TENDER FORM

प्लाज्मा अनुसंधान संस्थान

(भारत सरकार के परमाणु ऊर्जा विभाग का सहायता प्राप्त संस्थान)
इंदीरा ब्रिज के पास, भाट, गांधीनगर - 382428, भारत
दूरभाष: 079-23962020/23962021, **फैक्स:** 079-23962277

निमंत्रण निविदा और निविदाकारों को निर्देश करने के लिए
Invitation to Tender and Instructions to Tenderers

The Purchase Officer, Institute for Plasma Research invites, online tenders IN **TWO PART (INR QUOTE ONLY)** for supply of stores as detailed in the Purchaser's Tender documents. The conditions of contract and instructions to tenderers which will govern the contract pursuant to tender are given below.

If you are in a position to quote for the supply in accordance with the requirements stated in the attached Tender Form please submit your quotation **online. The quote should be in INR only.**

Tender submitted by **fax/cable/telegram or any mode other than online will NOT be considered at all** and all such tenders will be rejected without any notice to the tenderer.

Yours faithfully,

Purchase Officer-II
For and on behalf of Director, IPR
Institute for Plasma Research

Encl: as above.

INSTRUCTIONS FOR ONLINE SUBMISSION

1) It is mandatory for all the applicants to have **class-III digital signature certificate** from any of the licensed Certifying Applicant to participate in e-tendering.
2) In order to participate in online e-tendering process, it is mandatory for the applicants to have **user ID & password** to get access to the website www.tenderwizard.com/DAE. The applicants have to get registered their firm / company with the service provider, M/s ITI Limited for user ID & password. The registration shall be done by paying an annual registration fees to M/s ITI Limited and completing other formalities as mentioned in the website, www.tenderwizard.com/DAE. Validity of online registration is for one year from the date of its issuance and may be renewed by paying the applicable amount. For assistance/clarifications please contact Mr. Sunil K Patel at mobile 09624981992, e-mail: twhelpdesk426@gmail.com or nodalofficer.et@ipr.res.in or All India Help line No: 91-80-40482000/18004255048, e-mail: daehelpdesk@tenderwizard.co.in.
3) The applicants, who have already obtained such valid user ID and password from M/s ITI Limited, for any other tender of DAE, need not obtain fresh user ID and password for the purpose of participation in the present tender.
4) The services for e-tendering in IPR/DAE is provided by M/s ITI Ltd., Tender wizard Help Desk Centre, # 24, 1st Floor, Sudha Complex, Near Havanoor Circle, 3rd Stage, 4th Block, Basaveshwaranagar, Bangalore – 560079, Ph:91-80-40482000/18004255048, Telefax: 91-80-40482114, Email: daehelpdesk@tenderwizard.co.in.
5) The quotations shall be submitted online in the prescribed format before the date and time as mentioned in tender document. No other mode of submission is acceptable.
6) On successful e-payment of tender processing fees, the applicants can download the tender documents (including Excel sheets, if any) from the e-tendering portal.
7) Submission of the offer document after the due date and time shall not be permitted. Time being displayed on e-Tendering portal shall be final and binding on the applicant.
8) Applicants are advised to submit their documents well before the due date. IPR shall not be responsible for any delay in submission of documents for any reason including server and technical problems.
9) **Applicants are advised to fill all the mandatory fields (coloured cells) of the excel files of the Tender. If applicant keeps any mandatory cell blank, System will not allow to close/save the file.**
10) In case of any problem with the submission of the offer documents, the applicant may have the assistance of helpdesk or use the help manual given on the said website or mobile and e-mail mentioned elsewhere.

प्लाज़्मा अनुसंधान संस्थान इंदीरा ब्रिज के पास, भाट, गांधीनगर - 382428 गुजरात राज्य दूरभाष: **079 23962020, 23962021** फैक्स: **079 23962277**	**INSTITUTE FOR PLASMA RESEARCH** NEAR INDIRA BRIDGE, BHAT, GANDHINAGAR 382 428 GUJARAT STATE Phone: 079 23962020, 23962021 Fax: 079 23962277

निविदा सूचना TENDER NOTICE NO: IPR/TN/PUR/TPT/ET/19-20/22

दिनांकित DATED 1-8-2019

निम्नलिखित के लिए प्रतिष्ठित और योग्य पार्टियों से ई-निविदा विधि के माध्यम से दो भाग में ऑनलाइन निविदा आमंत्रित की जाती है।

Online tender is invited in **TWO PART** through e-tendering mode from reputed and eligible parties for the following.

मद का विवरण Item Description	Design, Fabrication, supply, installation and commissioning of Water Distributing System as per the specifications mentioned in the tender documents
निविदा प्रक्रिया शुल्क Tender Processing Fee	Tender Processing Fee of **Rs.2,950.00** should be paid through electronic mode to M/s ITI Limited.
बयाना राशि जमा EMD	**Rs.1,02,000.00** (Copy of Demand Draft to be uploaded with the quotation, Original DD should be sent to IPR on or before the specified closing date and time)
निविदा दस्तावेज वेबसाइट पर देखने और डाउनलोड करने के लिए उपलब्ध है Tender document available for view and downloading on website	**09.00 hrs.** on **1-8-2019** to **12.55 hrs.** on **18-9-2019**
निविदा दस्तावेज़ के संबंध में स्पष्टीकरण Clarifications regarding Tender document	**09.00 hrs**. on **1-8-2019** to **16.00 hrs**. on **5-9-2019**
निविदा ऑनलाइन जमा करने की अंतिम तिथि Closing of online submission of tenders	**18-9-2019** at **13.00 hrs.**
भाग-I के ऑनलाइन खोलने का समय और तिथि (तकनीकी बोली) Time and Date of online Opening of PART-I (Technical Bid)	**18-9-2019** at **14.30 hrs.**
भाग-II के ऑनलाइन खोलने का समय और तिथि (मूल्य बोली) Time and Date of online Opening of PART-II (Price Bid)	**Will be declared later on**

