DEEPAK FERTILISERS
AND PETROCHEMICALS
CORPORATION LIMITED

DEEPAK FERTILISERS AND PETROCHEMICALS CORPORATION LIMITED

Registered office at: - Sai Hira, Survey no. 93, Mundhwa, Pune – 411036, Maharashtra, India.

Plant at DFPCL Unit- Plot K1 Taloja MIDC Industrial Area, Raigad, Maharashtra, India-410208

Subject: - Value based Tender for Annual Rate Contract for Hot & Cold insulation Services at Deepak Fertilisers & Petrochemicals Corp. Ltd.(DFPCL/Company) Taloja K1 Plant.

Tender Ref : DFPCL (K1) /MECH-INSULATION/04/ 2023-24 Date**: 28.03.2024**

Sealed Technical bids are invited from professionally competent service providers of Mechanical Fabrication & Maintenance Services in Sealed Envelope with EMD. The sealed envelope shall be super scribed with Tender Reference Number, Name of Work & content in it and addressed to Mr. Swapneel Attarde or Mr. Yuvaraj Naik, At **Mahadhan Agritech Limited** at Plot K8 MIDC Industrial Area, Taloja, 410 208, Dist.: Raigad, Maharashtra, India

Stage I Bidding

- **Sealed Envelope- I: -** Technical Bid- General Terms and Conditions, Commercial Terms and Conditions, Special Conditions and Scope of work (Excluding price Bid)

- **Sealed Envelope- II: -** Earnest Money Deposit (EMD) for Amount Rs.1,00,000 (Rs. One Lac only) per unit & Price Bid (Please be guided with Annexure-I)
- The Scope of work for each activity mentioned in annexure of this tender (Excel Sheet -Annexure A)
- You will submit the closed technical bid in hard copy and in 2 envelop system by hand or through courier to DFPCL latest by **10.04.2024.**
- The commercial price bid will be invited from technically qualified Tenderers.

Exceptions and deviations, which tendered may desire to stipulate. (Tenderers are advised to submit the Tender strictly on the terms and conditions of the contract and specifications contained in the Tender documents and not to stipulate any deviations. However, if deviations become unavoidable, then it may be stipulated. The Company DFPCL reserves the right to reject such deviations or evaluate the Tenderers containing deviations having financial implication, by adding the cost for such deviations as may be determined by the Company DFPCL).

I/We confirm having accepted all the terms as mentioned above.

(Company name, seal and signature of authorized person with Designation)

Stage II Bidding

Submission & opening of the Bid: The Bidders shall submit the duly filled in all the bid documents (Stage I- Two Envelope system) signing on each page along with requisite document as mentioned in pre-qualification criteria and EMD & every component by the authorized signatory in Purchase Department of the Company latest by **10.04.2024** up to 15.00 PM
All the above documents should be hand delivered or Couriered to the following address.
Mr Swapneel Attarde or Mr. Yuvaraj Naik (Representative of DFPCL)

Mahadhan Agritech LTD
Unit- Plot K-7 & K-8, Taloja MIDC Industrial Area,
Raigad, Maharashtra, India-410208
Phone: 022-5044 3017 and 022-5044 3019
The Stage I Bid documents shall be opened within a week from the last date of submission tenders.

During Commercial Price Bid (Technically qualified Tenderers) need to quote for each activity as mentioned in Stage I excel sheet attachment Annexure C. We may reject the tender in case you do not quote for all items. As this is a volume contract, the contract will be awarded to two/three/four agencies**. DFPCL reserves the right to split contracts among many agencies at their sole discretion.**

E-Auction:
After submission of Stage I bid documents and close price bid, the E auction will be conducted. The E auction will be governed by the Business Rules for online Auction as per enclosed pages in Stage I bidding. Only Technically acceptable Tenderers against the tender can participate in further process. DFPCL's decision on technical evaluation shall be final and no correspondence shall be entertained in this regard. The Tenderers who do not fulfill all or any of the conditions laid down in the tender document are liable to be ignored at the sole discretion of DFPCL. DFPCL also reserves the right to reject any/all the offers without assigning any reason thereof.

In case of any technical queries, you may contact our Job Controller as below.

K1-DFPCL Unit – 1) Shri. Mahesh Kalghatgi (Tel.022-50684383, Mob. 9820636652)
2) Shri .Atulkumar Khatri (Tel.022-50684376, Mob. 9820234697)

For commercial queries you may contact
Mr Swapneel Attarde Tel No: - 022 5044 3017 (Mob.9833004627)
Mr. Yuvaraj Naik Tel No: - 022-5044 3019 (Mob.7892776483)

Thanking you,
For Deepak Fertilisers and Petrochemicals Corporation Limited

Srungavarapu Srinivas Rao
Senior General Manager-Sourcing & Supply Chain (Materials)- Corp Sourcing.

The participating company's declaration:
I/We confirm having accepted all the terms as mentioned above.

(Company name, seal and signature of authorized person with Designation)

The following are Pre-qualification criteria to be submitted along with Stage I Tender document.

[a] Annual Turnover of minimum Rs 1 Crores including group companies.

[b] Only professionally competent contractors should participate in the Tender.

[c] The net-worth of the bidder should be positive during the preceding financial year.

[d] Compliances of statutory requirement like registration under ESIC Act, PF Act, GST and other statutory compliance to operate/ do business in India.

[e] Minimum 3 to 5 years of experience in Similar field and details of similar ongoing works including group companies.

[f] List of clients of the Company/Firms.

[g] Details of manpower owned technical, and staff submitted along with the tender.

[h] List of requisite tools & tackles, equipment. (Attested Copy to be enclosed).

[i] The contractor should not have any record of being de-barred or blacklisted by any State / Central Govt. Dept. / any public / private organization. Compliances with the provisions all the personnel related statutes (and the corresponding rules framed under these various statutes) as may be applicable including, but not limited to statutory compliance like registration under ESIC Act, PF Act, Contract Labor Regulation and Abolition) Act, 1970, GST and other statutory compliances to operate / do business in India. The tenderer should carefully go through the Safety related rules as applicable in DFPCL (Refer Annexure II) and the statutory regulations (refer Annexure III) to be strictly followed.

[j] Should be able to handle any local matters.

[k] If the contractor is MSME then should have a valid MSME registration and a copy of the same should be enclosed along with the tender document at the time of submission.

[l] Organization Structure of the contractor.

The tendered must provide the supporting documents for above mentioned prequalification criteria.

I/We confirm having accepted all the terms as mentioned above.

(Company name, seal and signature of authorized person with Designation)

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ANNEXURE I
GENERAL TERMS AND CONDITIONS

1. Earnest Money Deposit of Rs.1,00,000/- (Rs. One Lac only) in the form of Bank demand draft/ Pay order (drawn on public sector bank or reputed private bank only) will have to be submitted in favor of Deepak Fertilisers and Petrochemicals Corporation Limited payable at Mumbai along with tender document. Tenders received without EMD will be disqualified.

2. All pages of the tender form and questionnaire must be signed and sealed by Tenderers.

3. Tenderers have to submit details along with documentary evidence for the following:
   a] Registration/ incorporation certificate as Proprietary/ Partnership Firm/ Private Ltd or Public Ltd Company/ LLP.
   b] Registration certificate with PF organization for allotment of PF code number.
   c] Registration certificate with Goods and Service Tax (GST).
   d] Allotment letter under ESIC Act
   e] Registration certificate under Maharashtra Labor Welfare Board.
   f] Registration certificate for professional Tax.
   g] Registration certificate with Income Tax Dept for allotment of permanent income tax code number.
   h] Tenderers are advised to submit their bids strictly on the terms and conditions of the bid. document and not to stipulate any deviation.
   i] ISO Certification holder: Name of certification: -----Validity: -----(Attested Copy to be enclosed)
   j] Organization Chart: Executive ----------, Technical Staff-------- (Attested Copy to be Enclosed giving the details)
   k] List of requisite machinery, tools & tackles, equipment. (Attested Copy to be enclosed)
   l] Audited annual Turnover: for last three Financial Years.
   m] List of similar jobs carried out in another company.
   n] Client List.
   o] MSME certificate if applicable.

Special Note: The contractors/Tenderer's who are registered with DFPCL need not to submit the documents mentioned above.

4. DFPCL reserves the right to accept or reject any or all tenders at its sole discretion without assigning any reason.

5. Late tender will not be accepted / received.

6. Canvassing in any connection with the tender in any form is strictly prohibited. Tenders submitted by the party who resort to canvassing will be liable for rejection and forfeiture of EMD.

7. In case of any unscheduled holiday falling on the prescribed closing or opening day of the tender, the next working day will be treated as scheduled for the opening or closing day of the tender as the case may be. The Final concluding bid shall be valid for 6 months from date of auction and if any new requirement is received shall be catered at same auction price.

8. The bidders are advised to read carefully all the terms and conditions of the tender document which will form part of the contract.

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9. If the Tenderers give wrong information deliberately to create conditions for acceptance of the tender, the DFPCL reserves the right to reject such tenders without assigning any reason.

10. Not more than one tender will be submitted by one Tenderer for the same work.

1.0 INSTRUCTIONS FOR SUBMISSION OF TENDER:

1) The Tenderers are advised to visit the site of work to acquaint themselves as to the nature and location of the work, access to the site, the general & local conditions, particularly those bearing upon transportation, disposal, handling and storage of materials, availability of labour, water, electric power, physical conditions etc. and shall be included on such account while quoting for the tender.

2) Tenderers shall quote the tender in the prescribed format of the tender document. Tenders should be free from overwriting. All corrections should be duly attested by the Tenderer. Tenders should be signed & stamped by person/s that are legally authorized to sign on behalf of the person or firm or company tendering and in case of firm / company tender should bear its seal or stamp.

3) Tender format should contain columns for amount in Rupees (if any),

4) The Tenderers shall not stipulate any additional conditions. Any tender containing such conditions will be summarily rejected. Canvassing in connection with tenders is strictly prohibited. Tenders submitted by the Tenderers, who resort to canvassing, will be rejected outright.

5) The work may be split up between two or more Contractors or accepted in part and not in entirety, if considered expedient at the sole discretion of DFPCL Management.

6) Submission of a tender will be conclusive evidence to the fact that the Tenderer has fully satisfied himself as to the nature and scope of work to be done, procedures for issue or materials, conditions of contract, local precautions to be ensured, security rules to be followed and all other factors affecting the performance of the contract and the cost thereof.

7) It will be obligatory on the part of Tenderer to sign the documents for all the component parts on each and every page.

8) No Bidder is allowed to bid below the current minimum wages applicable.

2.0 AMENDMENT TO NIT (Notice Inviting Tender):

At any time prior to the deadline for submission of bids, DFPCL or its nominee or its consultants may for any reason, whether at its own initiative or otherwise or in response to any clarification requested by a prospective Bidder, modify the NIT by amendment. The amendment will be notified in writing to all prospective Bidders who have received the NIT and the amendment will be binding on them. In order to afford prospective Bidders reasonable time to take the amendment into account in preparing their tenders, extension of time as may be reasonable, will be given for submission of tenders.

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3.0 SUBMISSION OF TENDERS:

The Bidder shall bear all costs associated with the preparation and submission of the Bid and neither the company nor its nominee nor its consultants will be responsible or liable for these costs, regardless of the conduct or outcome of the bidding process. Any clarification required by prospective bidder shall be furnished in writing soon after its receipt to ensure submission of bid on or before bid closing date. A metric measurement system shall be applied, wherever it is applicable.

4.0 EARNEST MONEY DEPOSIT (EMD)

The amount of earnest Money shall be deposited in the form of bank demand draft drawn on reputed public sector bank or reputed private bank only). **The EMD should be in the name of M/s. Mahadhan Agritech Limited**. payable at Panvel/ Mumbai. The EMD will be forfeited in the event of the Contractor/Tenderer failing to commence work within the 30-day period. The Earnest money deposited [E.M.D.] by the successful Tenderer's shall be Returned to the bidder after the commencement of the work and on receipt of bank guarantee towards security deposit (if applicable). The tenders without E.M.D. shall be liable for rejection. If for any reason the bidder withdraws his bid at any time prior to expiry of the validity period or refuses to execute the work after issue of the letter of intent/Work Order, the amount of Earnest Money is liable to be forfeited. Earnest Money Deposit will not carry interest. E.M.D. of the unsuccessful participating bidders will be refunded within one month.

5.0 RIGHT OF ACCEPTANCE & REJECTION OF TENDER:

DFPCL reserves the right to accept at their sole discretion any tender in whole or part or split the work among two or more Contractor/Tenderers or reject any or all Bids without assigning any reason thereof. No claim for compensation etc. whatsoever will be entertained by DFPCL. If a Contractor/Tenderer whose past performance has not been found satisfactory in the opinion of DFPCL, then DFPCL reserves the right to refuse the tender documents or reject the tender while opening or evaluating the tenders. The decision of DFPCL regarding performance evaluation shall be final & binding on the Contractor/Tenderers. DFPCL shall not have any liability to Tenderers for any interruption or delay in access to the site irrespective of the cause.

6.0 VALIDITY OF BIDS:

Bids shall be valid for at least 90 days after the date of price bid opening prescribed by DFPCL. A bid valid for a shorter period may be rejected at the discretion of DFPCL. In exceptional circumstances, DFPCL may solicit the bidder's consent to an extension of the period of validity. The request and responses thereto shall be made in writing. The bids shall be suitably extended where it is necessary at the request of DFPCL. Where the bidder is unwillingly to extend the validity period, his bid shall be deemed to be invalid and the EMD would be returned to the bidder. No bidder shall be permitted to modify his bid after commercial bids have been opened unless asked by DFPCL due to change in specifications / scope or otherwise. The Final concluding bid shall be valid for 6 months from date of auction and if any new requirement is received shall be catered at same auction price.

DFPCL's decision for award of contract shall be final and binding on all the tenderers.

7.0 PROCEDURE FOR AUCTIONING

7.1 [a] Auction: DFPCL will declare its **Opening Price** (**OP**), which shall be displayed to all Tenderers during the start of the Auction. The Tenderer will be required to start bidding after the announcement of Opening Price and decrement amount. The Opening Price displayed on screen is evaluated price to DFPCL for all the items mentioned in price bid. The first online bid and the subsequent bids received in the system during the event shall be less than the Auction's opening bid price by one decrement or multiples of decrement.

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[b] Auction shall be for a period of 30 minutes or as per DFPCL requirement. If a Tenderer places a bid in the last **2 minutes** of closing of the Auction and if that bid gets accepted, then the auction's duration shall get extended automatically for another **2 minutes**, for the entire auction (i.e. for all the items in the auction), from the time that bid comes in. The auto-extension will take place only if a bid is received & accepted in those last **2 minutes**. If the bid does not get accepted, the auto-extension will not take place. In case there is no bid in the last **2 minutes** of closing of Auction, the auction shall get closed automatically without any extension. However, Tenderers are advised not to wait till the last minute or last few seconds to enter their bid during the auto-extension period to avoid complications related with internet connectivity, network problems, system crash down, power failure, etc.

[c] After the completion of Auction, the **Closing / Final Price** (**CP**) shall be available on auction screen.

7.2. During Auction, if no bid is received within the specified time, DFPCL, at its sole discretion, may decide to reschedule / scrap the Auction process / proceed with conventional mode of tendering / or finalize the tender based on Prices Bid submitted in the envelope.

7.3. Placement of order on the conclusion of Auction shall be at the discretion of DFPCL. Bids once made by Tenderer cannot be cancelled or withdrawn. If the bidder withdraws the bid, then the EMD of the bidder will be forfeited.

7.4. It shall be the prerogative of DFPCL to offer the Final / Closing Price of Auction to the other bidders for matching in case DFPCL decides to have more than one supplier.

7.5. The Tenderer shall be assigned a **Unique Username** & **Password** by DFPCL's. The Tenderer is advised to change the Password and edit the information in the Registration Page after the receipt of initial Password from DFPCL. To ensure confidentiality. All bids made from the Login ID given to Tenderer will be deemed to have been made by them.

7.6. The Tenderer will be able to view the following on screen along with the necessary fields in the Reverse Auction:

_ Leading Bid in the Auction (Current Lowest Rate)

_ Opening Price & Decrement Value.

7.7. DFPCL decision for award of Contract shall be final and binding on all the Tenderers.

7.8. DFPCL shall not have any liability to Tenderers for any interruption or delay in access to the site irrespective of the cause.

8.0. SUBMISSION OF TENDERS:

The Bidder shall bear all costs associated with the preparation and submission of the Bid and neither the company nor its nominee nor its consultants will be responsible or liable for these costs, regardless of the conduct or outcome of the bidding process. Any clarification required by prospective bidder shall be furnished in writing soon after its receipt so as to ensure submission of bid on or before bid closing date. A metric measurement system shall be applied, wherever it is applicable.

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ANNEXURE II

Special Terms and Conditions

SAFETY ASPECTS:

1.01 Tenderer/ Contractor to provide safety appliances like dust masks, ear plugs, Full body harness, ladder, safety shoes, helmet, hand gloves, safety goggles, PPE, rain gears, Boiler suit/overall made up from cotton cloths etc. to their personnel working inside the Complex at his cost and should adhere to safety codes as given in General Conditions of the contract.

ISI mark yellow helmet to be provided of Udyogi or any standard company.

ISI marked safety shoes to be provided of Bata make or any standard Company.

ISI marked antifog goggles to be provided of any standard company.

If any deviation noticed, then the company will provide the helmet and safety shoes and will deduct the landing cost at actual incurred by company. After repetitive incidents of violation of safety PPES by Tenderer, serious penalty amount will be deducted from Tenderer's invoice as per safety requirement.

a) Penalty for violation of Safety norms: Rs 500/- for first instance per person, in multiple for next similar violations.

b) The manpower shall be confirmed physically fit by Factory Medical Officer to carry out assigned job at DFPCL work site. Tenderer/ Contractor must report with manpower to factory medical officer on very first day of his contract or his worker's first day of duty.

c) No young and Minor Child labour shall be allowed to enter and work at the site of DFPCL.

d) The Tenderer/ Contractor shall ensure the safety training of their workman prior to start of the assignment/ job with the help of DFPCL Supervisor and Safety Officer.

e) Electrical hand tools, welding machines deployed for the job shall be confirmed for the provision of ELCB proper earthing. The same shall be inspected by DFPCL Safety Officer and Electrical department.

f) Tenderer/ Contractor shall deploy Safety Supervisor for the manpower condition more than of 20 CL & 30 CL.

g) Tenderer/ Contractor shall prepare Job Safety Analysis for daily activities and will get endorsed from DFPCL Maintenance In charge. Hazard Identification and Risk assessment shall be done for each activity and accordingly Risk control measures shall be taken to control every risk. Every contract workman at site will be using Safety Helmet, Boiler suit and safety shoes compulsorily. Ear, Eye, Nose and Hand as well as body protection equipment will be used from time to time to protect the body from each activity.

h) Safety Work Permit system to be followed while performing any job. will be issued by Tenderer/ Contract Safety Officer, will perform inspections/checks that all jobs for safety procedures to be followed.

i) Safety Training, First Aid Training, shall be given to all workers on the first day and for five minutes every day at the start of the day.

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j) No person shall work under the control of liquor, Chewing of Tobacco or smoking is strictly prohibited on site.

k) Housekeeping on site is the essence of the contract. The site will be cleaned at the start and end of the work every day by the Contractor/Tenderer.

l) Every electrical supply shall be taken through closed socket and ELCB, every electrical hand tool will have proper earthing arrangement. All electrical required to check from DFPCL electrical dept. And put equipment inspection tag required before put in use.

m) All workers shall be provided with written and understandable Information about their employment conditions in respect to safety & wages before they enter employment and about the particulars of their wages for the pay period concerned each time that they are paid and deduction of fines for non-compliance of safety standards if any.

n) There should be no discrimination in hiring, training, compensation, access to training, promotion, termination or retirement based on race, caste, national origin, religion, age, disability, gender, marital status, sexual orientation, union membership or political affiliation.

o) Non-compliance of safety guidelines will be considered as default and may invite penalty upon the Contractor.

1.02. Safety Training

1) Tenderer/ Contractor has to deploy experienced trained and skilled manpower for the job assigned.

2) Safety training will be given by DFPCL Safety officer to all manpower reported on duty. Tenderer/ Contractor's Safety Supervisor shall prepare job safety analysis with the help of the Maintenance Officer for the job to be carried out and the procedure which is going to be used for the job. On the basis of the agreed procedure safety training will be given and the adequacy of safety PPE's will be checked by the Safety Officer.

3) Safety training certificates will be issued to all Tenderer's/ Contractors' workers. Every Contractor/Tenderer's worker will maintain a safety certificate copy with him for the period of work inside the factory/ work site of DFPCL. The certificate will be valid for a period of six months from the date of issue. After the validity, Tenderer/ Contractor and contract worker has to revalidate the certificate by acquiring additional certificate training from the Company.

4) Worker shall be aware of First Aid and using First Aid equipment and emergency procedures and assembly point at site.

5) Falsification or tampering of records, including safety certificates, attendance records, academic credentials, etc., will be considered as default and may invite penalty upon the Contractor.

1.03. Accidental Reporting

1) Safety of the worker/s is the essence of the contract.

2) Any unsafe condition noticed by the Tenderer/ Contractor/Contract worker shall be notified to the DFPCL Supervisor and Safety Officer on duty.

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3) Any near miss, minor injury, First Aid or major injury shall be reported to OHC & Safety Officer in writing by the Tenderer/ Contractor within 4 hours, with cause of the incident.

4) First Aid treatment shall be made available at OHC. Any more treatment advised by OHC /Factory medical officer shall be made available by Tenderer/ Contractor at ESIC recognized hospital/specialized hospital. It is sole responsibility of the Tenderer/ Contractor to make available in time the best treatment to its worker at his cost/insurance. DFPCL shall not be responsible for the same.

1.04 Safety Performance

1) Every contract shall be vetted for safety performance of previous contract and experience

2) Safety training to workers, proactive performance, availability of safety appliances, Attitude towards safety implementation, rewards to the worker/s will be evaluation parameters.

2. Labor law and Safety codes:

All the matters concerned with labour management shall be as per the prevailing Labor laws. Tenderer/ Contractor will obtain labour license/s on arrival at site before commencement of the job. The first RA bill shall be released only on submission of the copy of labour license duly attested by DFPCL Administration in the prescribed format. If labour license is not applicable, the Tenderer/ Contractor shall obtain confirmation to this effect from DFPCL Administration.

