of indicating the status of Review / Approval of a document, following status codes shall be followed.

Code 1 means No comments, work may proceed

Code 2 means The Contractor shall proceed with the fabrication / manufacturing taking care of and incorporating Owner / PMC comments. Contractor shall submit the Drawings again duly revised incorporating Owner / PMC comments.

Code 3 means Major non-conformance and deviations to contract specifications and the document is rejected. Contractor is to resubmit for review after incorporating comments In case the drawings / documents are under Code-3, the time spent by PMC shall be back charged to EPCC Contractor.

The documents / drawings submitted by the Contractor shall be accorded the status code as above by Owner / PMC depending upon the nature of comments on review



4.1.3. Owner / PMC failure to comment or to only partially comment upon any class 1 documents shall not be construed as an acceptance of the content of the documents unless the Owner / PMC advises otherwise.

4.1.4. Detailed Document list (discipline wise) is furnished herewith identifying the Class of review to be performed on various drawings / documents. Contractor shall submit 8 sets each of the drawings / documents identified in the list. In case of Documents pertaining to multi-disciplinary review. 10 sets shall be submitted.

## 4.2. CONTRACTOR'S REVIEW

4.2.1. The following cycle time shall be adopted by the Contractor for the incorporation of comments and resubmission of documents.

Review of Owner / PMC comments by Contractor	5 working days
Owner / PMC and Contractor discussion on Comments if required	5 working days
Incorporation of comments in drawings and resubmission	5 working days

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4.2.2. Contractor shall revert on unacceptable comment, if any, with adequate justification within 5 working days. In the absence of any rebuttal by Contractor, all comments will be deemed as acceptable to the Contractor.

#### 4.3. INSTRUCTION TO CONTRACTOR

4.3.1. Review / approval of Drawings / Documents by Owner / PMC shall not absolve the Contractor of their responsibilities to ensure defect free design and strict compliance to contract specifications. All documents shall be released for review having first fully checked and approved by the Contractor. Any changes shall be clearly highlighted. Incomplete, unchecked and unsigned documents / drawings and designs shall not be accepted for review/construction and shall be returned forthwith. Time delay on account of such submissions shall be to Contractor's account.

4.3.2. At the kick-off meeting, the Contractor must submit discipline wise list of documents and drawings schedule.



4.3.3. The drawings schedule (discipline wise) shall include description of drawings / documents, category of drawings, scheduled date of submission, actual date of submission, review code received with these dates.

4.3.4. The Contractor shall separately submit list of drawings / documents involving multi-disciplinary reviews at the kick off meeting itself. Extra copies shall be furnished for simultaneous distribution to all concerned.

4.3.5. Critical and typical drawings / documents having impact on schedule and quality should only be identified for such timely reviews. This shall be adopted after receipt of drawings / documents indices from the Contractor at the kick-off meeting with mutual understanding of the Contractor / concerned specialist / Owner



4.3.6. After the placement of purchase order the Contractor shall prepare a schedule of vendor's document with details as mentioned in Clause 4.3.3.





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- 4.3.7. All requirements specified in the Bid Package / Contract is with the intent of providing a safe, user friendly FACILITIES conforming to all applicable codes, standards, regulations etc. The drawings prepared by the Contractor shall reflect these requirements.
- 4.3.8. Each drawing submitted by the Contractor shall be clearly marked with the name of the Owner, the unit designation, the Document/Drawing, title, the Document/Drawing number and the name of the Project with revision No. and date. If standard catalogue pages are submitted the applicable items shall be indicated therein. All titles, markings and writings on the drawings shall be in English.
- 4.3.9. All the dimensions should be in metric units. Upon receiving comments on Drawings and Documents, the Contractor during subsequent submission should give compliance report, separately on each of the comments, documents-wise. Comments given by Owner / PMC to be discussed if required and finalized within agreed schedule.
- 4.3.10. The schedule of submission of the Drawings & Documents shall be in accordance with agreed project plans only. The detailed document list under different category, document-wise shall be prepared by Contractor for approval of Owner. This activity is to be completed within one month of award of contract.
- 4.3.11. Sequence of submission of drawings is essential for proper review of documents and timely completion of the project and the same is to be adhered to. In case sequence is not maintained, the documents submitted will not be reviewed by Owner / PMC and the responsibility of delay in REVIEW/Approval shall remain to Contractor's accounts.
- 4.3.12. Contractor shall maintain up-to-date record of drawings & document status and make regular issue of drawings / documents schedule indicating schedule date of submission, submission date of various revisions and date of review with code (Refer Annexure-I)
- 4.3.13. Contractor shall plan submission progressively so that no bunching takes place and ensure that all documents provided by sub-contractors/vendors meet the timing requirements of the schedule and are not released in major batch issues. Contractor shall expedite such information to ensure that the sub- contractor/vendor commitments with respect to schedule are maintained.