आवेदक निविदा दस्तावेज के बारे में वेबसाइट www.tenderwizard.com/DAE पर 5-9-2019 (16:00 बजे) तक अपने प्रश्नों को अपलोड करके स्पष्टीकरण (बोली-पूर्व) मांग सकते हैं। स्पष्टीकरण उसी वेब पोर्टल www.tenderwizard.com/DAE पर 9-9-2019 (17:30 बजे) तक अपलोड किए जाएंगे।

The applicant can seek clarifications (pre-bid) regarding the tender document up to 5-9-2019 (16:00 Hrs) by uploading their queries on website www.tenderwizard.com/DAE . The clarifications will be uploaded on the same web portal www.tenderwizard.com/DAE by **9-9-2019** (17:30 Hrs).

विस्तृत निविदा सूचना,योग्यता मानदंड और निविदा दस्तावेज के साथ वेबसाइट www.tenderwizard.com/DAE पर नि:शुल्क देखने और डाउनलोड करने के लिए उपलब्ध है। ई-निविदा प्रक्रिया में भाग लेने के लिए, उपर्युक्त ई-निविदा पोर्टल पर रजिस्टर करना अनिवार्य है और डिजिटल हस्ताक्षर प्रमाणपत्र (श्रेणी-III) होना आवश्यक है। बोलीदाता नए रजिस्टरेशन/टेन्डरिंग में सहायता के लिए पऊवि हेल्पडेस्क से daehelpdesk@tenderwizard.co.in पर संपर्क कर सकते हैं, फोन नंबर:(80)-40482000/ 9624981992/18004255048

Detailed tender notice along with Eligibility criteria and Tender Document is available on website **www.tenderwizard.com/DAE** for free view and downloading**.** For participating in the e-tendering process, it is mandatory to get registered on the above e-tender portal and required to have Digital Signature Certificate (Class -III). For new registration/ tendering help, bidders may contact DAE Helpdesk at daehelpdesk@tenderwizard.co.in Phone No: (80)-40482000/ 9624981992/ 18004255048

इस निविदा सूचना की एक प्रति संस्थान की वेबसाइट www.ipr.res.in//purchasetenders.html पर भी उपलब्ध है। अधिक जानकारी के लिए, कृपया संपर्क करें: 079 23962020/2021, फ़ैक्स: 079 23962277।

A copy of this tender notice is also available on the Institute's website **www.ipr.res.in//purchasetenders.html**. For further information, please contact: 079 23962020/2021, Fax: 079 23962277.

Form No: IPR-LP-ET-02.V5

TWO-PART TENDER
SECTION – A

Invitation to Tender and Tendering Conditions

1.0 INVITATION TO TENDER

1.1 Institute for Plasma Research (IPR) invites online tenders for supply of Plant, Machinery, Equipment/Components to the specifications detailed in Section "C" to this tender document. The conditions of contract/purchase order which will govern the contract pursuant to the tender are as contained in Section "B" of this tender document. If you are in a position to quote for supply in accordance with the technical specifications indicated in Section "C" to this tender document and as per the conditions stipulated in this Section and Section B, please upload your offer in a manner and method specified below.

2.0 MANNER AND METHOD FOR SUBMISSION OF TENDERS

2.1 All tenderers in response to this invitation shall be submitted through online mode only. Tender submitted by **fax/cable/telegram or any mode other than online will NOT be considered at all** and all such tenders will be rejected without any notice to the tenderer.

2.1.1 **Part-I (Techno-commercial):** This part of the tender shall include/contain documents related to eligibility criteria, all technical details, technical specifications, drawings and also the commercial terms and conditions of contract for the supplies to be made and the services to be rendered **EXCLUDING ANY PRICE DETAILS THEREOF.**

Proof for fulfillment of eligibility criteria mentioned in Annexure-A should be uploaded along with the tender. If the tender is submitted without valid documents, we shall not consider your offer. Tenders received without proof of eligibility criteria will be rejected. The offers which meets the eligibility criteria will only be considered for evaluation.

2.1.2 **Part-II (Price):** This part should contain only the prices of the stores offered for the services to be rendered. Part-II (Price) should be furnished in accordance with the format provided by the Purchaser at Section "D" of this tender document

2.1.3 If tenderer includes prices of any nature in Part-I (Techno-commercial) of the tender such offers are liable for rejection without any notice to the tenderers.