Tenderer/ Contractor will comply with all labour and other statutory laws applicable from time to time. All labour laws, such as Contract Labour (Regulation and Abolition) Act 1970 with Maharashtra and Central Rules, Employees State Insurance Act with Rules & Regulations, The Maharashtra Workmen's Minimum House Rent Allowance Act, 1983 with Rules 1990, The Payment of Bonus Act, 1965 with Rules 1975, Factories Act with Mah. Rules, The Digital Personal Data Protection Act, 2023, The Employees Provident Funds and Miscellaneous Provisions Act, 1952, Minimum Wages Act 1948, Payment of Wages Act 1936, Maharashtra Labor Welfare Act, etc. and such other acts which are in force, or which may come in force during the subsisting of the contract, should be adhered to by the Tenderer/ Contactor and such other rules/ regulations/ laws made applicable from time to time.

The Tenderer/ Contractor agrees to procure and maintain, at its own cost, insurance policy enough to insure against all liability, claims, demands, and other obligations assumed by the Contractor. Such insurance shall be in addition to any other insurance requirements imposed by this contract or by law.

The Tenderer/ Contractor shall be solely responsible for its employees. And always keep the DFPCL Indemnified from all losses, actions, penalties etc. arising out of this Tender/ Contract.

The Tenderer/ Contractor shall be responsible for all acts of its personnel and representatives, directly or indirectly rendering services in relation to or connected with job entrusted and to comply with all applicable labor laws

2.01 Deployment of Medically Fit Manpower:

For the due execution of this Contract, the Tenderer/ Contractor shall deploy workers/supervisors who are always physically and mentally fit and are not disabled/handicapped and do not suffer from any chronic or contagious disease. It shall be the responsibility of the Tenderer/ Contractor to ensure that its Workers/Supervisors employed

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are medically fit. The Tenderer/ Contractor shall give a written declaration as regards the fitness of the Workers/Supervisors employed at the time of applying for the Gate Pass. If any employee employed by the Tenderer/ Contractor becomes or is declared medically unfit after the issuance of the Gate Pass, the DFPCL shall revoke the Gate Pass.
Failure to comply with this stipulation shall entail penalty as may be decided by the management apart from refusing entry to such Workers/Supervisors of the contractor. The decision of the DFPCL's Medical Officer in this regard shall be final.

2.02 MEDICAL EXAMINATION:

Tenderer/ Contractor should ensure that all its Workers/Supervisors deployed at DFPCL sites undergo pre-employment fitness examination. The form No.33 (Prescribed under Rule 68T & 102) should be filled in for all its Workers/Supervisors deployed and should be submitted by Him/her to the user department.
Contract Workers/Supervisors completing 12 months shall undergo annual medical examination. Such examination must include the following tests: -

1) Complete Physical Examination. This will be done at DFPCL OHC.
2) X-Ray chest PA view (Once in Pre-employment then once every three years)
3) Complete haemogram (T&D, Hb at minimum)
4) One urine examination using Multistix.

All entries pertaining to the periodical examination must be made and maintained in form 32 (Bounded register) prescribed under Rule 68 T & 102.

Form No.32 must be maintained in bounded register & should be submitted to the OCCUPATIONAL HEALTH CENTER for records annually.

Each Personnel should use required Personal Protective Equipment's (PPE)as per Job (Minimum: Safety Shoes, Canvas Gloves, Welding Face shield attached with helmet safety goggles) For a work at height each person should use individual safety helmets with two lifelines (in good conditions).
Failure or negligence on part of Contractor in following these health and safety rules shall invite penalty as may be decided by the management and/or as described herein below.

Falsification or tampering of medical records will be considered as default and may invite penalty upon the Contractor.

2.03 Safety Organization of Tenderer:

The Contractor/Tenderer shall be fully responsible for supervision of its personnel to ensure that they strictly adhere to all applicable safety fire requirements.

The Contractor/Tenderer shall appoint one of its personnel on the work site as a Safety officer with the approval from the plant. Contractor/Tenderer shall employ skilled, experienced, trained, and dedicated safety personnel as per below details:

Safety officer deployment as per term of contract – 01 against 20 CL

If 101 and more employees – Additional safety officers/100 employees

Ensuring barricading in the area while work is in progress by Contractor/Tenderer.

Proper segregation of the insulation/ waste/ not required material and timely disposal

If Space/shed provided to Contractor/Tenderer – Prime responsibility and accountability of Contractor/Tenderer to ensure it neat and tidy and no unsafe conditions at any time.

Quality PPEs provision – ISI - marked safety Shoes, ISI - marked Yellow Safety Helmets, EN166 marked Safety Goggles, ISI marked dust masks, ISI marked Safety harness with double lifeline and with shock absorber, Coveralls.

BIS certified – Yellow color safety helmets with Test certificate worn by Contractor/Tenderers /contract workmen.

Contract safety officer shall conduct training for all contract employees as per guideline given by DFPCL safety dept. The Contractor/Tenderer's owner / line manager in charge on site shall be responsible for formation of the organization and coordination the Contractor/Tenderer's Safety activities. This organization shall take responsibility for all safety related activities with respect to their jobs.

2.04 Recruitment, Training of Contractor/Tenderer's Personnel: -

The Contractor/Tenderer shall at his own expense ensure that all its personnel and sub-contractor's personnel have been given the necessary safety, job-related training required by DFPCL regulations and will provide proof to the effect. The Contractor worker/Tenderer's personnel shall participate in any additional training, which may be provided by DFPCL. Access to work site by the Contractor/Tenderer's personnel shall be denied if not complying with the rules and regulations at site.

2.05 Minimum Entry qualification for contract Personnel:

The contractor/Tenderer shall employ only those personnel who are trained in their trade or otherwise having sufficient working experience to ensure their and others safety while on the work.
Contractor/Tenderer shall employ only those personnel who at least can speak & read Marathi, Hindi or English. Contractor/Tenderer shall maintain up to date record of qualification and experience of his personnel and produce it to concerned DFPCL authorities in advance.

2.06 Safety Meetings: -

The Contractor/Tenderer shall be responsible for maintaining and enhancing the Safety awareness of the workmen working under him, including sub-contractor. The Contractor/Tenderer will inform the DFPCL safety manager of the time and place of safety meetings arranged by him. Copies of minutes / records of Contractor/Tenderer's safety committee meetings shall be sent to the DFPCL Safety Department. The Contractor/Tenderer and sub-contractor's personnel are to be encouraged to contribute actively to safety meetings and to identify S.H.E. topics for inclusion in the agenda for a safety meeting. Toolbox talk should be conducted before conducting any maintenance activity. Safety committee meetings conducted by DFPCL should be attended by a nominated representative of the Contractor/Tenderer and he shall ensure the communication of same for his employees. This scheme is applicable to all Contractor/Tenderers working in the complex.

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2.07 First Aid and Industrial Injuries: -

Tenderer shall maintain first aid facilities for his employees. All industrial injuries (minor & major) shall be reported promptly to Engineer-In-Charge, and a copy of Tenderers report covering each personnel injury requiring the attention of a physician shall be furnished to Company.

2.08 Health:-

It is the responsibility of the Tenderer to provide hospitalization expenses, to carry the injured or sick personnel on duty to the designated hospital and to pay salary as per statutory requirements in case of absence from duty after suffering from occupational injury and to take post-hospitalization care with salary paid till the injured joins back duty / resigns / retires.

To provide documented proof for providing medical care / hospitalization, bearing hospital expenses, salary paid during and post hospitalization till complete recovery / not recovery - to Occupational Health Center

To provide Fitness certificate from the hospital at the time of joining duty after suffering from occupational injury while on duty - to Occupational Health Center

To provide Unfit certificate from the Hospital as the case may be – to Occupational Health Center

The Tenderer should provide the following details to Occupational Health Centre on the first day of beginning of contractual period.

Name with phone number/s of the manpower

Name of the close relative/s of the manpower with phone number/s

Residential address of the manpower

Name of the Registered / Tie-up Hospital with phone number and Doctor's name/s – wherein the manpower provided needs to be hospitalized if required.

2.09 Schedule of penalties for safety violations

Use of PPE is mandatory, and non-compliance shall be viewed seriously. Punitive actions including financial penalty may be imposed for safety violations.

1 Type of violation-Supervisor found at site without having undergone safety induction training
First Time-Rs.50/- per employee
Repetitions-Rs.100/- Per employee
Frequent Safety violations-Rs.100/- Per employee

2 Type of violation-Employee found without using required safety equipment
First Time-Rs.50/- per employee
Repetitions-Rs.100/- Per employee
Frequent Safety violations-Rs.100/- Per employee + warning letter

I/We confirm having accepted all the terms as mentioned above.

(Company name, seal and signature of authorized person with Designation)

3 Type of violation-Employee found without safety belt or without anchoring the safety line at height

First Time-Rs.100/- per employee
Repetitions-Rs.200/- per employee
Frequent Safety violations-Rs.200/- Per employee + warning letter

4 Type of violation-Using defective equipment (Tools & Tackles) at site having potential for accident/fire

First Time-Rs.500/-each Observation
Repetitions-Rs.1000/-each Observation
Frequent Safety violations-Rs.2000/-each Observation + warning letter

5 Type of violation-Non-compliance of HSE&F procedures/standard practices
First Time-Upto Rs.500/-
Repetitions-Upto Rs.1000/-
Frequent Safety violations-Review for de-listing

6 Type of violation-Carrying out job in an unsafe manner having potential for serious consequences e.g. fall accident, damage to property electrocution etc.
First Time-Rs.1000/-each observation
Repetitions-Rs.2000/-each observation
Frequent Safety violations--Review for de-listing

7 Type of violation-Medical treatment injury
First Time-- Repetitions-Warning letter
Frequent Safety violations--Review for delisting

8 Type of violation-Lost time accident
First Time-Warning letter
Repetitions-Review for de-listing the contractor from approved list

9 Type of violation-Fatal Accident
First Time-Review for de-listing the contractor from approved list.

2.10 UNIFORM:

The Contractor/Tenderer staff shall wear uniform as per work environment, After finalization-color code will be given to Contractor by user team for recognition of team in unit), Boiler suite (As per standard), Rainy wear (During monsoon) while working inside plant premises. They shall also wear badge/name plate/Printed name on Uniform while they are working at site. All labour laws/ regulations shall be strictly followed by Contractor/Tenderer as per central/state govt. directives. Before executing the contract agreement, Contractor/Tenderer will ensure with DFPCL P&A dept. that they are maintaining necessary records as required under labour laws.

Penalty for violation for Not wearing uniform/Boiler suit/Rainy Wear: Rs 500 for first instance per person, in multiple for next similar violations.

2.11 STATUTORY COMPLIANCE: -
Contractor/Tenderer will comply with all statutory regulations like payment as per minimum wages, bonus, labour welfare fund, leave wages, PF, ESIC, maintaining requisite record. Viz. various registers and submitting the same to the P&A department whenever asked for by DFPCL. In case of failure to comply with the regulations, appropriate deductions will be made from your bill, in addition to penalty deductions as agreed.

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(A) Documents Required at the time of Issuance of Gate Passes:

Whenever the Contractor/Tenderer applies for gate passes to his worker/s to enter into DFPCL premises, they have to apply on its letter head (Format with HR Department) along-with following documents.

The application should be recommended by the authorized User Dept.

Copy of Work Order/LOI issued by DFPCL.

Copy of Temporary or Regular ESIC Card of each worker (under ESIC Act) or Employees Compensation Policy (If contract worker drawing wages more than Rs.21000/-, required authentic proof i.e. appointment letter or last month pays lip) or Group Personal Accident Policy along-with list of employees who is covered under the said GPA.

In case more than 49 persons are to be engaged, Contractor/Tenderer has to apply and obtain Labour License under Contract Labour (R&A) Act from the State Labour authorities.

Copy of Allotment letter under ESIC Act

Copy of Registration certificate with PF organization for allotment of PF code number along with PF annual return submitted with the concern PF Commissioner.

Copy of Registration certificate under Maharashtra Labor Welfare Board.

Copy of Registration certificate for professional Tax.

Copy of Register of workmen employed by Contractor/Tenderer (Form XIII) – Rule 74

Copy of Employment Card (Form XIV) - Rule 76

Copy of Application for employment, appointment letter issued by Contractor/Tenderer to his workers.

Copy of Insurance coverage covering DFPCL, as workplace, and for the number of persons to be deployed. The nature of work in the policy should be the same as per the work order issued by DFPCL.

Medical Examination and fitness reports in respect of all the contract labors from the designated/specified medical officers.

If the job is subcontracted then no objection certificate from Contract Cell, DFPCL regarding subcontracting the work, work order issued to subcontractor by the main Contractor/Tenderer and all the documents mentioned at Sr. No.1 to 12 are also required in respect of the subcontractor. However, the same will be with prior written consent of the DFPCL only.

UAN Number or any other government recognized id (like-Aadhar card, PAN card, PRAN card) is mandatory for making gate pass.

(B) Procedure to be followed by the Contractor/Tenderers during the work period.

Documents / Registers / Challans to be maintained & photocopies of the same should be submitted to HR Department for verification on monthly basis on or before 28th of every month.

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1) Wage disbursement: Minimum wages as notified by State Govt. from time to time are required to be paid to the workers.

2) Monthly wage to all contract laborers as per their actual attendance to be paid on or before 7th Day of every month in presence of authorized person from DFPCL. Wage slips will be issued to all Contract Labors while disbursement of wages.

3) PF is required to be deducted in respect of all the contract labors and deposited with PF authorities by 21st Day of the month and receipt of the same to be submitted with DFPCL.

4) ESIC is required to be deducted in respect of all the contract labours and deposited with concern authorities by 21st day of the month and receipt of the same to be submitted with DFPCL.

5) Labour Welfare Fund is required to be deducted in respect of all the contract labours and deposited with concern authorities for the wages of June & December of every year within stipulated time and receipt of the same to be submitted with DFPCL.

6) Professional Tax is required to be deducted in respect of all the contract labours and deposited with concern authorities as per act and receipt of the same to be submitted with DFPCL.

7) Following records under Contract Labour (R&A) Act & other acts will also be verified by Contract Labour Cell:

i. Wage Register in form XVII. (Under the C.L Act)
ii. Muster Roll in Form XVI (under the C.L Act)
iii. Register of deductions (under the C.L Act)
iv. Register of Overtime (under the C.L Act)
v. Register of Fines (under the C.L Act)
vi. Register of advances (under the C.L Act)
vii. Bonus Register in Form C (under the Payment of Bonus Act)
viii. Leave register in Form 20 (under the Factories Act)

8) Copy of all the work orders (first two pages only applicable only if not submitted earlier) for which clearance certificate is sought.

9) Copy of Monthly Wage Register.

10) Copy of monthly PF challan along with receipted copy of monthly PF returns i.e. Form 12A, Form 5 and Form 10.

11) Site wise breakup of PF: If Contractor/Tenderer is working for various other companies then the site wise breakup of Monthly PF challan/returns.

12) Copy of Labour License (if not submitted earlier).

13) In case the work period is February/March, then the receipt of Annual PF return for that year is required.

14) Inspection report of PF and Labour authority.

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Tenderer/ Contractor should ensure that he has complied all statutory compliances as per above said acts for that particular Month before raising wage bill. contractors has to pay Leave & Bonus in monthly components to the labor. if it is found that it is not paid the dues while checking the compliance documents then proportionate amount will be kept on hold from your bills, and the same amount will be release on reimbursement bases.

DFPCL has the right to hold the bill for any particular month if the Tenderer/ Contractor has not complied with the mandatory statutory compliances. DFPCL Can levy Penalties for such repetitive Non-Compliance.
The Tenderer/ Contractor shall always keep DFPCL indemnified from any risk/ liability/ penalty/ cases arising from non-compliance of the same.

15) All workers shall be provided with written and understandable Information about their employment conditions in respect to safety & wages before they enter employment and about the particulars of their wages for the pay period concerned each time that they are paid and deduction of fines for non-compliance of safety standards if any.

16) There should be no discrimination in hiring, training, compensation, access to training, promotion, termination or retirement based on race, caste, national origin, religion, age, disability, gender, marital status, sexual orientation, union membership or political affiliation.

- **The below mentioned Statutory compliance must submit by vendors before 20th day of next month.**
  Annexure-E
  PF/ ECR challan copy
  PF, ECR & Payment receipt
  ESIC, ECR & payment receipt
  PT challan copy
  MLWF (in the month of June & Dec)
  Levy payment proof [for Security vendor only]
  Muster roll cum Wages register, including bonus and leave wages payment
  In / out entry register maintained at entrance security gate
  Register of deduction for damage & loss
  Register of Over Time Register
  Register of Fine
  Register of Advances
  Wage Slips
  Proof of salary made through RTGS/Bank transfer/Cheque payment.
  Bonus Register Form C, D & Leave Form 20 to provide annually.

- **DFPCL has CLMS System for registration of Vendors, below docs need to provide by Tenderer/ Contractor during working period & for his laborer**.
  PF allotment letter
  ESIC registration letter if wages are less than Rs.21000/-
  Pan Card
  GST Registration Certificate
  MLWF registration certificate
  Professional tax number
  Copy of Work / Purchase Order
  Owner Name and cell/Phone number
  Email ID of vendor

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Site In charge name and his cell number
Copy of labour license, if strength is more than 50 numbers
If wages are more than Rs.21000/ >Employees Compensation Policy or GPA policy with list of employees [Pay slip or declaration regarding wages are more than Rs.21000/- are must to be provide by vendor for above mentioned policies]"

- **The below mentioned documents of workers are to be require for CLMS registration.**
  1.E.pehchan card under ESIC or
  2.Workman Compensation Policy or
  Group Personal accident policy with list of employees Payslip or declaration regarding wages are more than Rs.21000/- are must to be provide by vendor for above mentioned sr.no.2."
  Copy of Aadhar card
  Copy of PAN card
  Copy of cheque leaf or bank pass book
  UAN Number under PF Act
  Cell Number of workers

(C) HOUSEKEEPING:

Tenderer/ Contractor shall do housekeeping and shall remove all unwanted materials from the work site immediately after completion of work. Housekeeping shall also be done in between the work to keep the work area clean & tidy. 25% of the bill's value will be deducted if housekeeping is not done properly.

(D) ASSIGNMENT OR SUB-LETTING OF CONTRACT:

The Tenderer/ Contractor shall not assign or sub-let the Contract or any part thereof or allow any person to become interested therein in any manner whatsoever without the previous consent in writing of DFPCL. Any breach of this condition shall entitle DFPCL to take such steps as may be necessary and also terminate Contract. Such termination shall also render the Tenderer/ Contractor liable for payment to DFPCL in respect of any loss or damage arising or ensuing from such cancellation. The permitted subletting or work by the Tenderer/ Contractor shall not establish any contractual relationship between the sub-contractor and DFPCL and shall not release the Tenderer/ Contractor of any responsibility under the Contract.

(E) CONTRACTOR/TENDERER TO BE LIABLE FOR ALL THE TAXES ETC:

The Tenderer/ Contractor shall be liable to pay all the taxes payable as per the prevailing laws made applicable or might come in force from time to time by the concerned authority. DFPCL shall not be responsible for the same.

(F) INDEMNITY:
Without prejudice to any other provisions in these conditions, the Tenderer/ Contractor shall be bound to keep DFPCL. Its Directors or any representative employee agents, fully indemnified against any action, claim or proceedings under the provisions of any rules, regulations, byelaws, notifications, directions or order having the force of law. The Tenderer/ Contractor in contravention of such provisions etc., for the infringement or violation thereof in the course of the execution or completion of the work under the Contract and if, as a result of any such action, claim or proceedings, the Tenderer/ Contractor or such representative of the Tenderer/ Contractor, as the case may be, adjudged to be liable to any penalties or to pay any penalties or to pay any compensation, such liability, the Tenderer/ Contractor and if, DFPCL has to take-over the liability, DFPCL shall deduct all amounts arising out of such liabilities from the Security Deposit or from the running account of the Tenderer/ Contractor or from any other

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amount due and payable by DFPCL to the Tenderer/ Contractor under this Contract or any other Contract and without prejudice to any other legal remedy available to DFPCL.

(G) TENDERER/ CONTRACTOR TO COMPLY WITH ALL LAWS ETC:

The Contractor/Tenderer shall be responsible for ensuring compliance with all Central and State Laws as well as the Rules, Regulations, Byelaws and Orders of the Local Authorities and Statutory Bodies as may be in force from time to time. The Tenderer/ Tenderer shall give to the statutory bodies, local authorities, police, and other relevant authorities all such notices etc. as may be required by law and obtain all requisite Licenses and pay all fees, Duties, Taxes, charges etc. in connection therewith as may be livable on account of his operations involved under this Contract.

The Contractor/ Tenderer shall make good at his own cost any damage to the property of the Company or any other body, persons, local authorities etc. due to or arising from operations involved under this Contract and the Company shall have the right to recover the cost of damage from dues payable from the Bank Guarantee or Security Deposit of the Tenderer/ Tenderer.

If Company's job-controller observes non-compliance by the Contractor/Tenderer in complying with provisions of labour statutes and specific Acts relevant to the Tender/ Contract, Company shall retain double the value of the non-compliance amount taking into consideration interest, penalty and dues. In case the Company is forced to pay the dues, along with interest and penalty, due to failure of the Contractor/Tenderer, the Company shall be at liberty to recover such amount or any part thereof by deducting it from the Security Deposit or from any sum due by the Company to the Contractor/Tenderer whether under this Contract or otherwise.

(H) CONFIDENTIALITY:

Both the parties during the continuance of this Agreement and 3 (Three) years after termination of this Agreement, Tenderer and/or his employees/ personnel shall keep all information, such as specifications, technical information, business data and other confidential information under this Agreement strictly confidential and shall not. Disclose it to any third party or use it for other purpose than to perform its obligations under this Agreement. Tenderer/ Tenderer and/or personnel may disclose the information to an employee of Tenderer, or a government agency or other regulating authority.
But only insofar as this is necessary either to carry out its duties under this Agreement or comply with any existing law, and under intimation to "Company". Where sub clause (b) applies, the Tenderer and/or personnel shall ensure that the person who receives the information keeps it confidential and does not use it for any unauthorized purpose.
If any unpublished price sensitive information is disclosed by the Company the Contractor/Tenderer and its representatives, agents, shall comply with the provisions of the Insider Trading regulation applicable and made applicable from time to time.
Unauthorized disclosure of business "secrets" or confidential information is considered as gross indiscipline and liable for penalty.

(I) **Personal Data Privacy:**
Tenderer consents to other party to provide any personal data, if any and if necessary and also undertake to process personal data provided by the other party in a manner consistent with applicable laws, in particular with the malprovisions of the Digital Personal Data Protection Act, 2023 and rules made thereunder including the implementation and use of technical and organizational measures to ensure an appropriate level of their security.