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- 4.3.14. Review period shall be reckoned from the “Date of Receipt” of documents/drawings by Owner / PMC at the Jacobs, review center to the “Date of Dispatch” from the review center. Contractor shall monitor submission and receipt. Drawings / documents received in the afternoon prior to holiday/week end shall be accounted as received on the following working day, for the purpose of review period.
- 4.3.15. Sequence of submission of drawings is essential for proper review of documents and timely completion of the project and the same is to be adhered to. In case sequence is not maintained, the documents submitted shall not be approved / reviewed by Owner / PMC and the responsibility of timely execution of the plant shall remain to Contractor’s accounts.
- 4.3.16. The critical documents falling under Approval category will in general be returned with comments within 10 working days, except the documents which involves multi-disciplinary review. For documents like control room layout, equipment layout, single line diagram compressor house layout, P&ID of compressors, etc the Contractor shall arrange for joint meeting with Owner / PMC for review of documents across the table. The Contractor shall submit CD’s for transfer of “Transmittal Sheets”, receiving date shall be considered as date entered in the transmittal by PMC. The records category document will be retained for information only. However Owner / PMC reserves the right to comment at any stage of the project and it is Contractor’s responsibility to correct the deviation if any to the stipulation in the bid document without any cost and time impact to Owner.
- 4.3.17. Where Approval of Owner / PMC is required for ordering critical equipments /materials, recommended technically selected offer, Technical Bid Analysis and Purchase Requisition / Specifications shall be submitted for review before ordering.
- 4.3.18. Each purchase order/Requisition forwarded should contain complete technical document. It is obligatory for the Contractor to obtain acceptance on all technical requirements and accepted copy of the same only to be forwarded to Owner / PMC. Any inaccuracies / omissions / inconsistencies noticed and brought to the notice of the Contractor at any stage of the project will be rectified/replaced by Contractor at no additional cost to the Owner.
- 4.3.19. Revision / updation of process P&ID’s shall be done on the P&ID’s issued to the Contractor as a part of CONTRACT documents. Contractor shall not redraw the P&ID’s. Electronic file of process P&ID’s will be provided by Owner / PMC.

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4.3.20. Documents required to be submitted by Contractor to Statutory Regulation Authorities indicated in PREAMBLE shall have to be furnished beforehand to Owner / PMC

4.3.21. Quality of drawings / documents are essential for a timely review. If major comments / deviations to the agreed design basis and Bid Specifications are noticed, the drawings shall be rejected in Code-3. Review period required for subsequent submissions in case of Code-3 drawings shall be to the accounts of the Contractor.

4.3.22. Piping/Instrument & other engineering drawings/documents shall be issued only after the corresponding P&ID's & Process documents coming under review category/residual process engineering category are first reviewed. P&ID's shall be accompanied with Interlock write-up and/or Process cause and effect diagram.