3.0 EARNEST MONEY DEPOSIT (EMD)

3.1 The Tenderer shall submit, as part of its bid, interest free Earnest Money Deposit (EMD) for an amount as specified in the Tender Notice. In the case of foreign bidders, the EMD shall be submitted either by the principal or by the Indian agent and in the case of indigenous bidders;

the EMD shall be submitted by the manufacturer or their specifically authorized dealer/bidder. EMD shall be submitted by way of Demand Draft from **SBI/nationalized banks or any one of the scheduled banks mentioned in the bracket (Axis Bank, HDFC Bank, ICICI Bank and IDBI Bank)** issued in favour of ***"Institute for Plasma Research***" and payable at **Ahmedabad**. **Tender received without EMD will be rejected at the discretion of IPR.**

(*Copy of Demand Draft to be uploaded with the quotation, Original DD should be sent to IPR on or before the specified closing date and time*)

3.2 The EMD of unsuccessful Tenderer will be discharged/returned after finalizing award of the Contract/placement of Purchase order.

3.3 The successful Tenderers EMD shall be discharged upon the Bidder submitting the Security Deposit as specified in the contract/purchase order, without any interest.

3.4 **Exemption from payment of EMD:** The firms registered with DGS&D, NSIC, DPS or Micro & Small Enterprises (MSEs) which are actual producers/manufacturers of tendered items are exempted from payment of EMD provided valid registration certificate is uploaded along with the offer. In the case of foreign bidders, payment of EMD is exempted if they submit their bid directly or through their Indian agent in **foreign currency** against the tender document bought by them, so that the order can be placed directly on their Principals.

3.5 **The EMD may be forfeited:**

3.5.1 If a Tenderer withdraws or amends or modifies or impairs or derogates its bid during the period of bid validity specified by the Bidder on the Bid Form; or

3.5.2 In case of a successful tenderer, if the tenderer fails to furnish order acceptance within 15 days of the order or fails to submit the Security Deposit within 21 days from the date of contract/order.

4.0 LATE/DELAYED TENDERS

4.1 Uploading of the offer document after the due date and time shall not be permitted. Time being displayed on e-Tendering portal shall be final and binding on the applicant.

5.0 OPENING OF TENDERS

5.1 Unless otherwise pre-opened or postponed with advance intimation to the tenderers, tender will be opened in two stages on the date and time indicated on e-Tendering portal.

5.2 Part-I (Techno-commercial) of the tender will be opened at the first stage on the due date and time indicated for opening on the e-Tendering portal while the Part-II (Price) will be opened at the second stage after completion of the evaluation of the Techno-Commercial Part (Part-I) of the tender.

5.3 While all the tenderers who uploaded tenders within the due date and time will be permitted to participate in the opening of Part-I (Techno-Commercial) of the tender on the due date and time indicated on e-Tendering portal, opening of the Part-II (Price) of the tender can be attended to only by such of those tenderers whose Part-I (Techno-Commercial) of the tenders are found to be technical suitable/

acceptable to the Purchaser and to whom intimation thereof is given by the Purchaser by Email/letter or through e-Tendering portal.

5.4 The tenderers whose Techno-commercial part (Part-I) are found suitable/acceptable to the Purchaser, will be given seven days advance intimation by the Purchaser to enable such tenderers to depute their representative to participate in the opening of the Part-II (Price) of the tender. The technically unqualified tenderers will neither be given any intimation about the date and time of opening of Part-II (Price) of the tender nor will they be permitted to participate in the opening of the same. **Part-II (Price) of the technically disqualified tenderers will not be opened.**

6.0 AUTHORITY LETTER

6.1 The tenderers who wish to participate in the opening of the tenders may depute their representatives to IPR on the respective due date and time as indicated in the tender notice with an authority letter addressed to the Purchase Officer which should be produced to the officers who are opening the tenders, on demand to prove the bonafides of the representative who participates in the opening of the tender. In case the representative of the tenderer fails to produce such an authority letter on behalf of the tenderer, he will be debarred from participating in the opening of the tenders.

6.2 The tenderers representative, who reaches the venue of the tender opening late, i.e. after the starting time specified for opening of the tenders, may not be allowed to take part in the tender opening. It should be noted that only one representative of each tenderer will be permitted to participate in the tender opening.

7.0 EVALUATION OF TENDER

7.1 Evaluation of tender shall be based on all inclusive landed cost.

8.0 PURCHASER'S RIGHTS TO REJECT QUOTATION

8.1 The Purchaser reserves the right to reject any quotation without assigning any reason thereof.

9.0 TECHNICAL CLARIFICATIONS

9.1 After opening of Part-I (Techno-commercial) of the tender, if it becomes necessary for IPR to seek clarifications from the tenderers, the same will be sought for from the tenderers.

10.0 **DATE FOR OPENING OF PART-II (PRICE):**

After completion of technical evaluation, Part-II (Price) of only technically qualified tenderers shall be opened. The date and time of opening of Part-II (Price) shall be intimated only to the technically qualified tenderers. Whose Part-I offers have been found suitable will only be permitted to participate in the opening of the Part-II (Price) of the tender.

11.0 HOLIDAYS

If the date (s) specified for receipt and opening of the tenders is/are declared as holidays abruptly by the competent authority due to any administrative reasons, then the date(s) for opening of tenders will get postponed automatically to the next working day. As for instance, if the due date for receipt of tender and its opening falls on 3rd of a particular month and if the 3rd day of the month is declared as a holiday, then the

opening date of tender will stand automatically postponed to 4th day of the month at the same time. However, due date for submission of tender online will remain same as mentioned in the tender notice.