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(J) RELATIONSHIP:

Each party understands that they are independent entities and this Agreement does not make it, its/ his employees, associates or agents, the legal representatives of the other party for any purpose whatsoever. Either party has express or implied right or authority to assume or to undertake any obligation in respect of and on behalf of or in the name of the other party or to bind the other party in any manner in respect of any transaction, except the present agreement.

(K) WAIVER:

The failure of either party to enforce at any time any of the provisions of this agreement shall not be considered to be a waiver of the right of such a party thereafter to enforce each and every provision.

(L) ENTIRE AGREEMENT:

This Agreement supersedes all oral and written representations and agreements between the parties, including, but not limited to any earlier agreement relating to the subject matter thereof and/or any other agreement between the parties in relation to the subject matter thereof.

(M) AMENDMENT:

The parties to this Agreement may add, delete, amend or alter all or any of the terms & conditions of this Agreement as mutually agreed from time to time and such modifications and changes shall not be effective until the same are in writing and duly signed by the authorized representatives of both the parties.

(N) Declaration of Tenderers/ Contractors Relation with DFPCL Employee(s):

Should a Tenderers/ Contractors have a relation or in the case of a firm, one or more of its partners a relation or relations employed in DFPCL or in case of company any of its official or relations employed in DFPCL, the authority inviting tenders shall be informed in writing of the fact at the time of submission of the tender. If so, the name, designation, department and Employee Number of such employees be indicated failing which DFPCL may in its sole discretion reject the tender or rescind the contract. If any ex- employee(s) of DFPCL is/ are employed, with the Tenderers/ Contractors, name, designation, department and employee number of such employee(s) be indicated and if any ex-employee(s) of DFPCL is/are employed after acceptance of tender, the said particulars shall also be intimated immediately in writing to DFPCL from time to time. If the Tenderer/ Supplier fails to inform the same, DFPCL shall at sole discretion may reject the tender.

(O) The Tenderer/ Contractor shall not be entitled to any claim including any cost, charges, TA/DA expenses or incidentals for the preparation and submission of this tender even if the Management may decide to withdraw the "NITT".

(P) Dispute not to hold up works:

The successful Tenderer(s) shall not stop the work in case of any dispute(s) unless further progress of work has been rendered impossible due to non-fulfillment of any reciprocal promise. Unilateral stoppage of work by the Tenderer shall be considered as a breach of contract and DFPCL reserves the right to take such action as it may deem fit keeping its interest as paramount.

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ANNEXURE III

Scope of Works & Contract Conditions for smooth operation:

Before submitting the rates in excel sheet, the bidders should be clear about the scope of works.

For any doubts, bidder should get it cleared from the job coordinator.

DFPCL -K1 Unit – 1) Shri. Mahesh Kalghatgi (Tel.022-50684383, Mob. 9820636652)
Mail- mahesh.kalghatgi@dfpcl.com

2) Shri .Atulkumar Khatri (Tel.022-50684376, Mob. 9820234697)
Mail- atulkumar.khatri@dfpcl.com

- The time allowed for carrying out the work as entered in tender / specified by Job Coordinator shall be strictly conserved by the contractor and shall be reckoned from the date on which the order to commence the work or completion of work is given to the contractor.

- If the progress of any portion of the work is unsatisfactory the DFPCL shall not be withstanding that the general progress of the work is satisfactory, the Contractor will have no claim for compensation, for any loss sustained by him owing to such action.

- The contractor or contractors will be responsible for the loss of their material as well as the material issued by DFPCL due to pilferage/theft. Hence, they shall have to ensure the security & safety of the material at their own expense.
- DFPCL shall have power to make any alterations in, or additions to the original specification drawings, designs and instructions that may appear to be necessary or advisable during the progress of the work and the Contractor shall be bound to carry out the work in accordance with any instructions in this connection.
- All quarry fees, royalties, octroi dues and ground rent for stacking materials, outside local issue if any will be settled/paid by the Contractor.
- Female coolies / workers / employees shall not work between 18.00 hrs. to 07.00 hrs.
- IF Any Quantity like to be increased the contractor must take Prior approval before job execution.
- Contractors should appoint a Main Engineer as In-charge of a minimum of 10-years' experience for each site.
- Under the main Civil In-charge, Contractor must deploy the civil engineers as per sites having minimum 5 years' experience of relevant work.
- The contractor must visit the site before he quotes the tender.
- All the QA/QP must maintain the contractor for all the items of execution at his own cost.
- Daily Progress report must be submitted by contractor to job coordinator.
- All the RCC work to be carried out as per IS 456-2000
- The contractor must make his own power distribution board system with required ELCB, MCB,50m Cable etc. (Refer. Electrical checklist is attached)
- The contractor must submit the Reconcilement statement.
- Quality Assurance & Quantity Verification through TPI Agencies

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- Falsification or tampering of records, including safety certificates, attendance records, academic credentials, etc., will be considered as default and may invite penalty upon the Contractor.

Contractor's liability for all taxes as per Govt. Notification.

The Contractor shall be liable to pay all the taxes payable as per the statutory requirements & made applicable from time to time by the concerned authority. DFPCL shall not be responsible for the same.

PRICE BID FORMAT
You will submit the quote considering with material (Material in your scope) and without material (Material provided by DFPCL) (Details are mentioned in details of Service code whether its required or not)

Please note that this is only the unit rate chart. The monthly bill will be approved for payment only on completed actual quantum of such listed services & supply as completed by the Contractor and certified by Job Co-Ordinator.

The contract is on a Value basis. For every item unit is mentioned.
Approximate Tender Value per year will be Rs. 50 Lacs

Any increase in the quantity which exceeds the value of the order should be considered at the same listed unit rate agreed by the contractor. The finalized rate will be applicable throughout the contractual period & for similar works conducted by the contractor in the Plant premises of K1, K7 and K8 Plant.

Similarly, **if by the end of the contract period the value in the said contract remains un-utilized then the validity of the said order will be extended. However, such a decision remains at the sole discretion of the DFPCL Management**.

The unit rates quoted by the suppliers shall remain firm till the completion of the contract period and during an extended period if any. No unit rate escalation on any other ground shall be allowed.

The quantity may be very +/- on either side during the tenure of the contract, The contractor/Tenderer will be paid as per the actual execution of the job which is to be certified by our job coordinator.

Insulation specific Jobs

INDEX

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(1) INTRODUCTION:

Execution of various Thermal insulation works described here under is an occasional service required at various plants at Taloja. The specification covers the technical requirement for the material procurement, supply, storage, and application of all types of external, above ground insulation of piping and equipment's for the maintenance of

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operating temperatures process stabilization, against of influx of heat, personnel protection and for anti-condensation.

(2) ABBREVIATIONS AND DEFINITIONS:

DFPCL: Deepak Fertilisers & Petrochemicals Corporation Ltd.

MAL: Mahadhan Agritech Limited

EIC: Engineer - in - Charge as defined in the General Conditions of Contract.

GCC: General Conditions of Contract annexed as part of this contract documents.

FIM: Free Issue Materials - This refers to materials issued by the company free of cost to the Contractor/Tenderer for performance of work under the contract and as per the conditions of the contract.

ISBL: Inside Battery Limit - The areas designated at individual sites by the company as forming part of inside battery limit.

OSBL: Outside battery limit - The areas designated at individual sites by the company as forming part of outside battery limit.

PPE: This refers to Personal Protective Equipment and covers all necessary personnel protective equipment to be used by Contractor/Tenderer staff and workmen for executing the works under the contract.

DOR: Division of Responsibility - This refers to the division of responsibility for providing the items specifically mentioned under the heading DOR in this document. The DOR is only for providing the item and it is the Contractor/Tenderer's the responsibility to execute and operate safely the company provided items**.**

UOM: Unit of Measurement

SOR: Schedule Of Rates

SOP: Standard Operating Procedure in use at respective site

S.H.E.: Safety, Health & Environment Department

TDS: Tax deducted at source.

PSV: Pressure safety valve

(3) DETAILED SCOPE OF WORK:

3.1 Contractors Scope of Work

A. This specification covers minimum technical requirements for the design, material procurement, supply, storage & application of all types of external, above ground insulation of piping and equipment's operating between ambient temperatures and 550 °C for the purpose of heat conservation ,maintenance of operating temperatures, process stabilization and personnel protection.

B. Contractor shall arrange for transportation of its personnel within the site. If contractor deploys vehicles for movement of its personnel, the vehicle shall meet the fitness requirements specified by the company and shall not be more than four years old.

C. Contractor shall ensure that the site is maintained clean at all times. All material shall be stacked neatly and useful and scrap material shall be segregated based on the type of material. Spillage of grease, lubrication, etc shall be avoided and if happens, the same shall be cleaned immediately as per approved procedures.

D. All Insulation application, removal, box up and other associated activities shall be performed by the contractor as per drawings, specifications and instructions of the EIC.

E. Collection of all raw materials, consumables, and all other company supplied materials from designated storage locations, performing all handling activities including loading, unloading, intermediate storage, handling all surplus and scrap material, returning the same at designated locations including performing salvaging operations wherever required.

3.2 DFPCL Scope of Supply

DFPCL scope of supply is limited to the following:

- Provision of required drawings and specifications.
- Provision of water, electricity, compressed air at one point in the site.
- Provision of mobile material handling equipment like cranes, trailers, trucks, etc with operators.
- Provision of open space for contractor office and material storage.
- Space for contractor office inside company premises subject to availability.
- Telephone facility on chargeable basis (if available)
- Issue of all FIM.

(4) SCOPE OF WORK FOR CARRYING HOT INSULATION

1. This specification covers minimum technical requirements for the design, material procurement.

2. This specification does not cover insulation for boilers, fired heaters, furnaces and cold services.

3. **<u>Design Basis-</u>**

i. Heat conservation insulation is designed to limit the cold face temperatures below 55oC if

ii. The design temperature used for calculation of insulation thickness shall be the normal operating temperature of the contained fluid. However, the insulation material shall be suitable for the design temperature of piping and equipment for which it is used.

iii. Insulation shall be applied for the following purpose:
Heat Conservation
Process stabilization.
Steam, hot water, hot oil or liquid jacketing
Steam, hot oil or electric tracing.
Personnel protection

4. <u>Extent of Insulation</u>

1. ON PIPING:

Insulated nozzles, flanges, valves, fitting and piping specialty items shall be considered a part of the piping & shall have the same insulation requirements as the attached piping.

(A) Insulated piping systems shall have straight pipe, bends, tees and pipe fitting completely insulated.

(B) All valves and flanged joints shall be completely insulated only in steam condensate services, hot oil lines and in lines which are trace heated or jacketed to maintain temperatures.

(C) For bucket and float type traps the inlet piping and trap shall be insulated.

(D) Insulation on inlet piping to thermostatic and thermodynamic steam traps shall terminate at approximately 500 mm before the trap.

(E) Steam trap outlet piping other than closed condensate recovery system shall not be insulated except for personnel protection reasons.

(F) Instrumentation to be insulated, such as level gauges, level controllers, level switches, DP cells, shall have fluid containing sections and the associated piping completely insulated, including pipes, valves and fitting.

(G) Insulation shall be designed to provide an absolute minimum clearance of 25 mm between the outside surface of any insulation finishing material and adjacent surfaces.

(H) Where insulated horizontal piping is supported on steel shoes, the height of the shoe shall be such that the underside of the insulation finishing material is clear of the supporting structures upon which the shoe rests by 25 mm minimum.

(I) Insulation Shall not be applied to the following unless otherwise Specified.
   i. Piping which becomes hot intermittently, such as relief valves, vents, steam-out and snuffing steam systems, flare and blow down systems.
   ii. Supports for piping, excluding pipe hangers to the extent covered by insulation.
   iii. Steam Traps (Except as noted in paragraph 3.1.C)
   iv. Valves including control valves and flanges in process piping systems (except as noted in 3.1.B and 3.1.G). However, personnel protection insulation for these items shall be applied as required.
   v. Pipe Union fittings.
   vi. Thermowell bosses and pressure tapping.
   vii. Expansion joints, hinged joints and hose assemblies

(J) Valves and flanges in services below 300°C are Usually not insulated unless other requirements are overruling.

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(K) Flanges for hydrogen service shall never be insulated.

(L) Flanges in services of 300°C and above which are not insulated, e.g. hydrogen service and equipment nozzles. shall be provided with a weather protection cover.

(M) Steam traps and the downstream lines of them shall not be insulated, except when heat of the drain is to be recovered.

2. ON EQUIPMENT-

(A) Support skirts of insulated vertical vessel greater than 1200 mm diameter shall be insulated both internally and externally for a minimum distance of 600 mm below the bottom tangent line. The insulation shall terminate not less than 300 mm above the support concrete or steelwork.

(B) Support skirts of insulated vertical vessels of 1200 mm and less shall be insulated externally only, as described in para 3.2.1 above. The insulation thickness shall be 50% of that provided for the main equipment.

(C) Bottom heads of insulated vertical vessels enclosed by a support skirt shall be insulated without finishing material and shall be insulated only when the vessel outside diameter is greater than 1200 mm. The insulation thickness shall be same as that provided for main equipment.

(D) Turbine and steam ends of reciprocating pump shall be insulated for heat conservation

(E) Liquid ends of pumps shall be insulated when heat traced or jacketed.

(F) Items and equipment for which heat loss is essential or those which are refractory lined from inside shall not be insulated.

(G) Rotating equipment

Pumps and compressors are normally not insulated. Protective fencing may be considered. If insulation is necessary, e.g. for steam and gas turbines, boiler feed water pumps, it shall be done by one of the following methods:

Insulating blankets shall be applied over the housing. stitched together with binding wire and covered with aluminium cladding.

A metal box, reinforced with insulation material, shall not be applied when pumping flammable liquids at high temperature. since if these liquids are absorbed by the insulation it can catch fire

(H) Nameplates. stampings, thermowell bosses and pressure tapping shall be left clear of insulation.

(I) Flare line for hydrocarbon gas and liquid shall not be insulated.

(J)

5. Materials

5.1 General

a) All insulation. fixing, sealing & weatherproofing materials shall be new undamaged and of good quality and appearance. They shall be of a normally available commercial grade.

b) Insulation material shall be chemically inert of low chloride content, non sulfurous. Non hygroscopic, impervious to hot water and steam, rot. Fungus and vermin proof. It shall be non-injurious to health and shall not exert a corrosive effect on the surfaces to be insulated and on the finishing materials even if soaked in water at ambient temperatures for extended periods. It shall be unaffected by acidic & saline atmospheric conditions.

c) Insulation and finishing materials shall! not contain ASBESTOS in any form.

d) All insulation materials and accessories shall conform to local health and safety regulations. Contractor shall determine applicability of regulatory requirements prior to use.

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e) Insulation support lugs or other support attachments shall not be field welded without written authorization.

f) Insulation material for austenitic stainless steel piping and equipment shall comply with ASTM C795. Leach able chloride content shell be less than 50ppm.

g) Insulation or jacketing material used shall not be backed with any flammable material.

5.2 Insulation Materials

a) Rock Wool / Mineral Wool

(Warning: This specification shall not be used below - 30°C and above 550°C)

h) The material shall -be lightly resin bonded; processed into long fibers from molten state and suitable for the intended operational temperature range from 60°C to 550°C. Fibers shall be of high tensile strength, tough. non hygroscopic & of diameter varying between 3 & 5 microns. There shall be no settling of fibers over an extended period of use or under vibration.

i) Glass wool/ slag wool shall not be used.

j) The lightly bonded mineral wool & slabs shall generally meet all the requirement of IS:8183.

Only machine made & machine stitched mattresses having uniform density thickness shall be used.

k) Performed Snap-On rigid pipe sections conforming IS 9842 shall be used for SD/cs up to50 NB. The density of these pipe sections shall be 140 kg/m3 minimum.

l) Properties & specifications

Unless specifically mentioned otherwise all properties shall be tested per IS-3144.

(A) Bulk Density(delta)

120 kg/m3 up to 300°C for LRB mattresses.

140 kg/m3 above 300°C & for all preformed pipe sections

(B) Thermal Conductivity, k (IS- 3346)

Mean Temperature	K (MW / cm deg C)	
	Delta = 120 kg/cu m	Delta = 140 kg/cu m
50	0.43	0.43
100	0.52	0.52
150	0.62	0.62
222	0.73	0.7
250	0.84	0.85
300	0.95	1

(C) Sulphur content <0.6%

(D) Moisture content & Moisture Absorption - <2.0%

(E) Shot Content:

500 microns size 5% maximum

250 microns size 5% maximum

(F) Resin content <3.0%

(G) Chloride content <20 ppm

(H) In combustibility - Incombustible with weight loss of s - 5%

(I) Linear Shrinkage - < 2%

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(J) Recovery after Compression Recovery shall be ~ 90% after compression of the material upto75%
Performed pipe sections - <200 NB
Curved Segments - >200 NB

6. Weather Proofing

(a) FOR FIBROUS MATERIAL (MINERAL WOOL)

Type of equip	Minimum Cladding thickness (mm)					
	Aluminium		Galvanized Steel		Stainless Steel	
	Flat	Corrugated	Flat		Flat	Corrugated
Vertical storage tank & vessel shells	-	0.71	0.8		0.6	0.4
Tank roofs & removable covers	1.22	-	0.8		0.6	0.4
Sphere, Horizontal vessel shell & heads, vertical vessel heads	0.71	-	0.8		0.6	0.4
All piping	0.71	-	0.8	-	0.5	0.4
Piping in offisites	-	-	0.56	-	-	-

(b) Unless otherwise specifically mentioned aluminium jacketing shall be used as weatherproofing material. Aluminium material shall be with low copper content and shall conform to ASTM B209 ALLOY 3003 h16 OR is:737 designation 31000 H3 for flat sheets and H4 for corrugated sheets. Finishing material shall be coated on the inside surface (i.e. the surface in contact with insulation material) with bitumen anti corrosive paint.

(c) Stainless steel material (if required to be applied) shall be of SS-304 grade.

7. Ancillary Materials

- Aluminum foil for protection of stainless steel surfaces
  A layer of 0.19 ,, (36 SWG) thick aluminum foil shall be applied first on stainless surfaces to avoid direct contact of insulation material with hot surface. Aluminum foil shall be as per ASTM B 209 alloy 3003 H16 or IS:737 designation 31000 H3.
- Securement Bands
  i. For securing fibrous insulation

Equip. Type	Band Size width x thickness		
	Aluminium	Stainless Steel	Galvanized Steel
Piping	12 x 22 SWG	-	-
Equipment	20 X 24 SWG	-	-
Vertical Storage	-	-	40 X 3 MM
Tanks	-	-	-
Horton spheres	-	25 X 0.8 MM	-

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ii. For securing cladding on fibrous insulation

Equip. Type	Band size width x thickness		
	Aluminium	Stainless Steel	Galvanized Steel
Piping	12 wide x 24 SWG	-	-
Equipment	20 Wide x 24 SWG	-	-
Vertical Storage Tank	-	25 Wide x 24 SWG	-
Spheres	-	25 Wide x 24 SWG	-

- Self tapping screws
  Self tapping screws with aluminum sheeting shall be No. 8 12mm long cadmium flat

- Clips
  Valves, strainers & nagged joints requiring frequent removal shall be provided with removable box type insulation adding with snap or type quick release dips.

- Hardware
  All steel nuts, bolts, screws, washers etc. shall be of commercial quality, hot dip or electrogalvanized.

- Wire netting, Lacina & stitchino wire
  Wire netting shall be. 20 mm mesh x 20 SWG galvanism, steel wire.
  Lacing & stitching wire shall be.20 SWG galvanized steel per IS-3150 or equivalent.
- Overlap & Sealer
  Metal cladding overlap shall be 50mm on longitudinal & circumferential joints

- Spacer Ring
  Spacer rings as per the following specifications shall be supplied by the insulation contractor.

  i. Spacers are used for providing framework on which metal sheeting used for protecting the insulation is cl added. These rings shall.be fabricated from 25 x 3mm MS flats. The outside diameter of these rings shall be equivalent to the diameter of the pipes measured over the insulation.

  ii. Spacer rings shall not be used for pipe sizes 80NB & below except where the where the insulation thickness exceeds 50mm

  iii. Spacers shall be provided with 'L' shaped stays fabricated from same size of MS flats at an interval of not more than 300mm along the circumference with a minimum of 3nos. & at a pitch of not more than 1200mm along the length .

  iv. Spacers shall be painted with one coat of red oxide zinc chromate primer or heat resistant aluminum paint.

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v. To minimize direct conduction of heat packing of 5 mm thick asbestos mill board shall be provided at the joints of stays & pipes and between stays & outer MS rings.

8. Application

The application methods given in the standard are general in nature. The contractor is responsible for applying an insulation system that will give or satisfactory operational performance & the requirements given herein shall be regarded as the acceptable of insulation application, with minimum of waste & debris and the final job shall have a minimum. The contractor shall carryout the work in accordance with the best practice neat & workmanlike appearance .

8.1 For fibrous material (Mineral wool)

Surface preparing

Prior to installing insulation/heal transfer putty. the contractor must remove all oil

and dirt from the surfaces to be insulated. Any occurrence of rust must be removed through wire brushing.

8. 1.1 Single layer Insulation

8.1.1.1 Single layer Insulation shall be used up to 75mm thickness. For insulation. thickness over 75 mm. the insulation shall be applied in multiple layers.

8. 1.1.2 Lightly resin banded mineral wool mattresses shall be machine made. Machine stitched at shop (to a suitable size) and shall have galvanized wire netting on one side .

8. 1. 1.3 The stitched mattresses shall be wrapped over the surface to be insulated and ends knitted with Gl wire or wire hooks. The successive mattresses shall be applied over the surface such that the joints are staggered and also the gap between the joints is kept as small as possible.

8.1.1.4 The mounted mattresses shall be held in position by metal bands.

8. 1. 1.5 Finally the insulation shall be covered by metal weather- proofing of aluminum sheets. The type and thickness of aluminum sheets shall be as per 4.5.2 .

8. 1. 1.6 Metal weatherproofing shall be provided over the insulation with an overlap of 50mm {minimum) at all lap joints.

8. 1.1. 7 All the over1ap joints shall be sealed and secured with self-tapping screws.

8. 1. 1.8 Metal weatherproofing applied to irregular surfaces shall be shaped to fit the contour of insulation.

8. 1.2 Double or Multilayer Insulation

8.1.2.1 The first layer shall be applied in the same manner as for single layer insulation.

8 .1.2.2 After the installation oi first layer. the second layer of stitched mattresses with joints staggered shall be placed and ends knitted together. Care has to be taken that there are minimum gaps. The second layer shall be held in position on the previous layer by metal bands. This has to be continued (application of successive layers) till required thickness is achieved.