4.3.23. In principle Contractor is not expected to revise drawings/documents already reviewed in Code-1.

a) If it is utmost necessary to revise or add some minor details in Code 1 drawings, Contractor shall highlight such revisions by marking "CLOUD" to such additions/alterations, Contractor is also needed to provide a "BLOCK" in the drawing indicating reasons of such changes and to insert another "Review Block". Owner / PMC shall put relevant code for such revisions only. Code marking given by Owner / PMC on such revisions shall not change the category of drawings.

b) Any major change in Code 1 drawing shall call for preparation of new drawing.



4.3.24. Once a document is already reviewed in Code-2, subsequent submission due to non-incorporation of comments shall not be accounted for any contractual commitment on time schedule from Owner / PMC. Contractor shall comply with Owner / PMC comments in the next revision after Code-2.

4.3.25. Based on the confidence gained on Contractor's quality of drawings / documents already submitted. "Approval / Review Category" drawings could be retained as information / Records and vice versa at the discretion of Owner / PMC. This however, does not change the category of drawings.

4.3.26. EPCC main Contractor shall open an engineering office in Bangalore for review of the following drawings & documents:

- Long delivery items
- Schedule critical drawings and documents.

However for review of multi-disciplinary drawings and documents, the engineering Contractor shall furnish at PMC Review Center.

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4.3.27. Any drawing/document submitted for seeking deviation shall be separately identified and shall not be considered as a document for timely review.

4.3.28. When Owner / PMC deploy engineers at the Contractor's work center following shall be satisfied.

Review limited to identified long delivery/schedule critical review only.

Readiness of documents/drawings shall be ensured by the Contractor

Presence of all discipline engineers of Contractor at the engineering sub-contractor's office when Owner / PMC engineers visit the sub-contractor's review center.

4.3.29. If Owner / PMC highlights any necessary rectification's required in the construction at the time of Technical Review/Audit, or construction executed based on information category drawings but not complying with Bid requirement, Contractor shall rectify the same without any cost or time impact to Owner.

4.3.30. Contractor shall submit designs and drawing for review, only after the corresponding GA/Eqpt. Data sheets etc have been coordinated in his office and reviewed/approved.

4.3.31. Only HTRI latest software's to be used for thermal design of shell and tube heat exchangers and air- cooled exchangers. Design output shall be made available on CDs in HTRI versions.

#### 4.4. REVIEW OF BID EVALUATION REPORT

4.4.1. Contractor shall ensure that all equipment in this EPCC package are ordered on vendors who are capable of supplying equipment, meeting all requirements of the Project Specifications.

4.4.2. Contractor shall submit a comprehensive bid evaluation report and recommendation for procurement of major equipment to Owner / PMC prior to award of purchase order.

The report shall incorporate, but is not limited to;

Names and addresses of the companies invited to quote or bid.



Recommended supplier

Evaluation of Vendor quality system

Scheduled award date

Quoted delivery date

Reason(s) for rejecting unsuccessful bidders whether it is technical, commercial, delivery etc. Reason for recommendation.

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#### 4.5. REVIEW OF PURCHASE REQUISITION

Contractor shall forward for all equipment, Purchase Requisition together with attached documentation, to Owner / PMC. Besides the Purchase Requisition to be approved for items covered in clause 4.4.3 above, additional items required for review, prior to award of the Purchase Order as identified in respective tables of Part III, shall be finalized during the kick off meeting. Such review by Owner / PMC shall not relieve Contractor of any of his obligations under the Contract. Orders shall be placed for equipment, only after the approval of the Purchase Requisition by Owner / PMC. All subsequent changes to Purchase requisition following review of the original, shall be subject to prior Approval. Where requisitions specify a particular make or brand of equipment to be used followed by the statement “or Purchaser approved equal”, any such “equal” proposed by the suppliers shall be submitted for Approval of Owner / PMC.

#### 4.6. APPROVED FOR CONSTRUCTION DRAWINGS

Drawings approved / reviewed under Code 2 & Code 1, required for the execution at site shall be arranged by Contractor to PMC (RCM), Contractor’s RCM and MRPL (Site).