12.0 **VALIDITY OF OFFERS**

Offers shall be kept valid for acceptance for a period of of 120 (One hundred twenty) days from the date of opening of Part-II (Price) of the tender. Offers with shorter validity period will be liable for rejection.

13.0 **CATALOGUES/TECHNICAL LITERATURE**

Vendor shall upload all necessary catalogues/drawings technical literature data as are considered essential for full and correct evaluation of the offers shall invariably accompany the Part-I (Techno-Commercial) of the tender. The quotations are liable to be ignored if this condition is not complied with.

14.0 **TERMS AND CONDITIONS OF THE CONTRACT**

It must be clearly understood that any contract concluded pursuant to this invitation to tender shall be governed by the General Conditions of the Contract as contained in Section “B" of this tender document. Tenderers must therefore, take special care to go through these general conditions of contract and in exceptional cases if any deviations are proposed, these must be clearly indicated in the Part-I of the tender as a separate annexure instead of merely enclosing their printed conditions of Sale. Tenders made subject to counter conditions or far too many deviations from the general conditions of contract, i.e. Section "B" of this tender document are liable to be ignored. It should also be realised that failure to bring out deviations from the General Conditions of Contract contained in Section "B" of this tender document will imply that the tenderer is willing to execute the contract as per the Purchaser's terms and conditions of contract.

15.0 TENDERING CONDITIONS FOR BIDS

15.1 The prices quoted must be FIRM and preference will be given to such tenders. In exceptional cases (e.g. items involving substantial use of raw materials susceptible to sharp fluctuations in prices) if prices quoted subject to variation it shall be on the basis of a standard 'Price Variation Formula'. The basis for calculation shall be very clearly stated. The responsibility for furnishing the documentary evidence for price variation lies with the vendor. Here again preference will be given to the tenders with a specific ceiling on escalation.

15.2 Prices quoted by the tenderer should include all charges involved for direct and safe-delivery of the stores to the consignee/place of delivery indicated in the tender document. If a tenderer so desires, separate lump sum charges for safe-delivery of the stores to the consignee/purchaser’s site, could be furnished. However, the purchaser reserves the right to call for break-up. The purchaser will neither undertake responsibility for transit insurance nor pay for it separately.

15.3 In respect of tenders on Ex-works basis, in case the tenderer has not mentioned in the offer packing, forwarding and transportation charges for safe delivery up to Purchaser's site, 2% of the price quoted towards packing (in respect of both local and outstation firms), 1% of the basic price quoted towards safe delivery charges in respect of local tenderer and 3% of the basic price quoted towards safe delivery charges in

respect of outstation firm will be added for comparison of offers on safe door delivery at Purchaser's site.

15.4 The stores shall neither be despatched under 'owner's risk' nor consigned to 'self', but only to the consignee's name and address indicated in the Purchase order. Non-adherence to this condition shall make the contractor liable to bear all consequential penalties/expenses such as demurrage, wharf age, etc. which the Purchaser may incur.

15.5 The consignee will, as soon as possible, but not later than 45 days from the date of arrival of stores at destination notify the contractor of any loss or damage to the stores that may have occurred during transit to enable the contractor to repair/rectify the defects/damages or replace the goods as is appropriate, free of all charges. In case it is desired by the contractor for returning of the material to them all expenses towards transportation etc. will be borne by the supplier and also will furnish bank guarantee towards the cost of material.

15.6 In case an Indian supplier/Agent furnishes an offer for supply of out-rightly imported stores, the price of such stores shall be quoted in Indian Rupees for delivery to the consignee's premises exclusive of import duties and on firm price basis.

15.6 **Conditional Discount:** In case the tenderer offers any conditional discount with regard to acceptance of their offer within a specific payment terms, delivery, quantity etc. the purchaser will not take into consideration such conditional discount while evaluating their offer.

16.0 SPARES AND ACCESSORIES

16.1 Tenders for plant/machinery/equipment/component shall also indicate prices for essential accessories, optional accessories and spares necessary for satisfactory operation of the plant/machinery/ equipment.

16.1.1 for a period of two years and

16.1.2 for a period of five years

16.2 Prices for accessories and spares shall be itemized. Tenders where only lumpsum prices are indicated are liable to be ignored. Particular care must be taken to list out each item of spare and quantity recommended and also the individual price for these items. These details should be included only in Part-II (Price) of the tender. However, a list of spares and accessories without Price should be included in Part-I (Techno-Commercial) of the tender.

17.0 QUANTITY

The purchaser reserves the right to accept tenders for any quantity of his choice and the tenderer shall be bound to accept a contract for any quantity. The Purchaser also reserves the right to accept or reject lowest or any tender in full or in part without assigning any reasons.

18.0 STATUTORY LEVIES SUCH AS CUSTOMS DUTY, GOODS AND SERVICE TAX

18.1 **CUSTOMS DUTY**

18.1.1 The Purchaser is entitled for assessment of customs duty at the concessional rate as per Customs Notification No. 51/96-Custom dated 23.7.1996 issued by the Department of Revenue, Ministry of Finance, as amended from time to time, in respect of purchases made for the Research Institutions under the Department of Atomic Energy and the Purchaser will obtain the requisite

certificate from the appropriate authority.