8.1.2.3. Over the final layer of insulation weather protection of aluminum sheet shall be provided.

8 .1.3 Pipes Bends, Elbows. Fittings, Flanges

8. 1.3.1 Elbows, Bends and fitting

The insulation to be build: up on elbows and all other fittings shall be the same as for adjoining pipe. Machine stitched mattresses from resin bonded mineral wool in suitable sizes shall be fatted properly round the pipe fittings. These then will be held in position by tie wire and steel bands. one at the center and one at each end. Finally weather protection of aluminum sheets shall be provided as described in 4.6.

8 .1.3.2 Flanges

At flanges in pipelines. the normal run insulation shall be terminated such that the gap between tile flanges and insulation is equal to length of bolt plus 20mm. So that the flange can be disconnected without damaging the insulation. The gap shall ·be packed with loose mineral wool and then the flange shall be insulated with resin bonded machine stitched mattresses of same thickness as the adjoining pipe and held in position by tie wire and metal bands. Finally, weather protection of aluminum sheets shall be provided. The insulation of flange shall form a box structure (removable type).

8 .1.4 Mineral Wool. Pipe Sections Insulation.

8 .1.4. 1 Performed pipe sections shall be installed in the same manner as the blanket insulation except as follows:

Sectional pipe insulation shall be applied with all the joints butted together and shall be secured with the bands.

8. 1.5 Pumps and Compressors:

In general. pumps and compressors that require insulation shall be insulated with removable metal boxes lined with flexible mineral wool mattresses, soundly adhered to the metal body by an approved method. The thickness of insulation shall be as specified for the connecting pipework. The metal box shall be made in at least two pieces, no piece weighing more than 30 kg. Secured by quick release toggle clips.

8.1.6 Man way etc.

8.1 .6. 1 Man way covers shall generally be insulated with removable metal boxes lined with flexible mattress soundly adhered to the metal box by an approved method. The thickness of insulation shall be as required for the vessel. The metal box shall be made in at least two pieces. no piece weighing more than 30 ~g. secured by quick release toggle clips.

8.1.6.2 Where tell-tale holes are provided in branch reinforcement rings, a small 'weep pipe should be fitted projecting clear of the insulation.

8. 1. 7 HOT PIPE INSULATION

8 .1. 7.1 Piping which is heat traced and insulated shall be covered with oversized pipe insulation to include the tracer.

9. Inspection. Testing & Measurement of work

9. 1 Test certificates

Along with quotation contractor shall submit recent test certificates from recognized laboratories for all the insulation material proposed to be used by him. The test certificates shall cover all the properties given in the relevant IS Specifications or applicable international standards, including the properties given below. Any quotation without test certificates shall be liable for rejection.

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a) 'K' value at different temperatures up to 500 °C. for hot insulation material.
b) Max. temp. up to which the material can be used.
c) Sintering temperature:
d) Sulphur content. e) Chloride content.
f) Shot content.
g) Fiber diameter
h) Water absorption & tendency to corrode metals.
I) Density of material
j) Resin properties (chemical)

9.2 Inspection and Testing

9.2.1 The contractor shall carry out various tests as listed in technical specifications mentioned herein but shall not be limited to this. All the tests either on the field or at outside laboratories concerning the execution of work and supply of materials by the contractor shall be carried by the contractor at his own cost. The owner / consultant shall have free access to the manufacturing facility of the contractor for inspection I testing of material as and when required.

9.2.2. The work is subject to inspection at all times by the Engineer-in-charge. The contractor shall carry out all instruction given during inspection and shall ensure that the work is being carried· out according to the technical specification of this specification.

9.2.3 The contractor shall provide for purpose of inspection access ladders, lighting and necessary instruments at his own cost.

9.2.4 Every batch of material supplied should be backed by test certificates for any or all of the requirements specified. Results of inspection and tests shall be recorded by the Contractor in the inspection. reports. proforma of which shall be approved by the Engineer. In-Charge. These reports as well as test certificates shall be submitted as part of completion certificates. Every batch of material supplied should be backed by test certificates for any or all the requirements specified. Results of inspection and tests shall be recorded by the Contractor in the inspection. reports. proforma of which shall be approved by the Engineer. In-Charge. These reports as well as test certificates shall be submitted as part of completion certificates.

9.2.5. Inspection and acceptance of the work shall not relieve the Contractor from any of his responsibilities under this contract.

9.3 Measurement of work:

9.3.1. The Measurement of Insulation work shall be in general as per IS: 14164 -2008, except otherwise specified.

9.3.2. Insulation over Tanks/Columns/heat Exchangers and Equipment's.

9.3.2.1 Measurements shall be taken in m2 over finished insulation surfaces in all cases.

9.3.2.2 No deduction shall be made for any area required to be left uninsulated the area of which is equivalent to a circle of 600 mm in diameter or less.

9.3.2.3 Dished ends of vessels shall be considered as twice the projected circular area of the dished end for the purpose of measurement.

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9.4 Insulation over Piping

9.4.1 All measurements for piping shall be taken over the finished insulated surface in meters (except for providing aluminum for over SS/alloy steel piping), corrected to nearest centimeters along the center line oi piping, through all fittings, insulated or otherwise such as valves, flanges, elbows, tees and reducers.

9.4.2 If the valves, flanges or other fittings are also insulated then, in addition to the lengths being already covered under piping and dueling insulation as stipulated in 4.9.4.1, extra measurement as prescribed below shall be allowed in linear meter of the connected piping or ducting.

Insulated Fitting-

	For Sheet metal finish	For other finishes
Valve/venturi/steam traps/strainers including flanges and body (up to 300 mm size)	1.50 m	1.40 m
Valve/venturi/steam traps/strainers including flanges and boxy (for sizes larger than 300 mm)	2.00 m	1.90 m
Pair of flanges including orifice plate and flanges Bends and elbows	0.80 m	0.60 m

Bends and elbows	Twice the actual length, as measured along the centre line of the piping or ducting.
Reducer	Actual length of larger size (along) the centre line of piping)
Tees	2 (D1 + D2) where D1 & D2 are insulated diameters of the two pipelines forming the tee

NOTE : Measurements of all valves, flanges and other fittings shall be based on actual count and then converted into equivalent lengths of connected piping, to arrive at the total equivalent lengths of piping or ducting of various diameter. Fittings that connect two or more different sizes of piping/ducting shall be counted as part of the larger size.

9.4.3 Steam traced and non-steam traced pipelines shall be normally specified and measured separately. Steam traced pipelines with single or multiple traces shall also be normally specified and measured separately, according to the number of tracers.

9.4.4 For steam traced pipe lines, which are specified and measured separately, only the Dia of the main pipeline(s) shall be reckoned for measurement of insulation. No separate measurement shall be made for insulation of the steam-traced line(s) which shall be deemed to have been covered under the insulation or main pipe line.

9.4.5 In case of any special treatment to steam traced pipe lines. Other than wrapping with wire netting and/or lacing with All black annealed wire, to be carried out, such as application of special heat conducting compounds or wrapping with aluminum foil, such special treatment shall be measured separately.

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9.4.6 For application of aluminum· foil over SS piping and equipment prior to application of Insulation. the measurement shall be taken over finished aluminum foiled surface on overall area-basis.

9.5 Insulation of instruments shall he measured separately and the length covered by such instruments which are not axial with the pipeline shall not be considered in the measurement or the concerned piping insulation.

9.6 Inspection plugs, if any provided. in the insulated on of pipeline or any equipment shall be measured separately on number basis and no deduction shall be made on this account from the overall measurement of insulation of concerned equipment or pipeline. Measurement for removal of hot/cold insulation shall be on actual area basis without any addition.

9.8 The mode of measurement for insulation work for piping above 20" Dia shall be on overall area basis based on actual measurement on finished insulated surface, without addition of extra measurement in lieu of any fittings such as valves. Gauges. tees, etc. This shall also be applicable to all sizes and shapes of insulated ducts.

9.9 Guarantee

Contractor shall guarantee for the quality of Insulation material and other ancillary and weather protection material. Contractor shall also guarantee for the service and workmanship of application of insulation.

10. Contractor's Obligations

Definition

For the purpose of this specification the contractor shall refer to the insulation specification selected by the Client/Consultant to supply and fix the Plant insulation.

10.1 The Contractor shall work in accordance with this specification, the Consultant's Insulation Purchase Specification (inquiry and/or order) and the Consultant's site regulations (sent with the insulation contract order) and any client's site rules as may be applicable.

10.2 The contractor shall provide all materials. tools. site accommodation, transport service and supervision necessary for the satisfactory completion of the insulation contract.

10.3 The contractor shall provide storage sheds to protect materials from the weather.

10.4 Special treatment coatings etc. shall be applied strictly in accordance with the procedure laid . down herein, and with the manufacturer's (supplier's) instructions. Where manufacturer's instructions conflict with this specification, the customer shall take precedence .

10.5 The contractor shall remove all oil grease. loose scales and dirt from surfaces to be insulated and shall ensure that all surfaces requiring insulation are clean and thoroughly dry before applying any insulation .

10.6 The contractor shall cover all openings in vessels. towers and any other equipment to prevent the entry of insulating materials and shall daily remove from job site all cartons. Wrappers and other debris.

10.7 Each day's application of insulation is to be weather-proofed over night by either the final protective coating or some form of temporary weather-proof covering .

10.8 Before starting site work the contractor and the Consultant's site supervisor shall agree to a detailed pro gramme of work. Before the application of insulation. The contractor shall check with the consultant's site supervisor that the equipment or pipeline to be insulated is available. i.e. all testing is completed.

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10.9 Insulation of all flanges, . valves etc. where required shall be left off until authorization is given by the Consultant's site supervisor to carry out this work. In general, this will be done after lines or equipment have reached operating conditions and all joints have been proven tight.

10.10 The contractor shall provide facilities to ensure that the materials can also be fitted under bad weather conditions. Prior to fitting the finishing material. The contractor shall remove and replace any wet insulation material.

10.11 Contractor shall specify make and type of all insulation sealing and coating materials to be used.

10.12 No insulating or ancillary material shall be used beyond its recommended temperature usage range.

(5) SCOPE OF WORK FOR CARRYING COLD INSULATION

5.1.1 Scope:

This specification describes the materials to be applied and the method of application for the external insulation of cold pipework end fittings, vessels, tanks, exchanges and other equipment for the maintenance of operating temperature against of influx of heat and for anti-condensation.

In case of conflict between the specification and the equipment data sheet/pipe list, the latter shall govern

5.1.2 Limits:

- Low temperature insulation shall be applied to all surfaces operating below 23°C (73°F), unless for process reasons it is undesirable to do so. Such cases shall be specified separately.
- Skirts, legs or support of insulated vessels shall be insulated internally and externally, for a distance equal to four times the main shell insulation thickness or 12” (300mm) from the vessel tangent line, whichever is the greater.
- Temperature used for the selection of insulation thickness shall be the lowest operating temperature.
- All tests on pipes, vessels and other equipment shall be completed before insulation is installed. If insulation is applied before tests have been completed, all welds and threads shall be left exposed until completion of testing.
- Vertical vessels which have a marked decrease in temperature from bottom to top shall be insulated as follows;

  The lower half of the vessels shall be insulated for the bottom service temperature, and the upper half shall be insulated for the vessels overall average temperature.

  The word "fittings" as used in this specification shall refer to Bends, Tees, Caps, Reducers, Level gauges, Level Controllers, and Level Alarm Bodies etc....

5.1.3 Contractors Obligations:

The Contractor shall work in accordance with this specification, site regulations (sent with the insulation Contract or order), and any client's site rules as may be applicable.

The Contractor shall provide all materials, tools, site accommodation, transport services and supervision necessary for the satisfactory completion of the Insulation contract.

The contractor shall provide storage sheds to protect materials from the weather.

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Pre-treatment coatings to metal surfaces, adhesives and outer vapor sealings etc. shall be applied strictly in accordance with the procedure laid herein and with the manufacturer's (suppliers) instructions. Where the Manufacturer's instructions conflict with this Specifications the former shall take precedence.

The Contractor shall remove all oil, grease, loose scale and dirt from surfaces to be insulated and shall ensure that all surfaces requiring insulation are thoroughly dry before application.

The Contractor shall cover all openings in vessels, towers and any other equipment to prevent the entry of insulating material , and shall daily remove from the site all cartons, wrappers and other debris.

Each day's application of insulation is to be weatherproofed over-night by either the final protective coating or some form of temporary weather-proof covering.

Before starting site work the Contractor shall agree to a detailed program of work Before the application on insulation the Contractor shall check that the equipment, pipeline to be insulated is available, i.e. all testing, painting etc.... is completed.

Insulation of all flanges, valves etc..., where required, shall be left off until authorization is given by the EIC to carry out this work. In general this will be done after testing and all joints have been proved tight.

5.2 Materials

5.2.1 Basic Insulating Materials

The following basic insulating material shall be used,

5.2.1.1 Glass Wool (or Mineral Wool) shall consist of long fibers of high tensile strength that will not settle under vibration and shall be chemically inert, non-hygroscopic and also rot, fungus and vermin proof. It shall not promote corrosion when in contact with iron steel or non-ferrous metals and shall not be affected by acidic and sea atmospheric conditions. Glass wool or mineral wool shall be resin bonded.

5.2.1.2 The thermal conductivity of Glass wool (or Mineral wool} shall not exceed 0.23 Btu ln./ft2hr at a mean temperature of 32°F (0.0285KCal/m.hr. °C at 0°c).

5.2.1.3. The density of resin bonded glass wool shall be not less than 2lb/ft3 (32 kg/M3) and that of resin bonded mineral wool shall not be less than 4lb/ft.3 (64 kg/M3).

5.2.1.4. Thermocole/Polystyrene shall be made of foamed polystyrene with smooth surface. It shall be of uniform section, rot and fungus proof and self extinguishing in the event of fire. The thermocole shall not be effected by sudden changes in temperature. The thickness of preformed sections shall be accurate within + 1/8" (3mm)- 1/16" (1.6 mm) and the edges shall be square, and the whole properly formed to fit snug without the necessity of filling joints. The alkalinity shall be neutral.

5.2.1.5 . The thermal conductivity of —Thermocole" shall not exceed 0.24 Btu in/ft2 hr..°F at a mean temperature of 32°F (0.03 Kcal/m.hr. °C at 0°C).

5.2.1.6. The density shall be in the range of 1.25lb/ft3 (15 Kg/M3') and 2 lb./ft3 (16 Kg/M3).

5.2.1.7 The compressive strength shall be in the range of 0.7 kg/cm2 and 1.0 Kg/cm2,

5.2.1.8 The water absorption shall not exceed 2% by volume after 24 hours.

B.5.2 Finishing Materials:

B.5.2.1 Metal Cladding where required for mechanical protection shall consist of following Aluminum sheets to IS737 Grade NS3-1/2H in the following range:

Type 1 - Shall be 24 SWG. (0.56mm) thick

Type 2 - Shall be 22 SWG. (0.71mm) thick

Type 3 - Shall be 20 S.W.G. (0.91mm) thick

B5.2.2 Vapor Sealing Compound - depending on the job requirements shall be of Fire Resistant Grade or normal grade of trowelling consistency. A selection of suitable please refer Appendix 1 of this specification.

B.5.2.3 Fixing Materials

B.5.2.3.1 Adhesives used for bonding insulation sections together or to metal surfaces shall NOT contain Ketone or Methylated Hydrocarbon Solvents and shall be suitable for use at the specified service temperatures, and shall be selected from the list given in Appendix 2 of this specification.

B.5.2.3.2. 'Fixing Bands for insulation (where specified and metal cladding shall be as follows:(As per IS 737 Grade SIB and secured by the appropriate aluminum seals.

a) 3/8" (9.5mm) wide x 24 swg , or equal Aluminum strip.,

b) 1/2" (12.7mm) wide x 24 swg or equal Aluminum strip

c) 3/4" (19mm) wide x 24 swg or equal Aluminum strip

d) 1" (25.4mm) wide x24swg or equal Aluminum strip

B5.2.3.3 Tie wire shall be galvanized, annealed iron,16swg(1.63mm) and 12swg(2.64mm)as specified.

B.5.2.3.4 Self Tapping Screws shall NOT be used.

B.5.2.3.5 Adhesive Tape shall be 3" (75mm) wide —DENSO Tape or equal.

B.5.2.3.6 Scrim Cloth shall be used between each layer of Vapor sealing compound and shall be evenly woven

glass cloth with an open mesh pattern. The specification shall be as follows.

- Warp : 20 per inch
- Waft : 20 per inch
- Yarn count : 22 ½ warp, ½ waft

B.5.2.3.7 Contraction joint compound shall be Foster's Foam seal 30-45 or equal.

*B.5.2.3.*8 Cushioning Blanket- When specified for certain vessels shall be 1" (25mm) thick 7 .5lb/ft3 (120kg/cm2) density mineral wool blanket on one side by 20SWG x1" mesh GI wire netting. Cushioning material should not be.considered as part ot the specified· insulation thickness. Where used, the blanket shall be draped to the vessel surface and held loosely in place with a minimum amount of 12 SWG "Tie wires".

5.3 Classification- General Piping:

5.3.1 Basic Types

The following Basic type of insulation shall be used.

TYPE —"D" - Preformed pipe sections or radiused and beveled lags and slabs of resin bonded glass wool coated with two layers of vapor sealing compound and finished with metal cladding.

TYPE —"E" - Preformed pipe section or radiused and beveled lagsand slabs of Thermocole / Polystyrene coated with two layers of vapor sealing compound and finished with metal cladding.

5.3.2 Insulation Form

5.3.2.1 Preformed pipe sections shall be used as far as possible for insulation layers less than 3" (75mm) having nominal inside diameter 23" (575mm) and below.

5.3.2.2. Where pipe sections of a specified thickness are not available, the nearest available pipe section shall be bs for outer layer.

5.3.2.3 Radiused and beveled lags shall be used for all circular sections where 5.6.2.1 does not apply.

5.3.2.4 Flat slab insulation shall be used for all rectangular or square section ducting.

5.3.2.5 No insulation piece shall exceed 36" (1M) in length

5.4 APPLICATION AND FINISH -PIPE WORK

- Wire brush the surface to remove rust and thoroughly clean tbe surface to remove all oil, loose scale and dirt and dry the surface throughly before application.
- On the clean and dry surface apply one coat of Shalimar Tankmastic primer or equivalent. Apply one coat of hot bitumen R85/25 or equivalent The thickness of insulation given in Table I & II are for guidance only. The number of layers of insulation applied shall be as tabulated in Table III.
- Fix the insulation (preformed pipe sections) of required thickness against each dia. of pipe.In case the sections with required thickness are not available, sections to the nearest thickness Will be fixed and further thickness built up by radiused and bevelled slabs.

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- The adhesive specified shall be applied on longitudinal and circumferential edges of the section.
- Where insulation is applied in multilayers, the first layer shall be treated as above.Subsequent layers shall have the inner surface circumferential and longitudinal edges coated with Adhesive before application.
- Insulation sections shall be fitted close avoiding gaps and joints staggered as far as practicable so that complete breaks are reduced to a minimum.
- Contraction joints shall be provided on long straight runs of piping at approxima tely 40 teet (12M) intervals. Joint shall be packed with Fibre glass and adequately sealed with contraction joint compound.
- Insulation support rings shall be provided by the Contractor at 12 feet (:3.66M) intervals on long vertical lines, or on lines inclined more than 45° from the horizontal axis and more than 12 feet (3.66m) in length.
- Insulation shall be carefully fitted at bends to conform as far as practicable to profile , care being taken to ensure tightly jointed work. All voids shall be fitted with fibre glass and joints pointed with jointing compound.
- Where 'Fixing Bands' are used to fix the insulation to pipework the following shall apply;

(a) No.1 Band and seals at 18”(450mm)pitch up to 12 —(300mm)OD insulation layer.
(b) No.2 Band and seals at 18” (450mm) pitch over 12”(300mm) and up to 18” (450mm) OD insulation.
(c) No.3 Band and seals at 12”(300mm) pitch over 18”(450mm)and up to 30”(750mm) OD insulation.
(d) No.4 Band and seals at 12” (300mm) pitch over 30”(750mm) OD insulation layer.

- The entire outer surface of the insulation shall receive one coat -of 'Vapour Sealing Compound' to a thickness of 1/16 in.(1.6mm) and while the surtace is still wet, 'scrim cloth' shall be embedded into the surface, care to be taken to avoid wrinkles.'Scrim Cloth' shall be overlapped to a minimum of 2inch (50mm).A final coat of 'Vapour sealing Compound' shall be applied to a thickness ot 1/8 in. (3mm)

Mechanical Protection (pipe work)

Where it is required to protect the outer 'Vapor Seal’ on pipework from damage, Metal Cladding shall be used in accordance. With the following procedure .

a) Type 1 metal cladding shall be used for pipes having a diameter over insulation of less than 12 in. (300mm).
b) Type 2 metal cladding shall be used for pipes having a diameter over insulation equal to or greater than 12 in (300mm).

The metal cladding ehall be applied over the 'vapour Seal' such that all points are lapped not than 1”(25mm),on piping upto and including 11/2” (38mm) nominal bore,and 3”(75mm) on all other piping. Laps shall be arranged to shed rainwater. Metal cladding shall be banded as mentioned above. NO SCREWS SHALL BE USED.

On bends, the metal cladding shall be of interlocking, self-supporting sections. NO SCREWS SHALL BE USED. Metal cladding shall be secured as follows.

(a) No.2 Band and seals at 18”(450mm)pitch upto 12 —(300mm)OD insulation layer.
(b) No.3 Band and seals at 18” (450mm) pitch over 12”(300mm) and upto 18” (450mm) OD insulation.
(c) No.3 Band and seals at 12”(300mm) pitch over 18”(450mm)and upto 30”(750mm) OD insulation.
(d) No.4 Band and seals at 12” (300mm) pitch over 30”(750mm) OD insulation layer.

One band shall coincide with each circumferential lap.

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Pipe fittings and Special pipework.

Flanges and Valves.

All valves, flanges and pipe fittinga shall be insulated. Valves shall be insulated to the packing gland.

Insulation at flanges, valves etc. shallbe built up,as far as possible, with flat slabs leaving sufficient space for the removal of bolts,studs or·other fictures.Voids or gaps are to be filled with chopped insulation to the same specification of the basic insulating material.

Where insulation.is to be removable. Adjoining layers of insulation shall be coated with grease where breaks are to occur.

The whole of the insulation outer ·surface shall receive the surface finish specified insuring that valve stems etc... are adequetly sealed against rain water.