- “Approved for Construction” stamp / sticker separately on the reviewed print and not on the Title Block.
- Without changing Revision Number, Contractor to arrange adequate number of prints of documents and drawing to Contractor’s RCM, 2 copies of PMC RCM and one copy to MRPL (Site) with transmittal.
- Copy of such transmittal shall be sent to PMC (HO) & MRPL (HO) for records.



#### 4.7. ACTIVITY SEQUENCE FOR DRAWING APPROVAL (THROUGH E-MAIL)

Contractor shall establish an electronic mail system compatible with that of Owner / PMC for document / data transfer. For details refer Part I Section 5.

The drawings requiring Owner’s / PMC’s approval / review shall be transmitted to office of Owner / PMC by e-mail.

Contractor shall establish a local office having facility of telephone, fax and electronic mail system for receiving documents and drawings from outstation.

On receiving the drawings / documents at Bangalore through e-mail, Contractor shall send the same to Owner / PMC through e-mail facility. However, three sets of hard copies each for general and four sets of hard copies each requiring multi-disciplinary review shall be sent by Contractor to Owner / PMC separately by courier or by hand delivery.

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A hard copy duly signed with comments / approval shall also be sent back to Contractor by courier / by hand delivery.

It shall be responsibility of Contractor's representative at Bangalore to transmit the drawings / documents to their design office / vendor works.

Contractor shall also establish electronic system at site to receive all drawings and documents with all printing and scanning facilities.

The approved / reviewed drawings shall be transmitted to site by Contractor.

Necessary printing / plotting and distribution of documents and drawings to RCM (Contractor), RCM (PMC) and MRPL Site is the responsibility of Contractor.



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## 5. Documents / Drawings for Approval, Review by Owner / PMC

### 5.1. DOCUMENTS FOR APPROVAL / REVIEW

The documents listed below required to be submitted to OWNER / CONSULTANT directly or arranged from Cost plus contractor which is applicable for the purpose of either approval or review/comments as mentioned against each item.

DOCUMENT DESCRIPTION	NO. OF COPIES TO BE FURNISHED FOR		Remarks
	APPROVAL	REVIEW/ COMMENTS	
	H.O + SITE		
<b>A. Process Documents</b>			
P&ID, Revision/ updation in line with Tender P & ID	6		
Pre-commissioning & Flushing Plan	6		
Operation Manual	6		
HAZOP Study Reports	6		
SIL Review Report	6		
Hook-ups Drawings	6		
<b>B. Engineering Documents</b>			
Unit Plot Plan	3	3-	
Electrical single line Diagram	3	3-	
Area Classification	-	3	
Basic schematics of process controls & interlocks including auto trips/ alarms	3	3	
<ul style="list-style-type: none"> <li>- Ladder Logic &amp; write up</li> <li>- Instrument point database</li> <li>- JB schedule &amp; cable schedule</li> <li>- Vendor prints/manuals</li> <li>- Instrument datasheets</li> <li>- Vendor list</li> </ul>		3 each	
Control Panel Layout	3	-	
Effluent collection and Disposal scheme (if applicable)	-	3	
Critical Purchase documents	3	3	

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<b>C. Estimating &amp; Cost Control (Purchase &amp; works contracts)</b>			
NIT estimates	2	2	
Tender estimates incl. Rate Analysis or basis of rates	2	2	
<b>D. Tenders/Purchase</b>			
PQ documents	3	-	
BID documents / recommendations	2	-	
Letter of Acceptance	3		
Draft Addendum, if any	2	-	
<b>E. Planning &amp; Scheduling</b>			
Master Network	3	-	
Tender Schedule	3	-	
Construction Schedule	3	-	

**Notes:**



1. CONTRACTOR will furnish a data file of all the drawings. The file format of electronically prepared data file shall be decided during kick off meeting.
2. List of critical purchase documents shall be decided within 12 weeks after award of contract

**5.2. DOCUMENTS FOR INFORMATION**

Following documents, as applicable, will be submitted to OWNER/CONSULTANT as and when generated, for information.