18.1.2 In case an Indian vendor/agent submits an offer for supply of outrightly imported stores in Indian Rupees, they should quote price for free and safe delivery of stores at destination.

18.1.3 Wherever, against a requirement, both indigenous as well as imported offers are received, the offers for imported stores will be evaluated on the basis of the total landed cost after loading the custom duty and other levies as may be applicable from time to time for taking purchase decision.

18.1.4 High Seas sale will not be considered.

18.2 **FLUCTUATION IN THE CUSTOMS DUTY**

18.2.1 Unless otherwise specifically agreed to in terms of the Contract, the purchaser shall not be liable for any claim on account of fresh imposition and /or increase in Customs Duty on raw materials and/or components used directly in the manufacture of the contracted stores, taking place during the pendency of the contract.

18.3 **Offers from Indian Agents on behalf of foreign suppliers:** In case the tender is submitted by an Indian supplier/Indian agent on behalf of their foreign supplier/ principals, following documents should be submitted with the tender, failing which, their offer is liable to be ignored.

18.3.1 Photocopy of the Agency Agreement between the Principals and the Indian Agent showing the percentage or the quantum of agency commission payable and a Letter of Authority from the Principals authorizing the Indian Agents to submit the tender on their behalf.

18.3.2 The type and nature of after sales services to be rendered by the Indian Agent.

18.3.3 Both Indian Agent and Principal/OEM cannot bid simultaneously for the same item/product in the same tender.

18.3.4 The Indian Agents are allowed to quote on behalf of only one foreign Principal/ Supplier against this tender.

18.3.5 Copy of Registration Certificate with DGS&D or DPS.

18.4 **GOODS AND SERVICE TAX**

18.4.1 GOODS AND SERVICE TAX where legally leviable as per relevant HSN code will be admitted and reimbursed at the rate applicable during original delivery date.

18.4.2 GOODS AND SERVICE TAX intended to be claimed should be distinctly shown separately along with the price quoted. Where this is not done, no claim for GOODS AND SERVICE TAX will be admitted at any later stage and on any ground whatsoever.

18.4.3 The Purchaser is entitled for assessment of GST at the Concessional rate as per Notifications issued by the Government, as amended from time to time, in respect of purchases made for the Research and Development applications under the Department of Atomic Energy and other R&D units.

18.4.4 **GST for R&D Unit:** Goods and Service Tax (GST) wherever applicable will be paid extra at actual during the delivery period stipulated in the Purchase order. In terms of notifications issued by the Central Government and Statement Governments, R&D units of Department of Atomic Energy are entitled for IGST @ 5% or CGST @ 2.5% and SGST @ 2.5% as applicable for stores covered under the Purchase Order.

18.4.5 **GST for Services:** As applicable. Specify the SAC codes wherever services are involved.

18.4.6 It would be the responsibility of the contractor to ensure that relevant certificate is obtained from the Purchaser before effecting the delivery of goods ordered failing which the excess tax paid by the contractor shall not be reimbursed by the Purchaser.

18.4.7 When GOODS AND SERVICE TAX is claimed as extra by the vendor in general and on packing charges in particular, the following certificates should be submitted by the vendor to the Paying Authority on the bills itself.

18.4.8 Certified that the goods and packing charges on which GOODS AND SERVICE TAX has been charged have not been exempted under the Central Sales Tax or the State Sales Tax Act or the rules made there-under and the amount charged on account of GST on these goods and packing charges are not more than what is payable under the provision of relevant Act or the rules there-under.

18.4.9 Certified further that we have actually paid GOODS AND SERVICE TAX and are being assessed to GST on packing charges and also that where there are statutory exemption under the Relevant Act/Law of the State Government concerned, we have availed ourselves of it and certified non-availability of such a provision for GST on packing charges wherever claimed.

18.4.10 Certified further in respect of amount claimed into the bill no claim is pending for refund/or admissible. Certified that in the event of our getting refund in whole or in part of the element of GOODS AND SERVICE TAX on packing charges claimed from Government, we shall pass on the benefit to the Purchaser by remitting to Government the amount equivalent to the amount of refund obtained by us.

18.4.11 Further certififed that we abide by the all the provisions of Acts of Governemnt and rules made thereunder especially regarding anti-profiteering provisions.

18.4.12 Certified further that we (our Branch or agent) _____ _____ (address) are registered as dealers in the State of _____ under Local Regn. No._____ and in the State of _____ under Central Regn. No. _____ for the purpose of State/Central Tax.

(Stamp & Signature of the Vendor)

18.4.13 The vendor shall solely be responsible for declaration of Goods and Service Tax made in his invoice and shall indemnify the purchaser from any claim or its liability from concerned authorities at any stage.

18.4.14 Certificate with each bill to the effect that no refund has been obtained in respect of the reimbursement of GST made to vendor during three months immediately preceding the date of the claim covered by the relevant bill.

18.4.15 AN UNDERTAKING to the effect that in case any refund of GST is granted to the vendor by concerned authorities in respect of stores supplied under the contract, they shall pass on the credit to the purchaser immediately alongwith a certificate from their Director/Manager/Proprietor/ Accountant to the effect that the credit so passed on relates to the GST originally paid for the stores

supplied under the contract. In case of their failure to do so within 10 days of the issue of the refund orders to them by the Authorites, the purchaser would be empowered to deduct a sum equivalent to the amount refunded by the authorities without any further reference to the vendor, from any of their outstanding bills against this or any other pending Government Contracts and that no dispute on this account would be raised by the vendor.