Pipe Hangers and Supports:

Insulation shall be continuous at all points of support. In general, pipe hangers and supports shall be attached to the outside of the insulation which shall be reinforced with metal cradles to prevent crushing of the insulating material. Where insulating material come in contact with the pipe,insulation shall be applied around the support for a distance equal to four times the pipe insulation thickness. Where pipe supports cannot be carried on the outside of the insulation, a cold break in the form of wooden blocks coated with hot bitumen shall be used and insulation shall be applied to the support for a distance equal to four times the pipe insulation thickness.

5.5 CLASSIFICATION OF EQUIPMENT

The following basic type of insulation will be used;

- TYPE —E" -Radiused and bevelled lags, bevelled lags or flat slabs of Resin bonded glasswool coated with two layers of vapour sealing compound and finished with metal cladding.
- TYPE —F" - Radiused and bevelled lags, bevelled lags or flat slabs of Thermocole/ polystyrene coated with two layers of vapur sealing compound and finished with metal cladding.

  Standard pipe sections may be used where diameter permits.

Insulation Form

- Radiused and bevelled lags shall be used on cylindrical items upto 6'- 0"(1.83M)diameter where the insulation thickness exceeds 1 ½ inch (38mm).
- Bevelled lags shall be used on cylindrical items upto 6'-0" (1.83M) diameter with insulation thickness upto 1 1/2"(38mm) and on all thicknesses on items over 6'-0" and upto 16'-0"(4.88M) diameter.
- Flat slabs shall only be used where specified and for flat surfaces and cylindrical items over 16'-0"(4.88M) diameter, unless special permission to the contrary is obtained in writing.
- No piece of insulation shall exceed 36"(1.0M) in length.

5.6 APPLICATION AND FINISH- EQUIPMENTS

Columns, Vessels, Tanks & Exchangers:

Wire brush the surface to remove rust and thoroughly clean tbe surface to remove all oil, loose scale and dirt and dry the surface thoroughly before application.

On the clean and dry surface apply one coat of Shalimar Tankmastic primer or equivalent. Apply one coat of hot bitumen R85/25 or equivalent.

The thickness of insulation given in Table I & II are for guidance only. The number of layers of insulation applied shall be as tabulated in Table III.

The thickness or insulation tabulated in tables 1 & II are for guidance only. The number of layers of insulation applied shall be as tabulated in table III .

For single layer insulation, the ends and butt edges of sections shall have a trowel coat of Adhesive. Insulation shall be securely banded with No.2 fixing bands and seals at approximately 12" (300mm) centers at least 1"(25mm) back from the butted joints.

For multi-layer insulation the first layer shall be. Erected as mentioned above. The subsequent layers ot insulation shall have a trowel coat of Adhesive applied to the erection surface and to the ends and butting sides. Each layer of insulation shall be banded with No.3 fixing bands and seals at approximately 12"(300 mm) centers at least 1 in (25mm) back from the butted joints. All joints shall be staggered and shall be cut and squared so that all voids are eliminated.

Vessel and exchanger flanges, manhole covers, and all appurtenances shall be insulated. All attachments to the vessel or exchangers such as skirts, supports, ladder and platform clips etc., shall be covered with insulation for a distance of four times the basic insulation thickness, with the outer vapor seal continuing and sealing to the metal. insulation shall be installed around manholes, exchangers, channels and shall covers so as to allow. Removal & re-use without to the insulation or the adjacent insulation.

At ir regular shapes where banding may be impracticable, —Tie wire‖, 12SWG as applicable may be used.

The entire outer surface of insulation shall receive one coat ot 'Vapour Sealing Compound' to' a thickness ot 1/16‖(1.6mm) and while the surface is still wet 'Scrim Cloth' shall ·be embedded into the surface, care to be taken to avoid wrinkles.'l'he scrim Cloth shall be overlapped to aluminum 2‖ (50mm) A final coat ot .vapour Sealing shall be applied to a thickness of 1/8‖(3mm).

Insulation shall be supported on lagging rings where provided.

Where equipment is supported by local steel work or on concrete, a cold break in the form of wooden blocks coated with hot bitumen shall be supplied between the equipment support and the supporting structure.

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Where circumferential expansion of cold vessels in the event ot. steaming out or other similar processes is anticipated, a cushioning blanket of fibreglass shall be draped to the vessel surface and the basic insulating material applied over the blanket. · .

Mechanical Protection -Equipment

In general, unless otherwise specified herein, insulation shall be encased in Metal Cladding applied directly over the vapor seal and held in position by No.4 bands and seals spaced at 18‖(450mm) centers.

The following types ot Metal Cladding shall be used:

- For Vertical Units Type 2
- For Horizontal units Type 3
- All metal cladding laps shall be 3‖ (75mm) and arranged to shed rain water
- Unexposed vessel heads i.e. bottom heads of vessel protected by skirts, shall be finished with a vapor seal only.
- Spheres shall not be metal clad. Finish shall be Vapor seal only.

Projections from Vessel, Columns etc..

- Projections from Vessels, Columns etc., such as for local platforms and walkways, shall be for general application, insulated along the projections to a distance to four times the applied thickness of insulation on the unit.
- Where the applied thickness on the unit is such that it would be impractical to insulate the projection to a distance of four times the applied thickness, a cold break in the form of 1/4”(6mm) thick compressed asbestos or equal shall be provided between the supporting structure and the unit lugs and 1/8”(3mm) thick insulating washers between the bolts and unit lugs. The use ot this procedure shall be clearly specified for individual items and shall be kept to a minimum because of the possibilities of localized icing occurring at the insulation break .
- For condition where the heat gain may be considered critical , platforms or walkways on projecting structures shall be provided with a cold break in the form of wooden blocks coated with hot bitumen, the projection being insulated as mentioned above.

Pumps and Compressors:

- In general, pumps and compressors or other irregularly shaped equipment shall be enclosed in block insulation, fabricated to suit the shape with voids filled with fiberglass
- Insulation on pumps and compressors shall be finished with Vapour Sealing Compound and have sheet metal cover formed to suit.

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TABLE I

ANTI-CONDENSATION

INSULATION THICKNESS (MM) Vs COLD FACE TEMPERATURE °C

C.F.Temp °C Pipe N.B.	+23 to +18	+17 to +11	+10 to +3	+2 to -3	-4 to -9	-10 to -15	-16 to -21	-22 to -27	-28 to -33
15	25	25	25	40	40	50	50	65	65
20	25	25	40	40	50	50	65	65	65
25	25	25	40	40	50	50	65	65	65
40	25	40	40	50	50	50	65	65	80
50	25	40	40	50	50	50	65	80	80
80	25	40	40	50	50	65	65	80	80
100	25	40	40	50	50	65	80	80	80
150	25	40	40	50	65	65	80	80	90
200	25	40	40	50	65	80	80	90	90
250	25	40	50	50	65	80	80	90	90
300	25	40	50	50	65	80	80	90	90
350	25	40	50	50	65	80	90	90	90
400	25	40	50	50	65	80	90	90	100
450	25	40	50	65	80	80	90	90	100
500	25	40	50	65	80	80	90	100	100
FLAT SURFACE	40	50	50	65	80	90	100	100	100

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TABLE II

COLD CONSERVATION

INSULATION THICKNESS (MM) Vs COLD FACE TEMPERATURE °C

C.F.Temp °C Pipe N.B.	+23 to +18	+17 to +11	+10 to +3	+2 to -3	-4 to -9	-10 to -15	-16 to -21	-22 to -27	-28 to -33
15	25	25	40	40	50	65	65	65	80
20	25	25	40	40	50	65	65	65	80
25	25	25	40	40	50	65	65	65	80
40	25	40	50	50	50	65	65	80	90
50	25	40	50	50	65	65	80	80	90
80	40	40	50	50	65	65	80	80	90
100	40	40	50	65	80	80	90	90	90
150	40	40	50	65	80	80	90	90	100
200	40	40	50	65	80	80	90	100	100
250	40	50	65	65	80	90	90	100	115
300	50	50	65	65	80	90	100	115	115
350	50	50	65	65	80	90	100	115	125
400	50	50	65	80	90	100	115	125	125
450	50	50	65	80	90	100	115	125	140
500	50	65	80	80	90	100	115	125	140
FLAT SURFACE	65	65	80	80	90	100	125	140	150

NOTES:

1. Thickness is insulation only and excludes any finishing material.
2. The range of temperatures given shall not be taken as implying that such temperatures will prevail in the plant.
3. Thickness given is based on an ambient temperature of 31°C(88°F), RH 85%,and may be varied to suit conditions and /or process conditions , where necessary

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TABLE III
THICKNESS SCHEDULE

Insulation to 65mm thickness shall be in single layer.

Insulation in excess of 65mm thickness shall be in multi layer construction in accordance with the following table.

Total Thickness (mm)	Nos of Layers	Inner Layer (mm)	Second layer (mm)	Outer layer (mm)
80	2	40	-	40
90	2	40	-	50
100	2	50	-	50
115	2	50	-	65
125	2	50	-	75
140	3	40	50	50
150	3	50	50	50
165	3	50	50	65
175	3	50	50	75
190	3	50	65	75
200	3	50	70	75

APPENDIX 1
VAPOUR SEALING COMPOUNDS

Supplier	Product reference	Type of Insulation to be used with	Type & Description of Product	Service Temperature Limits
AGROMORE LIMITED	Foster's C.I.Mastic 60-25	Glasswool;Expanded Polystyrene	Normal asphalt mastic	-29°C
SHALIMAR TAR PRODUCTS	Shalikote 12	Glasswool;Expanded Polystyrene	Bitumen Emulsion	As specified by manufacturer.
BURMAH-SHELL BITUMEN DEPT	R85/25	Glasswool;Expanded Polystyrene	Industrial Bitumen (Blown grade)	As specified by manufacturer.
LLOYD BITUMEN	Insulkote	Glasswool;Expanded Polystyrene	Bitumen Emulsion.	As specified by manufacturer.

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APPENDIX 2

ADHESIVES

Supplier	Product reference	Type of Insulation to be used with	Type & Description of Product	Service Temperature Limits
AGROMORE LIMITED	Koldfas Adhesive 82-08	Glasswool;Expanded Polystyrene	Quick setting water based rubber bitumen	-46°C to -77°C
SHALIMAR TAR PRODUCTS	C.P.R.X Compound	Glasswool;Expanded Polystyrene	Rubberised bituminous adhesive	As specified by manufacturer.
BURMAH-SHELL BITUMEN DEPT	R 85/25	Glasswool;Expanded Polystyrene	Industrial Bitumen (Blown grade)	As specified by manufacturer.
LLOYD BITUMEN	Thermoband - 741	Glasswool;Expanded Polystyrene	Rubberised bituminous adhesive	As specified by manufacturer.

NOTE:
The range of vapors sealing compounds and Adhesives given are for guidance and shall not be taken as implying that only the above named proprietory materials shall be used exclusively.

(6) DIVISION OF RESPONSIBILITY

6.1 Under Contractor/Tenderers scope -

a. Accommodation to workmen
b. Accommodation to Contractor/Tenderer staff
c. Vehicle for transportation of workmen
d. Vehicle for transportation of Contractor/Tenderer material within site
e. Vehicle for transportation of FIM within site
f. Mobile lifting equipment for loading / unloading / shifting of Contractor/Tenderer material within site.
g. Mobile lifting equipment for loading / unloading / shifting FIM material within site.
h. Contractor/Tenderer office
i. Safety tapes
j. Display boards
k. Material lifting equipment like chain pulleys, etc.
l. PPE for workmen and staff
m. Welding Machine
n. All welding accessories
o. All cutting machines, accessories.
p. All gases
q. All welding consumables for CS, LTCS, NACE specifications

6.2 Under DFPCL Scope

1.Space for Contractor/Tenderer office inside DFPCL premises subject to availability.
2.Erection equipment's like cranes, faranha, bobcat, forklift etc for erection / dismantling activities at field

3.Telephone facility on chargeable basis (if available)
4. Issue of all FIM. Space for Contractor/Tenderer office inside DFPCL premises subject to availability.

6.3 As per SOR – Schedule of Rates

a. Scaffolding pipes
b. Scaffolding clamps
c. Scaffolding jallies, planks, toe guards, ladders, etc
d. Electrodes, filler wires for alloy steel
e. Electrodes, filler wires for all SS and special metals

(7) SAFETY

a. The Contractor/Tenderer shall follow safety rules & regulations, safety procedures as per the safety standards and comply with the safety requirements.

b. The Contractor/Tenderer shall deploy at site a full-time safety in-charge and full-time safety officers with requisite qualification, experience and training. The safety in-charge shall be a senior person.

c. The Contractor/Tenderer shall submit an organization chart of its department to the EIC and shall obtain EIC' approval. The Contractor/Tenderer shall mobilize and always ensure availability of personnel as per approved site safety organization during execution of work under this contract.

d. The Contractor/Tenderer is required to deploy persons for specific jobs who are trained and skilled in particular trade and well familiar with hazards and safety precautions.

e. The site staff and workers of the Contractor/Tenderers are required to undergo safety orientation before they are assigned work at site. No person shall be allowed at work site without safety orientation. Contractor/Tenderer shall make hazard identification and risk assessment of job and accordingly will be using skilled manpower with appropriate safe job procedure and personnel protective equipment's. Job supervision is compulsory.

f. The Contractor/Tenderer shall plan and execute work in such a way to avoid accidents / injuries to its-own staff and workers, other workers, company employees, damage to company property and damage to environment.

g. Adequate resources must be made available by the Contractor/Tenderer for safe execution of work at site. Short cut methods or make-shift arrangement will not be allowed.

h. The Contractor/Tenderer shall ensure that any time during the performance of the work his personnel are fit to execute the tasks assigned and are not under the influence of any alcoholic liquor, drug or other intoxicating substances.

i. The Contractor/Tenderer shall make himself and all staff/workers familiar with emergency procedure and response action to respond rightly in the event of any emergency due to fire/gas leak, etc. in the operating plants at site.

j. Contractor/Tenderer shall ensure that all its staff and workmen are aware of the site-specific safety guidelines wherever applicable and shall ensure that the same is followed.

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k. It is the responsibility of the Contractor/Tenderer to ensure good housekeeping at work site. The scrap debris, unwanted material etc. shall be removed frequently from the workplace to avoid accident and work area shall be kept tidy. Gangways shall be kept clear of obstructions. Contractor/Tenderer shall deploy dedicated personnel for housekeeping.

(8) Personal Protective Equipment (PPE)

The Contractor/Tenderer shall provide personal protective equipment as specified to its staff and workmen such as, safety helmets, safety shoes, safety goggles, ear plugs, hand gloves, safety harness / belts, overalls, gum boots etc. and other work equipment as required for safe execution of work at his cost. Special PPEs/ safety appliances, if required for any job as mentioned below job may be provided by the company on chargeable / returnable basis (cost of repair or damage as a result of mishandling will be charged from the Contractor/Tenderer). All the safety equipment's should meet the specifications prescribed/approved by S.H.E. department of the respective sites.

8.1 Activity/Hazard and Recommended PPE

1) Nontoxic dust nuisance---Dust mask, Panoramic goggles, Hand gloves PVC/ Rubber
2) Toxic & Corrosive liquids/gases --Face shield, PVC Apron, PVC suit with hood, Positive Pressure suit , Panoramic Goggles, Gum Boots, SCBA sets, Airline mask set, Cartridge type Mask,
3) Working at height --Full body Safety Harness / Belt with two lifelines, Canvas hand gloves, Leather Palm canvas hand gloves,
4) Material Handling --Leather hand gloves, Aluminized hand gloves, Aluminized suit with hood, Asbestos/Leather apron, Spectacle type toughened glass,
5) Grinding/Chipping --Goggles, Panoramic goggles

8.2 Responsibility of provision of PPE

Under Contractor/Tenderer Scope.
Dust mask, Safety helmets, Boiler suit, safety shoes , Panoramic goggles , Hand gloves PVC/ Rubber , Face shield, PVC Apron, Panoramic Goggles, Gum Boots, Full body Safety Harness / Belt with two lifelines, Canvas hand gloves, Leather Palm canvas hand gloves, Leather hand gloves, Asbestos/Leather apron, Spectacle type toughened glass.

Under DFPCL Scope on returnable basis-

PVC suit with hood,
Positive Pressure suit, SCBA sets,
Airline mask set, Cartridge type Mask, Aluminized hand gloves, Aluminized suit with hood,
In case returnable PPEs are not received back/received in damage condition beyond normal wear & tear, cost of PPE shall be deducted from the bills of Contractor/Tenderer concerned.

8.3 Specifications for Contractor/Tenderer provided PPE.

The personal protective equipment shall be of standard make and preferably should have ISI mark or other certificate of approval from recognized institution/organization and ensure that are maintained in good condition and worn by workers as per the requirement.

Safety Helmet: Moulded out of high impact, heat & chemical resistant HDPE with brim for additional side protection with 6-point ergonomic adjustable head band & chin strap and approved as per BIS specification no. IS: 2925-1984

Safety Goggles: Toughened/ Polycarbonate scratch resistant lens with side shield, optically correct zero power, impact resistant and approved as per BIS specification no. IS: 7524 Part-I.

Safety Harness with double lifeline: Waist belt with shoulder strap, 6mm thick coated friction buckle& joint less D-ring, 44 mm wide nylon webbing, padded back, nylon stitched along with copper rivets for additional safety," quick fit" spring loaded hook and approved as per BIS specification no. IS: 3521.

Safety Shoes: High ankle shoes, made from fine quality plain black leather, padded collar, D-rings, full below attached tongue, with steel toe cap as per IS 5852 with direct injection PVC Nitrile heel sole resistant to acid, alkali, oil.

8.4 Guidelines for Personal Protective Equipment

Safety Harness / Belt: Full body safety harness / safety belts with two lifelines shall be provided for all jobs at heights. No persons will work at height without fall arrest device / safety belt with two lifelines except where standard scaffolds/work platforms are erected with proper handrails/ toe guards for fall protection.

Safety Goggles: Appropriate eye protection shall be used by the persons according to nature of hazard. The Contractor/Tenderer has to ensure that safety goggles/face shields are provided to workers.

Ear Plugs: Persons engaged in jobs near high level of noise (85 db or more) shall be provided with ear plugs / earmuffs.

Hand Gloves: All workmen / supervisors shall be provided with and use work gloves (cotton hand gloves) to avoid minor hand injuries. Other types of hand gloves specific to hazards will be used by workmen / supervisors.

Scaffolding: The Contractor/Tenderer is required to use standard scaffolding and temporary work platforms for jobs at elevations 2 meter or more. Unsafe work methods shall not be allowed. All temporary work platforms shall have guard rails/toe guards with proper means for access.

Electrical Equipment: All the electrical equipment shall be in good working condition. The electrical circuits shall be used with ELCB. Electrical circuits/ extensions boards used for hand tools shall have ELCB of 30 mA rating. Power supply cables with joints shall not be used at site.

Safety Guards: All moving parts like fly wheels, toothed gears, belt drives shall be provided with proper guards. No equipment/ machine with exposed moving parts shall be used at site.

Lifting Equipment: All lifting equipment, chain blocks, tools, tackles, cranes, etc shall have valid certification from a competent authority and shall be maintained in good working condition.

Fire Extinguishers: Contractor/Tenderer shall make adequate provision and provide fire extinguishers at certain locations e.g. stores containing combustible materials, solvents, paints, fuel storage, gas cylinder storage etc.

Gas Cylinders: Gas cylinders trolleys shall be used for safe handling gas cylinders at site. The Contractor/Tenderer must have adequate trolleys to handle gas cylinders.

8.5 Safety Organization Of Vendor:

The contractor shall be fully responsible for supervision of its personnel to ensure that they strictly adhere to all applicable safety fire requirements.

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The contractor shall appoint one of its personnel on the work site as a Safety officer with the approval from the plant . Contractor shall employ skilled, experienced, trained and dedicated safety personnel as per below details:

Those employing 20 to 100 employees - One Safety Officer

Those employing 101 & more employees - Additional safety officers/ 100 employees.

Ensuring barricading in the area while work is in progress by contractor Proper segregation of the insulation waste/material and timely disposal

If Space/shed provided to them – Prime responsibility and accountability of contractor to ensure it neat and tidy and no unsafe conditions at any time.

Quality PPEs provision – ISI - marked safety Shoes, ISI - marked Yellow Safety Helmets only, EN166 marked Safety Goggles, ISI marked dust masks, ISI marked Safety harness with double lifeline and with shock absorber, Coveralls

Contract safety officer shall conduct training for all contract employees as per guideline given by DFPCL safety dept. The contractor's owner / line manager in charge on site shall be responsible for formation of the organization and coordination the contractor's Safety activities. This organization shall take the responsibility of all safety related activities with respect to their jobs.

Recruitment, Training of contractor's Personnel-

The contractor shall at his own expense ensure that all its personnel and sub-contractor's personnel have been given the necessary safety, job-related training required by DFPCL regulations and will provide proof to the effect. The contractor's personnel shall participate in any additional training, which may be provided by DFPCL. Access to work site by the contractor's personnel shall be denied if not complying with the rules and regulations at site.

8.6 Minimum Entry qualification for contract Personnel

Contractor shall employ only those personnel who are trained in their trade or otherwise having sufficient working experience to ensure their and others safety while on the work.

Contractor shall employ only those personnel who at least can speak & read

Marathi, Hindi or English . Contractor shall maintain up to date record of qualification and experience of his personnel and produce it to concerned DFPCL authorities in advance.

Safety meetings -The contractor shall be responsible for maintaining and enhancing the Safety awareness of the workmen working under him, including sub-contractor. The contractor will inform the DFPCL safety manager of the time and place of safety meetings arranged by him. Copies of minutes / records of contractor's safety committee meetings shall be sent to the DFPCL Safety Department. The contractor and sub-contractor's personnel are to be encouraged to contribute actively to safety meetings and to identify S.H.E. topics for inclusion in the agenda for a safety meeting. Toolbox talk should be conducted before conducting of any maintenance activity. Safety committee meetings conducted by DFPCL should be attended by nominated representative of the contractor and he shall ensure the communication of same for his employees. This scheme is applicable to all contractors working in the complex.

First Aid and Industrial Injuries

Vendor shall maintain first aid facilities for his employees. All industrial injuries (minor & major) shall be reported promptly to Engineer-In-Charge, and a copy of Vendors report covering each personnel injury requiring the attention of a physician shall be furnished to Company.