DOCUMENTS DESCRIPTION	NO OF COPIES	
	HQ	Unit / site
Daily Progress Reports (H.O. & Site)	1	1
Weekly Progress Reports (H.O. & Site)	1	1
Monthly Progress Reports (H.O. & Site)	2	2
Monthly Material Status Report (HO & Site)	1	1
Tender Schedule	1	1
Procurement Schedule	1	1
Engineering Schedule of contractors	1	1



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Construction Schedule	1	1
Milestones	1	1
Drawing Index	1	1
Relevant Correspondence and Minutes of Meetings with Vendors/Contractors	2	1
Test Records wherever applicable		1
Overall Engineering Schedule (Bar Chart/ PERT/CPM Charts)	1	1
Overall Construction Schedule (Bar Chart/ PERT/ CPM Chart)	1	1

**NOTE:**



In all deliverables, approvals are to be taken from the OWNER/CONSULTANT after incorporation of comments. The tender document shall be prepared w.r.t. estimate/ specification/ quantities/ works contract for cost plus LSTK bids.

**5.3. FINAL DOCUMENTS**

Following documents (as applicable) will be submitted to OWNER/CONSULTANT as final documents (Properly bound & indexed in order & volumes):

DOCUMENTS DESCRIPTION	NO OF COPIES	
	HQ	Site / unit
P&ID (As built)	4	4
Plot Plan (approved )	Original	
Plot Plan (As built)	4	4
Final Vendor's as built drawings of fabricated equipment as supplied by Vendor		8
Piping & Isometric drawings (as build)		4
Release note issued by 3rd party Inspector for all the bought out items		3
Final copies of P&IDs, plot plan,3D model and all piping drawings, design calculation ,stress analysis report & CD (Auto CAD version no. 14 or latest)	1	3
As built Cable schedule, Interlock logic, loop schematics & loop wiring diagram, Terminal details, Instrument specification etc. in hard and soft copies(XL or Excess)	1	2
Draft LOA & tender document for CONTRACT agreement	8	





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Manufacturer's certified dimension drgs. erection, operating & Maintenance instructions and spare parts listed for machinery including rotating equipment as supplied by Vendor including		4
Test Records		1
Material Acceptance Certificate		1
Engineering drawing as built		4 prints + 1 SEPI
Updated process package of all offsites & utilities		8 each
Final Hazop study report	2	4
Plant specific operating manuals		8 (each)
Test Certificate for hydrostatic testing of equipment and piping calibration and test reports of Instruments and electrical pumps.		2
Data regarding settlement of tank foundations during hydro-Static testing		2
All NDT results viz. MP/ DP, Radiographic records, including failures record registers and line data together with inter preparation recheck and/ or Repair records.		1
Site calibration certificate (with traceability) of all the instruments.	1	2
Instrument datasheets for all the instruments in soft and hard copies	1	2
FAT & SAT reports	1	2
final Instrumentation documents	1	2
Control & Logic writeup	1	2
Hook up drawings	1	2
Alarm and trip set points for all the instruments	1	2
Draft Purchase Order	6	
Purchase/ Tender Award Recommendations	2	
Cost Status Report	3	

Note:

- 1.0 All the document requirements are indicative only and Contractor has to meet the actual requirement at no extra cost.**

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	<b>Part – A</b>	<b>DOCUMENTS/ DRAWINGS</b> <b>FOR OWNER'S/ PMC'S</b> <b>REVIEW</b>	Tender No :		3200000490
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	<b>Subsection – A 7.1</b>		Rev :		00

#### 5.4. Vendor Drawing Review

Each vendor Drawing / Document listed either under Approval / Review or Record category shall be reviewed by the Contractor for ensuring strict compliance to the Bid Specification requirements. The reviewed document shall be submitted along with comment sheet and shall carry the Reviewer's signature and Seal of the Contractor prior to submission for PMC's Approval / Review.

On non-compliance of above, the document shall be returned without review.