18.4.16 Statutory Deductions, as applicable shall be made from the supplier's bill.

18.5 **DEDUCTION OF TAX AT SOURCE (TDS)**

As per Government of India rules, it is mandatory that income tax shall be deducted at source at applicable rates as per relevant act, rules and notifications issued by the government from time to time.

18.5.1 **In case of Indigenous Vendors** (Indian Suppliers who provide indigenous products and services, Indian subsidiaries with permanent establishment in India who supply imported goods and services and paid in Indian currency only): Tax deducted at source will be applicable under Section 194-C for carrying out any work (including supply of labour for carrying out any work) in pursuance of contract as per Income Tax Act 1961. In case of technical or professional services, TDS will be applicable as per under Section 194-J of Income Tax Act 1961.

18.5.2 **In case of Foreign Vendors** (Foreign Suppliers who provide goods from abroad paid in foreign currency and providing technical services by Indian subsidiary paid in Indian currency): The TDS is applicable where services are rendered in India directly or through their Indian counter part against foreign Purchase order / Contract as per the provision of under Section 195 of Income Tax act of India. Wherever DTAA (Double Taxation Avoidance Agreement) agreement exists between India and the supplier country the provisions of the agreement shall be applicable. For getting benefit of DTAA (Double Taxation Avoidance Agreement), the following documents must be submitted, otherwise full TDS will be deducted.

a) No Permanent Establishment in India certificate
b) Tax Residency Certificate (TRC) issued by Tax authorities of their country
c) Form 10F if TRC does not contain required details
d) PAN (Permanent Account Number) details issued by Indian Income Tax Authority

Important Note:

a) Where bifurcation is inappropriate and unacceptable for supply of material and providing services the purchase order / contract will be treated as ***Composite Contract*** and TDS will be deducted on whole contract / purchase order value as per applicable rate.
b) TDS or any other leviable taxes or duties, if applicable, shall be deducted recovered from the Supplier's bill and necessary certificate will be issued to the supplier.

c) Details on relevant sections of Income Tax Act and DTAA treaties can be obtained from https://www.incometaxindia.gov.in/ Pages/acts/ income-tax-act.aspx.

19.0 FLUCTUATION IN STATUTORY LEVIES

Unless otherwise specifically agreed to in terms of the Contract, the purchaser shall not be liable for any claim on account of fresh imposition and/or increase in statutory levies on raw materials and/or components used directly in the manufacture of the contracted stores, taking place during the pendency of the contract. However, any reduction in statutory levies on these raw materials and/or components must be passed on to the Purchaser.

20.0 **SAMPLES/PROTOTYPES**

If any called for shall be submitted free of all charges by the Tenderer and the Purchaser shall not be responsible for any loss or damage thereof for any reason whatsoever. In the event of non-acceptance of the tender, the tenderer will have to make arrangements to remove/collect the sample/prototypes at his own expenses.

21.0 **QUANTITIES**

Quantities indicated are approximate only and one or more of the items of the stores tendered, or a portion of any one or more of the items of such stores may be accepted and the tenderer notwithstanding that his Tender has not been accepted in whole shall be bound to supply contracted quantity to the Purchaser.

22.0 **SUBMISSION OF DRAWINGS**

The tenderer shall furnish all drawings pertaining to the plant/machinery/ equipment/component to the Purchaser along with the tender for correct understanding and appreciation of the tender in quadruplicate. Besides, tenderers should also furnish general arrangement, schematic and such other drawings prescribed by the Purchaser within 4 weeks from the date of receipt of a Purchase Order for approval. Such drawings should be furnished along with Part-I (Techno-Commercial) of the tender. Tenderer's drawing will form part of the purchase order/contract only after these are approved by the Purchaser.

23.0 **INSTALLATION AND COMMISSIONING**

23.1 Wherever, the purchaser's invitation to tender calls for installation and commissioning or supervision of installation and commissioning of the instrument/equipment by the tenderer, the tenderer must clearly and separately quote the prices for the supply of the stores and the charges and the terms for installation and commissioning or supervision of installation and commissioning, as the case may be. The charges towards installation and commissioning should not be included in the price of the stores.

23.2 In respect of contracts involving installation and commissioning by vendors including overseas vendors where identifiable charges for the same has been quoted by the vendor, he shall bear the Income-tax liability as per the rates prevailing at the time of undertaking the job in accordance with the Income-tax Act in force in India.

23.3 Wherever, the scope of the contract includes installation and commissioning, it shall be the sole responsibility of the contractor to undertake the installation and commissioning as and when called for, by the Purchaser.

24.0 **INSPECTION**

24.1 The Contractor shall be responsible for and perform all inspection and testing required in accordance with the contract/purchase order and specifications included therewith.

24.2 The Purchaser may at his option depute his representative for inspection of the stores to be supplied under the contract or authorize and nominate a Quality Surveillance Agency of his choice for the purpose hereinafter called, in either case, the inspection.

24.3 The supplier shall give notice of readiness for inspection to the Purchaser so that the Inspector can be present at the requisite time. In such an event delivery shall not be effected until an authorization or shipping release is obtained from the Purchaser.