8.7 Schedule of penalties for safety violations

Use of PPE is mandatory and non-compliance shall be viewed seriously. Punitive actions including financial penalty may be imposed for safety violations

EHS PENALTY MATRIX		
No.	**EHS Offence / Misconduct**	**Penalty Amount**
1.	Failure to wear PPE / Improper use of PPE.	Rs.250 / Incident if PPE is supplied but not worn by the workmen. Rs.1000 / Incident if PPE not provided by the contractor.
2.	Not attending EHS meeting or any other Safety Program or Function.	Rs.200 / Incident
3.	Failure to submit EHS documents (EHS plan, work method statement, Emergency plan, and Risk assessment, JSA, within the stipulated period.	Rs. 500 / Incident
4.	Failure to submit report on incident / accident and near miss within the stipulated time.	Rs. 500 / Incident
5.	Misuse / damage to property / equipment / infrastructure.	Rs.1000 / Incident and in addition contractor to pay for the cost of items repair.
6.	Poor housekeeping and improper stacking of materials at Contractor shed and during & after completion of job in plant.	Rs. 500 / Incident
7.	Use of equipment without Inspection tag or its unauthorized use and alterations.	Rs.1000 / Incident & immediate rectifications
8.	Use of damaged or uncertified lifting tools and Tackles.	Rs.1000 / Incident & immediate rectifications
9.	Unsafe Act / Condition	Rs.500 / Incident & immediate rectification.
10.	Failure to provide for and use unsafe working platforms, means of access to the work place, where work is required to be carried out beyond a person's normal reach.	Rs.1000 / Incident & immediate rectifications

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11.	Allowing fall of material from height or throwing materials from height or not barricading dangerous zone on ground or not providing signage to warn.	Rs. 2000 / Incident
12.	Working without work permit Violation of work permit / work instructions	Rs. 2000 / Incident Rs. 1000 / Incident And Immediate rectification
13.	Adopting unsafe tapping / connections / termination of electrical lines or use of defective electrical fittings to be submerged in water or not providing ELCB / RCCB / RCBO	Rs. 2000 / Incident & immediate rectification
14.	Environmental incidence (spillage / Leakage, high noise / unabated dust in work environment)	Rs. 2,000 / Incident and in addition contractor will pay for the cost of cleanup and other incidental expenses.
15.	Failure to dispose of waste as per approved DFPCL / STL practices	Rs. 1,000 / Incident and in addition contractor will pay for the cost of cleanup and other incidental expenses.
16.	Minor incidence / Serious deviation - Repetition of safety rule deviations, use of defective tools / tackles / equipment / PPE, Unsafe act / condition may result into serious injury.	Rs. 10,000 / Incident
17.	Major Incidence - Case of Reportable accident / Fatal Accident.	As decided by STL, depending upon the nature & scope of works.

- Type of violation-Medical treatment injury
  First Time—Verbal warning
  Repetitions-Warning letter
  Frequent Safety violations--Review for delisting

- Type of violation-Lost time accident
  First Time-Warning letter
  Repetitions-Review for DE-listing the contractor from approved list

- Type of violation-Fatal Accident
  First Time-Review for DE-listing the contractor from approved list.

(9) WORKINGHOURS

Normal working time shall be same as the general shift timing of the respective sites. This will be 8 working hours excluding lunch time. However, based on the job requirement during the planned /unplanned shutdown/ emergencies or as per plant requirement and instructions of EIC, Contractor/ Tenderer shall work beyond normal working hours also. No separate / additional compensation shall be payable for the same. (In such cases the Contractor/Tenderer must work as and when required without any percentage increase on SOR.)

(10) MOBILIZATION

Contractor/ Tenderer shall arrange for necessary materials, workmen and supervision to start the work within 48 hours of instruction from EIC. In case of emergency or shutdown, Contractor/Tenderer shall mobilize all required resources and start the work within 24 hours of instruction of EIC.
To & fro transportation of the equipment shall be arranged by Contractor/Tenderer. However mobile crane/tractor, EOT/ HOT facilities, if required for loading /unloading supply of slings and movement of the machine at site shall be

provided by Company, free of charge. However actual activities of loading / unloading, internal shifting of machines shall have to be done by Contractor/Tenderer's manpower.

Contractor/Tenderer shall complete all formalities for its staff & workmen with company's P&A / IR/Contract Cell as required for gate pass and mobilize the manpower as per the requirement of EIC.

Contractor/Tenderer shall interact with S.H.E. department of company for scheduling training program for its total untrained personnel prior to entering complex.

Contractor/Tenderer shall initiate gate pass request to EIC, get it counter signed by P&A/IR/Contract Cell and then submit to security in advance as required to mobilize manpower.

(11) JOB COMPLETION TIME

The total contract duration is as specified in the contract . However For individual works from time to time as and when need arises, separate intimations shall be issued from individual plants/ EIC. Contractor/Tenderer shall ensure mobilization of all required resources and completion of the job including dismantling, etc. as per EIC instructions.

12) MODE OF MEASUREMENT

Mode of Measurement will be guided by & as per instructions given by our EIC / Job Coordinator Measurement need be carried out in presence of EIC. Once Measurement has completed & Contractor/ Tenderer have to get acknowledgement on measurement sheet from EIC/ Job Coordinator. Same Sheet needs to be attached / present at the time of bill submission & Payment.

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Price Bid Format: As per Annexure "A"

Prices to be submitted considering regular jobs And Annual Shutdown jobs as well.

Planned Annual shutdowns will be informed to the Contractor / tenderer 20 days prior.

Note: -There will be no % increase will be given in pricing for Breakdown/ Emergency & Annual Shutdown. For this regular ARC pricing will be applicable.

Scaffolding / Hydra/ Farana / Crane will be provided by DFPCL, Wherever not mentioned in scope as per Annexure -A.

The services of Fabricator, Welder, Rigger, and Helper which are mentioned in this tender shall be used for other services than the specifically mentioned in this tender.

NOTE:-

Another ARC Scope is published on Mahadhan Agritech Limited website - https://mahadhanagritech.com/tender

Both Tenders will be open & Close for same period of time.

Budget is different for both Companies & Tenders are on value basis only.

At the time of price finalization will combine both ARC's & negotiate accordingly.

Annexure A -Consists of Unit Name, Service Code, Short text of Service, Detail description of Service & UOM.

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Details of Job Scope

Sr No	Activity No	Service deatails	Detail Description	UOM
1	1000154	Hot Ins. on pipe size 1/2" x 50 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire, brushes, etc. Providing and fixing LRB mattresses of required, thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
2	1000157	Hot Ins. on pipe size 1/2" x 100 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
3	1000164	Hot Ins. on pipe size 3/4" x 50 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
4	1000174	Hot Ins. on pipe size 1" x 50 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM

The participating company's declaration:

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5	1000176	Hot Ins. on pipe size 1" x 75 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
6	1000177	Hot Ins. on pipe size 1" x 100 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
7	1000184	Hot Ins. on pipe size 1-1/2" x 50 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
8	1000186	Hot Ins. on pipe size 1-1/2" x 75 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM

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9	1000187	Hot Ins. on pipe size 1-1/2" x 100 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
10	1000194	Hot Ins. on pipe size 2" x 50 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
11	1000196	Hot Ins. on pipe size 2" x 75 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
12	1000197	Hot Ins. on pipe size 2" x 100 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM

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13	1000206	Hot Ins. on pipe size 2-1/2" x 75 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
14	1000207	Hot Ins. on pipe size 2-1/2" x 100 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
15	1000214	Hot Ins. on pipe size 3" x 50 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
16	1000216	Hot Ins. on pipe size 3" x 75 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM

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17	1000217	Hot Ins. on pipe size 3" x 100 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
18	1000219	Hot Ins. on pipe size 3" x 150 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
19	1000221	Hot Ins. on pipe size 3" x 200 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
20	1000224	Hot Ins. on pipe size 4" x 50 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM

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21	1000226	Hot Ins. on pipe size 4" x 75 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
22	1000227	Hot Ins. on pipe size 4" x 100 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
23	1000229	Hot Ins. on pipe size 4" x 150 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
24	1000231	Hot Ins. on pipe size 4" x 200 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM

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25	1000234	Hot Ins. on pipe size 6" x 50 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
26	1000236	Hot Ins. on pipe size 6" x 75 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
27	1000237	Hot Ins. on pipe size 6" x 100 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
28	1000239	Hot Ins. on pipe size 6" x 150 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM

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29	1000241	Hot Ins. on pipe size 6" x 200 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
30	1000244	Hot Ins. on pipe size 8" x 50 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
31	1000245	Hot Ins. on pipe size 8" x 65 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
32	1000246	Hot Ins. on pipe size 8" x 75 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM

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33	1000247	Hot Ins. on pipe size 8" x 100 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
34	1000249	Hot Ins. on pipe size 8" x 150 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
35	1000251	Hot Ins. on pipe size 8" x 200 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
36	1000254	Hot Ins. on pipe size 10" x 50 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM

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37	1000256	Hot Ins. on pipe size 10" x 75 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
38	1000257	Hot Ins. on pipe size 10" x 100 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
39	1000259	Hot Ins. on pipe size 10" x 150 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
40	1000261	Hot Ins. on pipe size 10" x 200 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM

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41	1000264	Hot Ins. on pipe size 12" x 50 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
42	1000266	Hot Ins. on pipe size 12" x 75 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
43	1000267	Hot Ins. on pipe size 12" x 100 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
44	1000268	Hot Ins. on pipe size 12" x 125 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM

45	1000269	Hot Ins. on pipe size 12" x 150 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
46	1000274	Hot Ins. on pipe size 14" x 50 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
47	1000276	Hot Ins. on pipe size 14" x 75 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
48	1000277	Hot Ins. on pipe size 14" x 100 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM

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49	1000279	Hot Ins. on pipe size 14" x 150 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
50	1000281	Hot Ins. on pipe size 14" x 200 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
51	1000284	Hot Ins. on pipe size 16" x 50 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
52	1000286	Hot Ins. on pipe size 16" x 75 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM

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53	1000287	Hot Ins. on pipe size 16" x 100 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
54	1000289	Hot Ins. on pipe size 16" x 150 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
55	1000291	Hot Ins. on pipe size 16" x 200 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
56	1000297	Hot Ins. on pipe size 18" x 100 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM

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57	1000298	Hot Ins. on pipe size 18" x 125 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
58	1000299	Hot Ins. on pipe size 18" x 150 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
59	1000301	Hot Ins. on pipe size 18" x 200 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	RM
60	1000303	Hot Ins. Flt Sur 40 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	M2

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61	1000304	Hot Ins. Flt Sur 50 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	M2
62	1000306	Hot Ins. Flt Sur 75 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	M2
63	1000307	Hot Ins. Flt Sur 100 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	M2
64	1000309	Hot Ins. Flt Sur 150 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	M2

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65	1000310	Hot Ins. Flt Sur 180 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	M2
66	1000311	Hot Ins. Flt Sur 200 MM	To clean surface or rust, scale, greases, etc. by sand paper, wire,brushes, etc. Providing and fixing LRB mattresses of required,thickness and of 120 Kg/M3 density. Joints of mattress to be sealed,with loose wool and lace it properly with galvanised wire.,Cladding the mattresses with aluminium sheets of 22 gauge using,tarfelt at joints and fixing by self-tapping screws. All the joints,from wherever ingress of water is possible shall be sealed with,putty of approved quality. Before application of hot insulation on,SS pipes and vessels, aluminium foil shall be wrapped to avoid,direct contact of hot insulation mattresses with pipe.	M2
67	1000314	Cold Ins. on pipe size 1/2" x 50 MM	Clean the surface to be insulated, apply thermocol joint seal tarfelt,pipe section with CPR, wirenet, tiding by G.I. Wire and one small,coat and final coating by 22 gauge aluminium cladding with fixing,by 3/4" parker screws. The cold insulation before applying the,cladding shall be made vapour proof by providing vapour barrier,over the insulation material and sealing by putty shall be done over,the cladding to make it vapour and water proof. Alternate for the,material of cold insulation i.e., in place of thermocol, rigid,expanded polyurethane shall be applied.	RM
68	1000334	Cold Ins. on pipe size 1" x 50 MM	Clean the surface to be insulated, apply thermocol joint seal tarfelt,pipe section with CPR, wirenet, tiding by G.I. Wire and one small,coat and final coating by 22 gauge aluminium cladding with fixing,by 3/4" parker screws. The cold insulation before applying the,cladding shall be made vapour proof by providing vapour barrier,over the insulation material and sealing by putty shall be done over,the cladding to make it vapour and water proof. Alternate for the,material of cold insulation i.e., in place of thermocol, rigid,expanded polyurethane shall be applied.	RM

69	1000336	Cold Ins. on pipe size 1" x 75 MM	Clean the surface to be insulated, apply thermocol joint seal tarfelt,pipe section with CPR, wirenet, tiding by G.I. Wire and one small,coat and final coating by 22 gauge aluminium cladding with fixing,by 3/4" parker screws. The cold insulation before applying the,cladding shall be made vapour proof by providing vapour barrier,over the insulation material and sealing by putty shall be done over,the cladding to make it vapour and water proof. Alternate for the,material of cold insulation i.e., in place of thermocol, rigid,expanded polyurethane shall be applied.	RM
70	1000344	Cold Ins. on pipe size 1-1/2" x 50 MM	Clean the surface to be insulated, apply thermocol joint seal tarfelt,pipe section with CPR, wirenet, tiding by G.I. Wire and one small,coat and final coating by 22 gauge aluminium cladding with fixing,by 3/4" parker screws. The cold insulation before applying the,cladding shall be made vapour proof by providing vapour barrier,over the insulation material and sealing by putty shall be done over,the cladding to make it vapour and water proof. Alternate for the,material of cold insulation i.e., in place of thermocol, rigid,expanded polyurethane shall be applied.	RM
71	1000354	Cold Ins. on pipe size 2" x 50 MM	Clean the surface to be insulated, apply thermocol joint seal tarfelt,pipe section with CPR, wirenet, tiding by G.I. Wire and one small,coat and final coating by 22 gauge aluminium cladding with fixing,by 3/4" parker screws. The cold insulation before applying the,cladding shall be made vapour proof by providing vapour barrier,over the insulation material and sealing by putty shall be done over,the cladding to make it vapour and water proof. Alternate for the,material of cold insulation i.e., in place of thermocol, rigid,expanded polyurethane shall be applied.	RM
72	1000356	Cold Ins. on pipe size 2" x 75 MM	Clean the surface to be insulated, apply thermocol joint seal tarfelt,pipe section with CPR, wirenet, tiding by G.I. Wire and one small,coat and final coating by 22 gauge aluminium cladding with fixing,by 3/4" parker screws. The cold insulation before applying the,cladding shall be made vapour proof by providing vapour barrier,over the insulation material and sealing by putty shall be done over,the cladding to make it vapour and water proof. Alternate for the,material of cold insulation i.e., in place of thermocol, rigid,expanded polyurethane shall be applied.	RM

73	1000357	Cold Ins. on pipe size 2" x 100 MM	Clean the surface to be insulated, apply thermocol joint seal tarfelt,pipe section with CPR, wirenet, tiding by G.I. Wire and one small,coat and final coating by 22 gauge aluminium cladding with fixing,by 3/4" parker screws. The cold insulation before applying the,cladding shall be made vapour proof by providing vapour barrier,over the insulation material and sealing by putty shall be done over,the cladding to make it vapour and water proof. Alternate for the,material of cold insulation i.e., in place of thermocol, rigid,expanded polyurethane shall be applied.	RM
74	1000374	Cold Ins. on pipe size 3" x 50 MM	Clean the surface to be insulated, apply thermocol joint seal tarfelt,pipe section with CPR, wirenet, tiding by G.I. Wire and one small,coat and final coating by 22 gauge aluminium cladding with fixing,by 3/4" parker screws. The cold insulation before applying the,cladding shall be made vapour proof by providing vapour barrier,over the insulation material and sealing by putty shall be done over,the cladding to make it vapour and water proof. Alternate for the,material of cold insulation i.e., in place of thermocol, rigid,expanded polyurethane shall be applied.	RM
75	1000376	Cold Ins. on pipe size 3" x 75 MM	Clean the surface to be insulated, apply thermocol joint seal tarfelt,pipe section with CPR, wirenet, tiding by G.I. Wire and one small,coat and final coating by 22 gauge aluminium cladding with fixing,by 3/4" parker screws. The cold insulation before applying the,cladding shall be made vapour proof by providing vapour barrier,over the insulation material and sealing by putty shall be done over,the cladding to make it vapour and water proof. Alternate for the,material of cold insulation i.e., in place of thermocol, rigid,expanded polyurethane shall be applied.	RM
76	1000377	Cold Ins. on pipe size 3" x 100 MM	Clean the surface to be insulated, apply thermocol joint seal tarfelt,pipe section with CPR, wirenet, tiding by G.I. Wire and one small,coat and final coating by 22 gauge aluminium cladding with fixing,by 3/4" parker screws. The cold insulation before applying the,cladding shall be made vapour proof by providing vapour barrier,over the insulation material and sealing by putty shall be done over,the cladding to make it vapour and water proof. Alternate for the,material of cold insulation i.e., in place of thermocol, rigid,expanded polyurethane shall be applied.	RM

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77	1000384	Cold Ins. on pipe size 4" x 50 MM	Clean the surface to be insulated, apply thermocol joint seal tarfelt,pipe section with CPR, wirenet, tiding by G.I. Wire and one small,coat and final coating by 22 gauge aluminium cladding with fixing,by 3/4" parker screws. The cold insulation before applying the,cladding shall be made vapour proof by providing vapour barrier,over the insulation material and sealing by putty shall be done over,the cladding to make it vapour and water proof. Alternate for the,material of cold insulation i.e., in place of thermocol, rigid,expanded polyurethane shall be applied.	RM
78	1000386	Cold Ins. on pipe size 4" x 75 MM	Clean the surface to be insulated, apply thermocol joint seal tarfelt,pipe section with CPR, wirenet, tiding by G.I. Wire and one small,coat and final coating by 22 gauge aluminium cladding with fixing,by 3/4" parker screws. The cold insulation before applying the,cladding shall be made vapour proof by providing vapour barrier,over the insulation material and sealing by putty shall be done over,the cladding to make it vapour and water proof. Alternate for the,material of cold insulation i.e., in place of thermocol, rigid,expanded polyurethane shall be applied.	RM
79	1000387	Cold Ins. on pipe size 4" x 100 MM	Clean the surface to be insulated, apply thermocol joint seal tarfelt,pipe section with CPR, wirenet, tiding by G.I. Wire and one small,coat and final coating by 22 gauge aluminium cladding with fixing,by 3/4" parker screws. The cold insulation before applying the,cladding shall be made vapour proof by providing vapour barrier,over the insulation material and sealing by putty shall be done over,the cladding to make it vapour and water proof. Alternate for the,material of cold insulation i.e., in place of thermocol, rigid,expanded polyurethane shall be applied.	RM
80	1000394	Cold Ins. on pipe size 6" x 50 MM	Clean the surface to be insulated, apply thermocol joint seal tarfelt,pipe section with CPR, wirenet, tiding by G.I. Wire and one small,coat and final coating by 22 gauge aluminium cladding with fixing,by 3/4" parker screws. The cold insulation before applying the,cladding shall be made vapour proof by providing vapour barrier,over the insulation material and sealing by putty shall be done over,the cladding to make it vapour and water proof. Alternate for the,material of cold insulation i.e., in place of thermocol, rigid,expanded polyurethane shall be applied.	RM

81	1000396	Cold Ins. on pipe size 6" x 75 MM	Clean the surface to be insulated, apply thermocol joint seal tarfelt,pipe section with CPR, wirenet, tiding by G.I. Wire and one small,coat and final coating by 22 gauge aluminium cladding with fixing,by 3/4" parker screws. The cold insulation before applying the,cladding shall be made vapour proof by providing vapour barrier,over the insulation material and sealing by putty shall be done over,the cladding to make it vapour and water proof. Alternate for the,material of cold insulation i.e., in place of thermocol, rigid,expanded polyurethane shall be applied.	RM
82	1000397	Cold Ins. on pipe size 6" x 100 MM	Clean the surface to be insulated, apply thermocol joint seal tarfelt,pipe section with CPR, wirenet, tiding by G.I. Wire and one small,coat and final coating by 22 gauge aluminium cladding with fixing,by 3/4" parker screws. The cold insulation before applying the,cladding shall be made vapour proof by providing vapour barrier,over the insulation material and sealing by putty shall be done over,the cladding to make it vapour and water proof. Alternate for the,material of cold insulation i.e., in place of thermocol, rigid,expanded polyurethane shall be applied.	RM
83	1000404	Cold Ins. on pipe size 8" x 50 MM	Clean the surface to be insulated, apply thermocol joint seal tarfelt,pipe section with CPR, wirenet, tiding by G.I. Wire and one small,coat and final coating by 22 gauge aluminium cladding with fixing,by 3/4" parker screws. The cold insulation before applying the,cladding shall be made vapour proof by providing vapour barrier,over the insulation material and sealing by putty shall be done over,the cladding to make it vapour and water proof. Alternate for the,material of cold insulation i.e., in place of thermocol, rigid,expanded polyurethane shall be applied.	RM
84	1000406	Cold Ins. on pipe size 8" x 75 MM	Clean the surface to be insulated, apply thermocol joint seal tarfelt,pipe section with CPR, wirenet, tiding by G.I. Wire and one small,coat and final coating by 22 gauge aluminium cladding with fixing,by 3/4" parker screws. The cold insulation before applying the,cladding shall be made vapour proof by providing vapour barrier,over the insulation material and sealing by putty shall be done over,the cladding to make it vapour and water proof. Alternate for the,material of cold insulation i.e., in place of thermocol, rigid,expanded polyurethane shall be applied.	RM

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85	1000407	Cold Ins. on pipe size 8" x 100 MM	Clean the surface to be insulated, apply thermocol joint seal tarfelt,pipe section with CPR, wirenet, tiding by G.I. Wire and one small,coat and final coating by 22 gauge aluminium cladding with fixing,by 3/4" parker screws. The cold insulation before applying the,cladding shall be made vapour proof by providing vapour barrier,over the insulation material and sealing by putty shall be done over,the cladding to make it vapour and water proof. Alternate for the,material of cold insulation i.e., in place of thermocol, rigid,expanded polyurethane shall be applied.	RM
86	1000413	Cold Ins. on pipe size 10" x 40 MM	Clean the surface to be insulated, apply thermocol joint seal tarfelt,pipe section with CPR, wirenet, tiding by G.I. Wire and one small,coat and final coating by 22 gauge aluminium cladding with fixing,by 3/4" parker screws. The cold insulation before applying the,cladding shall be made vapour proof by providing vapour barrier,over the insulation material and sealing by putty shall be done over,the cladding to make it vapour and water proof. Alternate for the,material of cold insulation i.e., in place of thermocol, rigid,expanded polyurethane shall be applied.	RM
87	1000414	Cold Ins. on pipe size 10" x 50 MM	Clean the surface to be insulated, apply thermocol joint seal tarfelt,pipe section with CPR, wirenet, tiding by G.I. Wire and one small,coat and final coating by 22 gauge aluminium cladding with fixing,by 3/4" parker screws. The cold insulation before applying the,cladding shall be made vapour proof by providing vapour barrier,over the insulation material and sealing by putty shall be done over,the cladding to make it vapour and water proof. Alternate for the,material of cold insulation i.e., in place of thermocol, rigid,expanded polyurethane shall be applied.	RM
88	1000416	Cold Ins. on pipe size 10" x 75 MM	Clean the surface to be insulated, apply thermocol joint seal tarfelt,pipe section with CPR, wirenet, tiding by G.I. Wire and one small,coat and final coating by 22 gauge aluminium cladding with fixing,by 3/4" parker screws. The cold insulation before applying the,cladding shall be made vapour proof by providing vapour barrier,over the insulation material and sealing by putty shall be done over,the cladding to make it vapour and water proof. Alternate for the,material of cold insulation i.e., in place of thermocol, rigid,expanded polyurethane shall be applied.	RM

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89	1000464	Cold Ins. Flt Sur 50 MM	Clean the surface to be insulated, apply thermocol joint seal tarfelt,pipe section with CPR, wirenet, tiding by G.I. Wire and one small,coat and final coating by 22 gauge aluminium cladding with fixing,by 3/4" parker screws. The cold insulation before applying the,cladding shall be made vapour proof by providing vapour barrier,over the insulation material and sealing by putty shall be done over,the cladding to make it vapour and water proof. Alternate for the,material of cold insulation i.e., in place of thermocol, rigid,expanded polyurethane shall be applied.	M2
90	1000466	Cold Ins. Flt Sur 75 MM	Clean the surface to be insulated, apply thermocol joint seal tarfelt,pipe section with CPR, wirenet, tiding by G.I. Wire and one small,coat and final coating by 22 gauge aluminium cladding with fixing,by 3/4" parker screws. The cold insulation before applying the,cladding shall be made vapour proof by providing vapour barrier,over the insulation material and sealing by putty shall be done over,the cladding to make it vapour and water proof. Alternate for the,material of cold insulation i.e., in place of thermocol, rigid,expanded polyurethane shall be applied.	M2
91	1000467	Cold Ins. Flt Sur 100 MM	Clean the surface to be insulated, apply thermocol joint seal tarfelt,pipe section with CPR, wirenet, tiding by G.I. Wire and one small,coat and final coating by 22 gauge aluminium cladding with fixing,by 3/4" parker screws. The cold insulation before applying the,cladding shall be made vapour proof by providing vapour barrier,over the insulation material and sealing by putty shall be done over,the cladding to make it vapour and water proof. Alternate for the,material of cold insulation i.e., in place of thermocol, rigid,expanded polyurethane shall be applied.	M2
92	1000472	Rem. Old Ins. (25-100mm)	Removal of old insulation (thickness from 25mm to 100 mm)	M2
93	1000473	Rem. Old Ins. (101-200mm)	Removal of old insulation (thickness from 101mm to 200 mm)	M2
94	1000474	Fix. old ins with old Al sh.(25-100mm)	Refixing of Old insulation with old aluminium sheet including,supply of wire and screw (thickness from 25 mm to 100 mm)	M2
95	1000475	Fix. old ins with old Al sh.(101-200mm)	Refixing of Old insulation with old aluminium sheet including,supply of wire and screw (thickness from 101 mm to 200 mm)	M2
96	1000476	Fix. old ins with new Al sh.(25-100mm)	Refixing of Old insulation with new aluminium sheet including,supply of wire and screw (thickness from 25 mm to 100 mm)	M2
97	1000477	Fix. old ins with new Al sh.(101-200mm)	Refixing of Old insulation with new aluminium sheet including,supply of wire and screw (thickness from 101 mm to 200 mm)	M2

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98	1000478	Fix. New ins with old Al sh.(25-100mm)	Fixing of New insulation material with old aluminium sheet including,supply of wire and screw (thickness from 25 mm to 100 mm)	M2
99	1000479	Fix. New ins with old Al sh.(101-200mm)	Fixing of New insulation material with old aluminium sheet including,supply of wire and screw (thickness from 101 mm to 200 mm)	M2
100	1000480	Wrapping Al foil on SS pipe	Wrapping aluminium foil (0.1 mm thick) over SS pipe before,application of insulation	M2
101	1004386	Cold insul PUFF material 3" X 50 mm	Cold insul PUFF material 3" X 50 mm,Scope of Work for Vendor:,1)Cleaning the surface with Brush/cloth to remove,oil,dust and foreign,materials after removal of existing insulation as per requirement.,2) Application of one coat Bitumenous primer over Metal surface.,3) Fixing of Polyurethane foam slab with the help of 85/25 grade,Hot Bitumen in single/multilayer.,4) All the joints are to sealed with hot bitumen.,5) Application of one coat insulkote with single layer of Glass cloth,as a vapour barrier system.,6)After drying up 22 swg thick plain aluminium sheet to be,fabricate grooved and with proper overlap to be fix by means,of self tapping SM.Screws.,7) All the vertical joints to be sealed with putty.,8) Puff Insulation Material: 50 mm thick insulation with Rigid,Polyurethane Foam of density 36 Kg/M3.,(MATERIAL TEST CERTIFICATE SHOULD BE SUBMITTED),9) Supply and Apply of puff insuation is in vendor scope.,10) Housekeeping to be done after job completion.,DFPCL Scope:,1) Water and Electricity.,2) Permit to carry out the job.,3) Scaffolding, if required.	RM
102	1004387	Cold insul PUFF material 4" X 50 mm	Cold insul PUFF material 4" X 50 mm,Scope of Work for Vendor:,1)Cleaning the surface with Brush/cloth to remove,oil,dust and foreign,materials after removal of existing insulation as per requirement.,2) Application of one coat Bitumenous primer over Metal surface.,3) Fixing of Polyurethane foam slab with the help of 85/25 grade,Hot Bitumen in single/multilayer.,4) All the joints are to sealed with hot bitumen.,5) Application of one coat insulkote with single layer of Glass cloth,as a vapour barrier system.,6)After drying up 22 swg thick plain aluminium sheet to be,fabricate grooved and with proper overlap to be fix by means,of self tapping SM.Screws.,7) All the vertical joints to be sealed with putty.,8) Puff Insulation Material: 50 mm thick insulation with Rigid,Polyurethane Foam of density 36 Kg/M3.,(MATERIAL TEST CERTIFICATE SHOULD BE SUBMITTED),9) Supply and Apply of puff insuation is in vendor scope.,10) Housekeeping to be done after job completion.,DFPCL Scope:,1) Water and Electricity.,2) Permit to carry out the job.,3) Scaffolding, if required.	RM

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103	1004388	Cold insul PUFF material 6" X 75 mm	Cold insul PUFF material 6" X 75 mm,Scope of Work for Vendor:,1)Cleaning the surface with Brush/cloth to remove,oil,dust and foreign,materials after removal of existing insulation as per requirement.,2) Application of one coat Bitumenous primer over Metal surface.,3) Fixing of Polyurethane foam slab with the help of 85/25 grade,Hot Bitumen in single/multilayer.,4) All the joints are to sealed with hot bitumen.,5) Application of one coat insulkote with single layer of Glass cloth,as a vapour barrier system.,6)After drying up 22 swg thick plain aluminium sheet to be,fabricate grooved and with proper overlap to be fix by means,of self tapping SM.Screws.,7) All the vertical joints to be sealed with putty.,8) Puff Insulation Material: 75 mm thick insulation with Rigid,Polyurethane Foam of density 36 Kg/M3.,(MATERIAL TEST CERTIFICATE SHOULD BE SUBMITTED),9) Supply and Apply of puff insuation is in vendor scope.,10) Housekeeping to be done after job completion.,DFPCL Scope:,1) Water and Electricity.,2) Permit to carry out the job.,3) Scaffolding, if required.	RM
104	1004389	Cold insul PUFF material 8" X 75 mm	CCold insul PUFF material 8" X 75 mm,Scope of Work for Vendor:,1)Cleaning the surface with Brush/cloth to remove,oil,dust and foreign,materials after removal of existing insulation as per requirement.,2) Application of one coat Bitumenous primer over Metal surface.,3) Fixing of Polyurethane foam slab with the help of 85/25 grade,Hot Bitumen in single/multilayer.,4) All the joints are to sealed with hot bitumen.,5) Application of one coat insulkote with single layer of Glass cloth,as a vapour barrier system.,6)After drying up 22 swg thick plain aluminium sheet to be,fabricate grooved and with proper overlap to be fix by means,of self tapping SM.Screws.,7) All the vertical joints to be sealed with putty.	RM

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105	1005866	REMOVAL & FIXING CERAWOOL 25-50 MM	Removal & Refixing of 25-50 mm thk cerawool blancket. Material will be provided by DFPCL/STL. Vendor scope: 1.Removal of old ceramic / cerawool insulation. 2.Shifting the scrap insulation to designated area as per EIC guidelines. 3.Fixing 25-50 mm thk cerawool / ceramic insulation. 4.All tools & tackles, manpower, PPE will be in vendors scope. 5.Shifting of material from store to site. 6.House keeping after job completion. 7.Submission of measurement sheet for certification within a week time from the date of completion of jobs. SAFETY ASPECTS : EACH PERSONNEL SHOULD USE REQUIRED PERSONAL PROTECTIVE EQUIPMENTS (PPE) AS PER JOB (MINIMUM: SAFETY SHOES, CANVAS GLOVES, SAFETY HELMET, SAFETY GOGGLES) FOR WORK AT HEIGHT EACH PERSON SHOULD USE INDIVIDUAL SAFETY HELMETS WITH TWO LIFELINES (IN GOOD CONDITION). STATUTORY COMPLIANCE:- YOU WILL COMPLY WITH ALL STATUTORY REGULATIONS LIKE PAYMENT AS PER MINIMUM WAGES,BONUS,LABOUR WELFARE FUND, LEAVE WAGES,PF,ESI, MAINTAINING REQUISITE RECORDS VIZ.VARIOUS REGISTORS AND SUBMITTING THE SAME TO P &A DEPT. WHENEVER ASKED FOR BY DFPCL.IN CASE OF FAILURE TO COMPLY WITH THE REGULATIONS,APPROPRIATE DEDUCTIONS WILL BE MADE FROM YOUR BILL ,IN ADDITION TO PENALTY DEDUCTIONS AS AGREED. GATE PASSES REQUIRED GATE PASS MUST BE STRICTLY MADE BEFORE BRINGING ANY LABOUR INSIDE FACTORY PREMISES. FOLLOWING DOCUMENTS ARE REQUIRED FOR GATE PASS 1. ESIC ALLOTMENT LETTER 2. ESIC TIC CARD 3. Labor License (if applicable) for any employee 4. P.F. Code Allotment Letter 5. WORK ORDER / LOI 6. Employment Card / I Card 7. Photo Identity Card HOUSEKEEPING : CONTRACTOR SHALL DO HOUSEKEEPING AND SHALL REMOVE ALL UNWANTED MATERIALS FROM THE WORK SITE IMMEDIATELY AFTER COMPLETION OF WORK. HOUSEKEEPING SHALL ALSO BE DONE IN BETWEEN THE WORK TO KEEP THE WORK AREA CLEAN & TIDY. 25% OF BILL VALUE WILL BE DEDUCTED IF HOUSEKEEPING IS NOT DONE PROPERLY. TIME SCHEDULE :- JOB IS TO BE STARTED IMMEDIATELY IN CONSULATION WITH OUR JOB CO-ORDINATOR AND SHOULD BE COMPLETED AT THE EARLIEST. JOB CO-ORDINATION CONTRACT SUPERVISOR SHOULD MEET IMMIDIATELY TO THE CONCERNED ENGINEER AFTER RECIEVING THE PURCHASE ORDER/LOI. MANPOWER AND MATERIAL SHOULD BE IMMIDIATELY MOBILISED AS PER INSTRUCTION OF CONCERNED ENGINEER. JOB SHOULD BE IMMIDIATELY STARTED AS PER INSTRUCTION OF CONCERNED ENGINEER. AFTER COMPLETION OF THE JOB PROPER HOUSEKEEPING OF AREA TO BE DONE AND SIGNATURE OF ENGINEER SHOULD BE TAKEN ON HOUSEKEEPING CERTIFICATE. ONLY ONE INVOICE SHOULD BE IMMIDIATELY SUBMITTED TO THE CONCENRED ENGINEER AFTER COMPLETION OF JOB. INVOICING :- ONLY ONE INVOICE TO BE SUBMITTED TO OUR JOB CO-ORDINATOR FOR HIS CERTIFICATION AND FURTHER PROCESSING. NOTE :- QUANTITIES MENTIONED BELOW ARE APPROXIMATE.	M2

The participating company's declaration:

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			HOWEVER, YOU WILL BE PAID AS PER ACTUAL QUANTITY AS CERTIFIED BY OUR JOB CO-ORDINATOR	

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106	1001573	Wrapping of filter elemet on filter cage	Wrapping of filter element on spare platinum filter cage after cleanin,and after completion of wrapping complete cage is to be covered with,plastic paper in our plant at Taloja.	AU
107	1003339	Removal & Refixing of Pillow	Pillow insulation FOR TURBINESS AT K-1 plant at Taloja.,SCOPE OF WORK :-,Removal of exisiting pillows.,Fixing of new pillows made out of Glass cloth and Ceramic wool.,Qty given is tentative and payment shall be done as per actual job,carried out.,DFPCL'S SCOPE OF SUPPLY :-,ELECTRIC POWER <(>&<)> WATER – FREE OF CHARGE.,SAFETY PERMIT TO BE ISSUED BY DFPCL ENGINEER.,CONTRACTOR'S SCOPE OF SUPPLY :-,1. ALL TOOLS, TACKLES, EQUIPMENTS, CONSUMABLES ETC.,2. COMPETENT MANPOWER.,3. TO <(>&<)> FRO TRANSPORTATION OF THE BELOW.,4. SCRAP MATERIAL TO BE SHIFTED TO SCRAP YEARD AFTER,COMPLETION OF JOB TO SCRAP YEAR AS PER THE INSTRUCTIONS,FROM OUR JOB CO-ORDINATOR.,SAFETY ASPECTS :,EACH PERSONNEL SHOULD USE REQUIRED PERSONAL PROTECTIVE EQUIPMENTS (PPE),AS PER JOB (MINIMUM: SAFETY SHOES, CANVAS GLOVES, SAFETY HELMET, SAFETY,GOGGLES) FOR WORK AT HEIGHT EACH PERSON SHOULD USE INDIVIDUAL SAFETY,HELMETS WITH TWO LIFELINES (IN GOOD CONDITION).,STATUTORY COMPLIANCE:-,YOU WILL COMPLY WITH ALL STATUTORY REGULATIONS LIKE PAYMENT AS PER,MINIMUM WAGES,BONUS,LABOUR WELFARE FUND, LEAVE WAGES,PF,ESI, MAINTAINING,REQUISITE RECORDS VIZ.VARIOUS REGISTORS AND SUBMITTING THE SAME TO P,<(>&<)>A DEPT. WHENEVER ASKED FOR BY DFPCL.IN CASE OF FAILURE TO COMPLY,WITH THE REGULATIONS,APPROPRIATE DEDUCTIONS WILL BE MADE FROM YOUR BILL,,IN ADDITION TO PENALTY DEDUCTIONS AS AGREED.,GATE PASSES,REQUIRED GATE PASS MUST BE STRICTLY MADE BEFORE BRINGING ANY LABOUR,INSIDE FACTORY PREMISES.,FOLLOWING DOCUMENTS ARE REQUIRED FOR GATE PASS,1. ESIC ALLOTMENT LETTER,2. ESIC TIC CARD,3. Labor License (if applicable) for any employee,4. P.F. Code Allotment Letter,5. WORK ORDER / LOI,6. Employment Card / I Card,7. Photo Identity Card,HOUSEKEEPING :,CONTRACTOR SHALL DO HOUSEKEEPING AND SHALL REMOVE ALL UNWANTED MATERIALS,FROM THE WORK SITE IMMEDIATELY AFTER COMPLETION OF WORK. HOUSEKEEPING,SHALL ALSO BE DONE IN BETWEEN THE WORK TO KEEP THE WORK AREA CLEAN,<(>&<)>,TIDY. 25% OF BILL VALUE WILL BE DEDUCTED IF HOUSEKEEPING IS NOT DONE,PROPERLY.,TIME SCHEDULE :-,JOB IS TO BE STARTED IMMEDIATELY IN CONSULATION WITH OUR,JOB CO-ORDINATOR AND SHOULD BE COMPLETED AT THE EARLIEST.,JOB CO-ORDINATION,CONTRACT SUPERVISOR SHOULD MEET IMMIDIATELY TO THE CONCERNED ENGINEER,AFTER RECIEVING THE PURCHASE ORDER/LOI.,MANPOWER AND MATERIAL SHOULD BE IMMIDIATELY MOBILISED AS PER INSTRUCTION,OF CONCERNED ENGINEER.,JOB SHOULD BE IMMIDIATELY STARTED AS PER INSTRUCTION OF CONCERNED,ENGINEER.,AFTER COMPLETION OF THE JOB PROPER HOUSEKEEPING OF AREA TO	M2

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			BE DONE AND,SIGNATURE OF ENGINEER SHOULD BE TAKEN ON HOUSEKEEPING CERTIFICATE.,ONLY ONE INVOICE SHOULD BE IMMIDIATELY SUBMITTED TO THE CONCENRED,ENGINEER AFTER COMPLETION OF JOB.,INVOICING :-,ONLY ONE INVOICE TO BE SUBMITTED TO OUR JOB CO-ORDINATOR,FOR HIS CERTIFICATION AND FURTHER PROCESSING.,NOTE :-,QUANTITIES MENTIONED BELOW ARE APPROXIMATE. HOWEVER, YOU WILL BE PAID AS,PER ACTUAL QUANTITY AS CERTIFIED BY OUR JOB CO-ORDINATOR	
108	1007668	Removal & Refixing Pockets for Inspect	Removal of 4"x 4" pocket from existing insulation cladding and insulation	EA
109	1000483	Lagger on 8 Hr shift	Supply of Lagger for insulation jobs	PSH
110	1000484	Helper on 8 Hr shift	Supply of Helper for insulation jobs	PSH

The participating company's declaration:

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ANNEXURE IV
Additional Terms and Conditions

1 GENERAL:

There are to apply as additional specifications and conditions, unless otherwise already provided for contradictorily elsewhere in this contract.

2 CONTRACTOR TO STUDY SITE CONDITIONS:

The Contractor shall be deemed to have carefully examined the work and site conditions including labour, the general and the special conditions, specifications, schedules and drawing and shall be deemed to have visited the site of the work and to have fully informed himself regarding local conditions and carried out his own investigations to arrive at rates quoted in the tender. In this regard, he will be given necessary information to the best of Knowledge of CLIENT but without any guarantee to it.

If he shall have any doubt as to the meaning of any portions of these general conditions, or the scope of the work or the specifications and drawings, or any other matter concerning the contract, he shall in good time, before submitting his tender, set forth the particulars thereof and submit them to the Client / Architect, in writing in order that such doubts may be clarified authoritatively before tendering. Once a tender is submitted, the matter will be decided according to tender conditions, in the absence of such authentic pre-clarification.

3 DECLARATION OF THE CONTRACTOR:

The Contractor should sign the declaration form.

4 WORKING METHODS AND PROGRESS SCHEDULE:

4.1 PROGRAM OF WORK:

The work is required to be completed within a period of as specified by the Job Coordinator.

4.2

a) METHODOLOGY OF CONSTRUCTION AND CONSTRUCTION EQUIPMENT:

Contractor shall furnish at least 7 days in advance his program of commencement of item of work, the details of actual methods that would be adopted by the Contractor for the execution of various items of cast-in-situ, super structure, and earth work, supported by necessary detailed drawing and sketches including those of the plant and machinery that would be used, their locations, arrangements for conveying and handling materials etc. And obtain prior approval of Architect well in advance of starting of such item of work. The client's EIC reserves the right to suggest modifications or make complete changes in the method proposed by the Contractor, whether accepted previously or not at any stage of the work, to obtain the desired accuracy, quantity and progress of the work which shall be binding on the Contractor, and no claim on account of such change in method of execution will be entertained by client's EIC so long as specifications of the item remain unaltered. The sole responsibility for the safety and adequacy of the methods adopted by the Contractor will however rest on the Contractor, irrespective of any approval given by the client's EIC.

In case of slippage from the approved work program at any stage, the Contractor shall furnish a revised program to make up the slippage within the stipulated time schedule and obtain the approval of the clients to the revised program.

(b) CONSTRUCTION EQUIPMENT:

The Contractor shall be required to give a trial run of the equipment's for establishing their capability to achieve the slaid down specifications and tolerance to the satisfaction of the client before commencement of the work. All equipment provided shall be of proven efficiency and shall be operated and always maintained, in a manner acceptable to the client and no equipment or personnel will be removed from the site without permission of Client.

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Construction equipment used to be kept in healthy condition in all respects with valid documents required for various statutory / government agencies. These are to be verified through our EHS department before taking into use.

(c) PROGRESS SCHEDULE:

The Contractor shall furnish within the plant, of one week if the order to start the work, the program of work in CPMs/PERT charts in quadruplicate indicating the date of actual start, the monthly progress expected to be achieved and the anticipated completion date of each major item of work to be done by him, also indicating dates of procurement and setting up of materials, plant and machinery. The schedule is to be such as is practicable of achievement towards the completion of whole work in the time limit, the particular items, if any, on the due dates specified in the contract and shall have the approval of the client, no revised schedule shall be operative without such acceptance in writing. The client/PMC is further empowered to ask for a more detailed schedule or schedules say, week by week for any item or items, in case of urgency of work as will be directed by him and the Contractor shall supply the same as and when asked for.

The Contractor shall furnish sufficient plant, equipment and labour as may be necessary to maintain the progress of the schedule. The working and shifts hours restricted to one shift a day for operations. Nightwork which requests supervision shall not be permitted except when specifically allowed by the Client each time, if requested by the Contractor. The Contractor shall provide necessary lighting arrangements etc. for night works as directed by the client without extra cost.

Further the Contractor shall submit the progress report of work in prescribed forms and charts etc. at periodical intervals, as may be specified by the client. Schedule shall be in the form of progress charts, form progress statement and/or reports as may be approved by the client / PMC.