24.4 The contractor shall allow reasonable facility and free access to his work/factory and records to the inspector for the purpose of inspection or for ascertaining the progress of delivery under the contract.

25.0 **FACTORY REGISTRATION/SHOP & ESTABLISHMENT CERTIFICATE**

The tenderers shall upload the copy of the Factory Registration/License or Shop & Establishment Certificate as applicable, along with the tender, failing which the tenders are liable for rejection.

26.0 **PRODUCTS WITH ISI MARK**

26.1 Products with ISI mark will be preferred.

26.2 In respect of following categories of item, Purchaser will consider offers for products with ISI mark only:

- Fire Extinguisher
- Building Material
- PVC Pipes & fittings
- Agricultural Implements & sprayers
- Medical instruments such as syringes, needles, BP apparatus etc.

27.0 **SHOP/FACTORY EVALUATION, QUALITY SURVEILLANCE /INSPECTION AND SUBMISSION OF PROGRESS REPORTS**

27.1 The Purchaser or his technical authorities may at his option and prior to evaluation of the tender depute his Inspector or any quality surveillance Agency of his choice to the factory/workshop of the tenderer to assess and establish the manufacturing capability etc. of the tenderer. Similarly, the Purchaser may also depute his inspector/Quality Surveillance agency of his choice for inspection of the plant/machinery/equipment/component during the various stages of manufacture in such an event the tenderer/contractor shall:-

27.1.1 Allow reasonable facility and free access to his factory/work/ records to the Inspector for the purpose of inspection or for ascertaining the progress of manufacture and delivery.

27.1.2 Provide the drawings, toolings, gauges, instruments etc. required for carrying out the inspection work.

27.1.3 Produce an inspection plan to the Purchaser's satisfaction notifying him when check points on the plan are imminent.

27.1.4 Not supply or deliver the plant/machinery/equipment/ component unless and until a Shipping Release or an authorisation for despatch is obtained in a format provided by the Purchaser. Failure to comply with this instruction will not only result in with holding of the payment to the contractor/supplier, but also hold the tenderer/contractor liable for payment of compensation to the Purchaser due to delay in clearance of the Equipment/plant/machinery/ component from the carriers.

28.0 **INSTRUCTION MANUAL**

In respect of plant/ machinery/ equipment/ instrument/ apparatus, where instruction/ operation manual is normally necessary to enable the user to put the plant/machinery/equipment/instrument/ apparatus to proper use, the Contractor shall furnish such an instruction/operation manual specific to the stores being supplied along with the plant/machinery/equipment/instrument/apparatus. The Contractor shall clearly specify in the offer about his readiness to supply instruction/operation manual

29.0 **PACKING**

29.1 Tenderers shall note that packing for shipment shall be in accordance with the instructions outlined in this tender document, each package shall be limited to the size and weights that are permissible under the existing Air and Sea limitations. Even when no packing specification is included in the invitation to tender, it will be Supplier's responsibility to provide appropriate packing depending upon the nature of the supply and the transportation and handling hazards.

29.2 The equipment shall be so packed and protected as not to suffer deterioration, damage or breakage during shipment and storage in a tropical climate.

29.3 Each package shall be properly labeled to indicate the type and quantity of material it contains, the purchase order number, its dimensions and weight and any other necessary data to identify the equipment and relate it to contract.

30.0 **DEVIATIONS TO PURCHASER'S SPECIFICATIONS AND CONDITIONS OF CONTRACT**

30.1 If any deviation or substitution from the technical specifications contained in Section "C" to this tender document is involved, such details should be clearly indicated in Part-I (Techno-Commercial) and should be added as an annexure to Part-I (Techno-commercial) of the tender as otherwise it shall be an admission on the part of the tenderer that he will supply the equipment as specified by the Purchaser. Similarly, deviations to the Purchaser's General Conditions of Contract/Special Conditions of Contract contained in Section "B" of this tender document shall be indicated by the tenderer in another annexure to Part-I (Techno-commercial) of the tenderer.

30.2 Part-II (Price) should be furnished in accordance with the format provided by the Purchaser at Section "D" of this tender document.

31.0 **DELIVERY**

Tenderer should note that no tender will be considered by the Purchaser unless the Tenderer can meet the delivery schedule specified by the Purchaser. All equipments/machinery/plant/ component covered by this tender document should be supplied on or before _____ or _____ month from the date of approval of drawings or ____ month from the date of receipt of free issue materials. The prices quoted by the tenderer should include all charges involved for direct and safe delivery of the items by Road to the project site of the Purchaser. If a tenderer so desires/separate lumpsum charges for transportation and safe delivery to Purchaser's site could be furnished. Purchaser will neither undertake responsibility for transit insurance nor pay for it separately. No other, delivery term will be accepted by the Purchaser.

32.0 **ACCEPTANCE OF TENDERS**

32.1 The purchaser shall be under no obligation to accept the lowest or any other tender and shall be entitled to accept or reject any tender in part or full without assigning any reasons whatsoever.

32.2 Acceptance of tenders by the Purchaser will be sent by fax, E-mail, letter etc. within the validity date of the tender and such a fax, letter etc. would then be followed by a formal purchase order/contract. The tenderer whose offer is accepted will proceed with the execution of the contract on the basis of such advance acceptance of tenders without waiting for a formal purchase order/contract, and will be responsible to seek and obtain whatever clarifications that are necessary from the Purchaser to proceed with the manufacture without waiting for a formal purchase order/contract and delivery period will be reckoned from the date of the Letter of Intent.