The Contractor shall maintain Proforma, charts, details regarding machinery, equipment, labour, materials, personnel, etc. as may be specified by the client / PMC.

5 AGENT AND WORK ORDER BOOK:

The Contractor shall himself manage the work or engage an authorized all-time agent on the work capable of managing and guiding the work and understanding the specifications and contract conditions. The Contractor shall provide a qualified and experienced Engineer as his agent for technical matter in case the client considers this is essential for the work and so directs Contractors. He will take orders as will be given by the client or his PMC and shall be responsible for carrying them out. This agent shall not be changed without prior intimation to the client and his representative on the work site. The Contractor shall supply to the client the details of all supervisory and other staff employed by the Contractor and notify changes when made, and satisfy the client regarding the quantity and sufficiency of the staff, thus employed. The client will have the unquestionable right to ask for changes in the quality and numbers of contractor's supervisor staff and to order removal from work of any such staff. The Contractor shall comply with such orders and effect replacements to the satisfaction of the client/PMC.

A workbook shall be maintained on site and it shall be property of the client and the Contractors shall promptly sign orders given therein by the client and comply with them. The compliance shall be reported by the Contractor to the client in good time so that it can be checked. The Contractor will be allowed to copy out instructions therein from time to time.

6 LEVELING INSTRUMENTS:

If measurements of items of the work are based on volumetric measurements calculated from levels taken before and after the construction of the item, a large number of leveling staves, tapes etc. will have to be kept available by the Contractor at the site of the work for this purpose. Lack of such leveling staves, tapes, etc. in required numbers may cause delay in measurements and work. The Contractor will therefore have to keep enough of these readily available on site.

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7 AUTHORITY OF REPRESENTATIVE OF THE CLIENT

The duties of the representative of the Client / Engineer / Supervisor/Architect are to watch and supervise the work and to test and examine any material to be used or workmanship employed in connection with the works.

The PMC may from time to time, in writing delegate to his representative any powers and authorities vested in the PMC and shall furnish to the Contractor a copy of all such delegations of power and authorities any written instruction of approval given by the representative of the PMC to the Contractor within the terms of such delegations (but not otherwise) shall bind the Contractor and the Council as though it had been given by the PMC, provided always as follows.

Failure of the representative of the PMC to disapprove any work or materials shall not prejudice the power of the PMC thereafter to disapprove such work or materials and so order the putting down, removal or breaking up thereof.

8 CO-ORDINATION:

When several agencies for different sub-works of the project are to work simultaneously on the Project site, there must be full co-operation between different contractors to ensure timely completion of the whole project smoothly. The scheduled dates for completion specified in each contract shall therefore be strictly adhered to. Each Contractor may make his own independent arrangement for water, power, housing, etc. if they so desire. On the other hand, the Contractors are at liberty to mutual agreement in this behalf and make joint arrangements with the approval of the client. No single Contractor shall take or cause to be taken any steps or action that may cause, disruption discontent, or disturbance of work, labour, or arrangements, etc. of other Contractor in the project localities. Any action by any Contractor which the client's EIC in his unquestioned discretion may consider as infringement of the above code, would be considered as a breach of the Contract conditions and shall be dealt with as such.

In case of any dispute, disagreement between the Contractors, the client's decision regarding the co-ordination, co-operation and facilities to be provided by any of the Contractors shall be final and binding on the Contractors concerned and such a decision or decision shall not vitiate any Contractor nor absolve the Contractor(s) of his/their obligation under the contract nor considered for the grant for any claim or compensation.

9 SITE OFFICE:

9.1 The Contractor shall at his own expense maintain sufficient experienced Engineers and supervisory staff etc. required for the work and shall make his own arrangement, provide portable container as a site office for them with all necessary arrangements, including fire preventing measures, etc.

10 SUPERVISION AND INSPECTION OF WORKS AND QUALITY CONTROL:

10.1 SUPERVISION:

The Contractor shall either himself supervise the execution of the works or shall appoint the competent Engineers and Supervisors approved by the Client /Architect, to act on his behalf. If in the opinion of the Client / Architect, the Contractor has himself no sufficient knowledge and experience of receiving instructions or cannot give his full attention to the works, the Contractor shall at his own expenses employ as his accredited agent a qualified Engineer approved by the Architect.

Contractors should appoint a Qualified Engineer related to steam as a Main In charge having more than 10 years of experience for each site. Under this main Engineer, minimum 3 Sub-Engineers of minimum 5-year experience should be working under him for each site. Also, a minimum of 5 to 6 Supervisors should be working below these Sub-Engineers.

Orders given to the Contractor's agent shall be considered to have force as if these had been given to the Contractor himself. If the Contractor fails to appoint suitable agent as directed by the client, the client shall have full power to suspend the execution of the work until such date a suitable agent is appointed and the Contractor shall be

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responsible for the delay so caused to the works and the Contractor shall not be entitled for any compensation on this behalf.

10.2 INSPECTION:

The Contractor shall inform the client in writing when any portion of the work is ready for inspection giving him sufficient notice to enable him to inspect the same without affecting the further progress of the work. The work shall not be considered to have been completed in accordance with the terms of the contract until the client shall have certified in writing to that effect. Approval of materials or workmanship or approval of part of the work during the progress of execution shall not bind the client or in any way affect him even to reject the work which is alleged to be completed and to suspend the issue of his certificate of completion until such alternation and modifications or reconstruction have been effected at the cost of the Contractor as shall enable him to certify that the work has been completed to his satisfaction.

The Contractor shall provide at his cost the necessary ladders and such arrangements as to provide necessary facilities and assistance for proper inspection of all parts of the work at his own cost.

11 INITIAL MEASUREMENTS FOR RECORD:

Where, for proper measurement of the work, it is necessary to have an initial set of levels or other measurements taken, the same as recorded in the authorized field book or measurement book. by the Engineer or his authorized representative will be signed by the Contractor who will be entitled to have a true copy of the same made at his cost. Any failure on the part of the Contractor to reach such levels. etc. recorded before starting the work will render him liable to accept the decision of the Engineer /Architect as to the basis of taking measurement. Likewise, the Contractor will not cover any work which will render its subsequent measurements difficult or impossible without first getting the same jointly measured by himself and the authorized representative of the client. The record of such measurements on the Client side will be signed by the Contractor and he will be entitled to have a true copy of the same made at his cost.

12 SAMPLES AND TESTING OF MATERIALS:

12.1 All materials to be used on work shall be got approved in advance from the Client Engineer/ Architect and shall pass the test and/or analysis required by him which will be:

a) As specified in the specification for the items concerned and/or

b) I.S.I Specification (whichever and wherever applicable) or

c) Such recognized specifications acceptable to Engineer-In-charge as equivalent there to or in absence of such authorized specification.

d) Such requirement test and/or analysis as may be specified by the client in order of precedence given above.

12.2 The Contractor shall at his risk and cost make all arrangements and/or shall provide for all such facilities as the client may require collecting, preparing required number of samples for tests or for analysis at such time and to such place as may be directed by the client and bear all charges and cost of testing. Such samples shall also be deposited with the client.

12.3 The Contractor shall if & when and if required, submit at his cost the samples of material to be tested and analyzed and if, so directed, shall not make use of or incorporate in the work any material represented by the samples until the required tests or analysis have been made and the materials, finally accepted by the client.

12.4 The Contractor shall not be eligible for any claim or compensation either arising out of any delay in the work or due to any corrective measures required to be taken on account of and as a result of testing of the materials.

12.5 The Contractor or his authorized representative will be allowed to remain present in the departmental laboratory while testing sample furnished by him. However, the results of all the tests carried out in the departmental laboratory in the presence or absence of the Contractor or his authorized representative will be binding on the Contractor.

12.6 The Contractor shall at his own cost set up a laboratory to carry out the routine tests of materials which are to be used in the work. The tests will have to be carried out either in his field laboratory or in an approved laboratory.

In case tests are carried out in field laboratory, at least 50% tests should be carried out nearest quality control laboratory.

13 HANDING OVER OF WORK:

All the work and materials before finally taken over by the client., will be entire liability of the Contractor for guarding, maintaining, and making good any damages of any magnitude. Interim payments made for such work will not alter this position. The handling over by the Contractor and taking over by the client will be always in writing of which copies will go to the client or his authorized representative and the Contractor, it is, however understood that before taking over such work the Council will not out it into regular use as distinct from causal or incidental one, except as specifically mentioned elsewhere in this contract, or as mutually agreed to.

14 CLAIMS:

Bills for extra work or for any claim shall be paid separately apart from the interim bills for the main work. The payment of bills for the main work shall not be withheld for want of decision on the extras or claims not covered in the appendices.
Claims for extra work shall be registered within 30 days of occurrence of the event. However, bills for these claims including supporting data/details may be submitted subsequently.
Contractor should submit the detailed breakup of the extra items in the form of Labour + Material + transportation and Profit (10 %). This is to be submitted to the Engineer in Charge and Purchase Coordinator.

I/We confirm having accepted all the terms as mentioned above.

(Company name, seal and signature of authorized person with Designation)

ANNEXURE V

Commercial Terms and Conditions

1) **Job Controller**: Mr Mahesh Kalghatgi & Mr. Atulkumar Khatri any other person appointed by the Company at our plant locations, from time to time, shall be the job controller.

2) The Vendor / Contractor shall be responsible for providing the requisite and professional manpower for mentioned Subject Works.

3) The employees provided by the Vendor / Contractor should be employees of the Vendor / Contractor and all / any dispute/s between the Vendor / Contractor and the staff shall be resolved by the Vendor / Contractor and shall have no bearing on DFCPL. The Vendor / Contractor should indemnify any claim, title in debt, cost, damage, compensation in respect of its employees posted on DFPCL premises.

4) **Mobilization:** Within 15 days from the date of receipt of PO/ email confirmation the contractor shall mobilize men and materials.

5) **Taxes and Duties:** Taxes will be paid by DFPCL as per government notifications.

6) **Security Deposit:** - 10% of yearly basic order value will be retained by DFPCL or equal amount of Bank Guarantee drawn on nationalized bank or reputed private bank to be submitted by the Contractor/Tenderer or will be deducted from Tenderers From first 6 Monthly Bills from against this contract and NO INTEREST will be payable by DFPCL on the said this amount and it will be refunded to you only after expiry of the contract and warrantee period. subject to deduction if any.

7) **Invoicing & Payment:** The Vendor / Contractor shall submit on or before the expiry of the 1st week of the following month proforma running bill of the last month in the format provided by DFPCL, in triplicate, to the Job Coordinator giving abstract and attached with detailed, duly signed, joint measurement or joint report sheet for the various items of work executed during the month. The Vendor / Contractor shall prepare Monthly final running account bill based on the certified measurements and summary sheets and submit the same along with the enclosures mentioned herein to the person designated by the owner. Invoice shall be submitted exactly as per the original work order in line with the line items with actual quantity executed. Additional quantity (other than W/O) shall be claimed only after the issue of amendment to the work order.
   Also, where the rates are not available, but the jobs are executed as per the instructions of Job coordinator, Vendor / Contractor shall submit the invoice only after the issue of amendment to original Work order. Accordingly, payment shall be released in two phases i.e. Based on original WO & based on amendment to original WO.
   The Job coordinator shall ensure payment after 45 days from the date of receipt of final monthly running account bill provided the same is complete in all respects & duly certified by the engineer- in - charge/ Job Coordinator.
   The vendor / contractor should produce each monthly running bill along with measurement sheets.
   The applicable TDS shall be deducted as per the existing provisions of the law in force.
   The number of payments to be made to the Vendor / Contractor shall be restricted to one in each month.
   The payment shall be released by RTGS or NEFT with nominal charges per transaction, if imposed by the bank. *The Vendor / Contractor should provide* requisite details of their bank, Account No. Branch code, etc.

8) **Insurances:** Vendor / Contractor shall obtain and keep valid, at all times adequate insurance cover for its personnel, material and equipment, against all losses and liabilities whether at common law or under any

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statute relating to workers Compensation or Employer's Liability in the jurisdiction in which the Services are performed, from any accident or injury to any person employed by it in connection with the Services. The vendor / contractor shall ensure that any of their staff employed to complete the given scope of works, are similarly insured in respect of their employees including claim against third party liability.

9) **Validity**: **This contract is valid for a period of Three (3) years.** This final price will be valid till the job completion w.e.f. the date of the purchase order (renewable after every year subject to satisfactory performance). Further extension of the contract by a suitable period will be at the discretion of DFPCL. During the contract period either party can terminate the contract by giving 3 months' notice to the other party. However, in case of unsatisfactory performance or breach of contract terms on the part of the Vendor / Contractor, DFPCL reserves the right to terminate the contract forthwith. **DFPCL shall also have right to extend the Contract at its own discretion. During the contractual period, the unit rates should remain unchanged throughout the contract term. During the validity period of the Contract, there shall be no revision of the compensation payable to the Vendor / Contractor**. The Vendor / Contractor shall ensure payment of minimum wages in force and as prescribed by the competent authorities from time to time. The Vendor / Contractor is required to maintain all documents and records as required under the statutory laws and rules in force from time to time. The rate of different activities of mentioned Subject Works once finalized through DFPCL ERP System (SAP or IVALUA), will be applicable for any similar scope of works in either(K1 or K8) of plant.

10) **Notices:** Any notice required to be given by either party shall be validly given if it is in writing and sent at the abovementioned address in case of DFPCL and to contractor as provided in the bid document.

11) In the event of a contract not being considered for extension, DFPCL reserve the right to extend the expiry date by not more than 3 months for smooth handover. There should not be any breach of any rules and / or regulations or any violation of the terms and conditions during the tenure of contract. In case any breach / violation / misconduct observed, then DFPCL will impose appropriate penalty on the Vendor / Contractor. The same will be deducted from the monthly bills of the Vendor / Contractor. This will culminate in the cancellation of the complete purchase / work order without any further notice, which will be at the risk and cost of the Vendor / Contractor. Any loss and / or damage to the Plant and / or machinery or any property belonging to DFPCL or its Vendor / Contractor due to the negligence / mistake on part of any manpower employed by the Vendor / Contractor will be dealt with seriously and will culminate in recovering from Contractor's monthly bills. It will be the sole discretion of DFPCL to decide on a penalty for any misconduct / negligence / violation / breach of the terms, conditions, statutory rules, safety rules as mentioned in the tender / purchase / work order.

12) **Bill submission:** The billing period applicable for running A/c bills in respect of this contract is every calendar month. The bills shall be submitted to with respective Unit addresses (Wherever work is carried out)–

- DFPCL Unit- Plot K-1, Taloja MIDC Industrial Area, Raigad, Maharashtra, India-410208

The first RA bill shall be released only on submission of a copy of labour license duly attested by DFPCL administration in the prescribed format. If a labour license is not applicable, the contractor shall obtain confirmation to this effect from DFPCL administration.

Please mention vendor code no., PAN no., GST No., HSN / SAC Code and WO no. on invoice/ bills.

Joint measurement sheet (IMS) to be submitted by contractor within 7 days of completion of job or within 7 days of end of the month for previous month job.

I/We confirm having accepted all the terms as mentioned above.

(Company name, seal and signature of authorized person with Designation)

13) <u>Correspondence</u>:

For any payment/TDS certificate/Security Deposit, guarantee money refund/ Accounts related matters, please make correspondence with the accounts department at DFPCL Taloja.

Contractor to comply with all statutory obligations prevalent and applicable as per law. For further guideline on statutory related matters, contact personal department at respective DFPCL Taloja

For any job-related instruction and guidelines, working, turn up of workmen, tools & tackles, contact - engineer-in-charge / representative of plant.

For all matters related to entry/movement of persons, material, and vehicle within complex, contact the security department at respective DFPCL Taloja unit.

Penalty for late submission of bill:

Submission of the bill by the contractor to the concerned dept. For verification and certification of the jobs carried out by him/ them for payment shall be considered as a part of the work. In case bill is not submitted within 14 days' time from the date of completion of work mentioned in work order or issue of work order (for post facto cases) or amendment to work order whichever is later. Penalty at the rate of 1% per week of the invoice value maximum to 5% of the value of invoice shall be levied from contractor's bill. No compromise shall be granted in this regard. Date of bill scrolling shall be the reference date as zero date.

The invoice should be attached to a joint measurement sheet, failing to so, the invoice will not be processed by the finance department.

14) The Vendor / Contractor shall be responsible for providing the requisite number of staff for completing the mentioned Subject Works.

15) The Vendor / Contractor and its persons employed by him at DFPCL have no camping right whatsoever in the company's premises.

16) The members of the staff provided by the Vendor / Contractor should be employees of the Vendor / Contractor and all disputes between the Vendor / Contractor and the hiring Equipment staff shall be resolved by the Vendor / Contractor and shall have no bearing on DFPCL. The Vendor / Contractor should indemnify any claim, title in debt, cost, damage, compensation in respect of its employees posted on DFPCL premises.

17) Liquidated Damages: Liquidity damages of 1% per day of the monthly service charges shall be levied, subject to a maximum of 10% of contract for any breach of contractual obligations by the Vendor / Contractor as stipulated in the terms and conditions in addition to the obligation under any other provisions in the contract and the Law of the land.

18) Force Majeure condition: The term force Majeure as employed herein shall mean acts of God, War, Revolt, Terrorist Act, Accident, Fire, Flood and Acts and Regulations of respective Governments of the two parties. Upon occurrence of such cause and upon its termination, the party alleging that it has been rendered unable as aforesaid thereby shall notify the other party in writing within 72 hours, the full particulars and satisfactory evidence supporting his claim. Time for purpose of the relative obligations suspended by the force majeure shall then stand extended by the period of delay, which is directly caused by force majeure event.

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(Company name, seal and signature of authorized person with Designation)

19) Jurisdiction:

The Court at Pune/Panvel, Maharashtra shall have exclusive Jurisdiction to deal with and decide any legal matter whatsoever arising out of this Tender/ Purchase order or any agreement entered between the Tenderer/ Supplier and Company.

20) Arbitration:

Any dispute, difference, claim or question of interpretation of any nature arising between the parties with regard to this Tender/ Purchase Order/ Work Order/ Agreement regarding the meaning, respective rights, claims, liabilities and obligations under this Tender/ Purchase Order/ Work Order/ Agreement, including any question regarding its existence, validity or termination which is not resolved by amicable settlement shall be settled by arbitration by a sole Arbitrator appointed mutually by both the parties in accordance with the Arbitration and Conciliation Act, 1996 or any enactment or amendment thereof or through online arbitration. Award passed shall be final and binding on both the parties. The venue of such arbitration proceedings shall be at Pune/Mumbai (India) and for interim relief under the Act, courts at Pune/ Panvel shall have the exclusive jurisdiction over this Agreement.

20) Termination:

A. The Contract/ Tender can be terminated by either party i.e. DFPCL or the Contractor/Tenderer/ Tenderer, after giving three (3) months' notice to the other party. However, DFPCL reserves the right to terminate the contract without giving any notice in case of the Contractor/Tenderer fails to commence the work or commits breach of any of the terms of the contract. DFPCL's decision in such a situation shall be final and binding on the Contractor/ Tenderer without any objection or resistance.

B. On termination of the contract, the Contractor/ Tenderer will hand over all the equipment's/ furniture/ article etc. supplied by DFPCL (if any) in good working condition back to DFPCL except normal wear and tear.

C. If the successful bidder/ Contractor withdraws or the services provided by the successful bidder are not found satisfactory (say in a month or so) during the probationary period of three months from the date of taking over charge /Job contract, DFPCL reserves the right to terminate the contract with 15 days' notice to improve the services, if the Contractor/Tenderer fails to do so within 15 days then without giving any notice initiate appropriate necessary action in the matter for making alternate arrangements and immediately terminate the contract. The Contractor/Tenderer shall continue till such a time DFPCL finds an alternative arrangement.

In case it is found that any information furnished by the Tenderer/ Contractor/ Supplier is false or incorrect, the Company at its sole discretion may terminate the Contract/ Order without giving any notice. The Company shall reserve its right to seek appropriate damages from the Tenderer/ Contractor/ Supplier. Any loss incurred by the Company in this respect will be on Suppliers/ Tenderer's account.

21) The rates quoted by the suppliers shall remain firm till the completion of the contract period and also during extended period if any. No escalation on any other ground shall be allowed.

I/We confirm having accepted all the terms as mentioned above.

(Company name, seal and signature of authorized person with Designation)

(On Contractor/Tenderer's letterhead)

DETAILS OF BLACKLISTING / DISQUALIFICATION / FORFEITURE OF B.G. / S.D.

1) Whether your Firm/Company is blacklisted by DFPCL/ MAL or any other Public Sector / Govt. / Quasi-Govt Organization / any other client: **Yes / No.**

If yes, please mention details.

2) Whether your Contract was terminated before expiry of Contract period or Security Deposit / E.M.D forfeited by our Company or any other Public Sector/ Govt./ Quasi Govt Organization / Any other client: **Yes / No.**

If yes, please mention details.

3) Whether Proprietor / Partner / Director (as applicable) has been prosecuted by any judicial court for any criminal breach of trust: **Yes / No.**

If yes, please mention details.

(Signature of the Contractor/Tenderer & Seal)
.....

I/We confirm having accepted all the terms as mentioned above.

(Company name, seal and signature of authorized person with Designation)

(On Contractor/Tenderer's letterhead)

INFRASTRUCTURE / RESOURCES:

1) Total number of resources employed: _____

2) No. of branch offices: _____ _____ _____ (details of address, Telephone No. Fax No. etc.)

3) No. of FMS Contracts engaged in Mumbai with Avg value of Contract:

(Signature of the Contractor/Tenderer & Seal)

.....

I/We confirm having accepted all the terms as mentioned above.

(Company name, seal and signature of authorized person with Designation)

(On Contractor/Tenderer's letterhead)

GENERAL INFORMATION

1) Name & address of the Tenderers Firm / Company: _____

2) Office Telephone No.: _____

3) Office Fax No.: _____

4) Year of Establishment: _____

5) Constitution of the Firm: Proprietorship/Partnership/Pvt. Ltd./ Pub Ltd. Co./Co-operative

6) Name, Address of Partner / Directors: _____

7) Name of contact person: _____

8) Telephone no. of contact person: Office _____

9) Residence _____

10) Mobile _____

11) Name & Designation of Authorized Signatory: _____

12) Details of sister concerns

a) Name & Address:

b) Activities engaged in by Sister Concern:

c) Names, Addresses & Telephone Nos. of Proprietors/Directors/Partners of Sister concerns.

(Signature of the Contractor/Tenderer & Seal)

I/We confirm having accepted all the terms as mentioned above.

(Company name, seal and signature of authorized person with Designation)