33.0 **SETTLEMENT OF COMMERCIAL TERMS AND CONDITIONS OF CONTRACT**

In case the commercial terms and conditions of sale/contract stipulated in Part-I (Techno-commercial) of the tender submitted by the tenderer are at variance with the Purchaser's General Conditions of all Contracts/Special Conditions of Contract stipulated in Section "B" of this tender document, the Purchase Officer will settle the commercial terms and conditions of contract with the tenderers chosen for award of the contract by holding discussions with them OR by sending Fax/Letter/E-mail etc. In case the concerned tenderer to whom an intimation thereof is given does not respond/fail to respond to communication sent by the Purchaser within the date specified, his tender is liable for rejection at the discretion of Director, IPR and no complaints whatsoever will be entertained from the tenderer for rejection of this tender. The tenderers should not discuss with the technical authorities/user department any of the commercial terms and conditions of contract and any agreement/understanding reached between the tenderer and the technical authorities will not be valid and binding.

34.0 **COMPLIANCE WITH THE SECURITY REQUIREMENTS OF THE PURCHASER**

The Contractor shall strictly comply with the Security Rules and Regulations of the Purchaser in force and shall complete the required formalities including verification from Police and any other authority and obtain necessary prior permission for entry into the Purchasers premises, wherever authorized by the Purchaser.

35.0 **PAST PERFORMANCE**

In case the past performance of the tenderer is not found to be satisfactory with regard to quality, delivery, warranty obligation and non-fulfillment of terms and conditions of the contract, their offer is liable to be rejected by the purchaser.

36.0 CAPACITY & FINANCIAL STANDING

In case it is found that the tenderer does not possess the requisite infrastructure, capacity, capability and their financial standing is not satisfactory, such tender is liable to be rejected by the Purchaser.

37.0 **CONFIDENTIALITY**

Drawings, specifications, prototypes, samples or any other correspondence/details/information provided by the Purchaser relating to the tender or the contract shall be kept confidential by the contractor, and should not be disclosed or passed on to any other person/firm without the prior written consent of the purchaser. This clause shall apply to the sub-contractors, consultants, advisers or the employees engaged by the Contractor.

38.0 **RESTRICTED INFORMATION CATEGORIES UNDER SECTION 18 OF THE ATOMIC ENERGY ACT, 1962 AND OFFICIAL SECRETS UNDER SECTION 5 OF THE OFFICIAL SECRETS ACT, 1923**

Any contravention of the above mentioned provisions by the contractor, sub-contractor, consultant, adviser or the employees of the contractor will invite penal consequences under the aforesaid legislation.

39.0 **PROHIBITION AGAINST USE OF THE NAME OF ANY INSTITUTION OF DEPARTMENT OF ATOMIC ENERGY WITHOUT PERMISSION FOR PUBLICITY PURPOSES**

The Contractor or sub-contractor, consultant, adviser or the employees engaged by the contractor shall not use the name of any Institution of Department of Atomic Energy for any publicity purpose through any public media like Press, Radio, TV or Internet without the prior written approval of the Purchaser.

40.0 **FREE ISSUE MATERIAL** (*This clause shall apply only to contracts for supply of fabricated equipment with purchaser's Free Issue Materials (FIM).*

40.1 Wherever contracts envisage supply of Free Issue Material (FIM) by the Purchaser to the contractor, such Free Issue Material shall be safeguarded by an insurance policy to be provided by the Contractor at his own cost for the full value of such materials and the insurance policy shall cover, the following risks specifically and shall be valid for six months beyond the contractual delivery date.

- **Risk to be covered:** Any loss or damage to the Purchaser's material due to fire, theft, riot, burglary, strike, civil commotion, terrorist act, natural calamities etc. and any loss or damage arising out of any other causes such as other materials falling on purchaser's materials.

- **Insured by:** (Name of the Contractor)

- **Beneficiary:** Institute for Plasma Research, Near Indira Bridge, Bhat, Gandhinagar-382428.

- **Amount for which insurance policy to be furnished:** The amount will be indicated in the respective contract.

Free Issue Material (FIM) will be issued to the Contractor only after receipt of the Insurance Policy from the Contractor. The contractor shall arrange collection of the FIM from the Purchaser's premises and safe transportation of the same to his premises at his risk and cost.

Notwithstanding the insurance cover taken out by the Contractor as above, the contractor shall indemnify the purchaser and keep the Purchaser indemnified to the extent of the value of free issue materials to be issued till such time the entire contract is executed and proper account for the FIM is rendered and the left over/surplus and scrap items are returned to the Purchaser. The contractor shall not utilize the Purchaser's free issue materials for any job other than the one contracted out in this case and also not indulge in any act, commission or negligence which will cause/result in any loss/damage to the Purchaser and in which case, the Contractor shall be liable to the Purchaser to pay compensation to the full extent of damage/loss. The Contractor shall be responsible for the safety of the free issue materials after these are received by them and all through the period during which the materials remain in their possession/control/ custody. The free issue materials on receipt at the Contractor's works shall be inspected by them for ensuring safe and correct receipt of the material. The Contractor shall report the discrepancies, if any, to the Purchaser within 5 days from the date of receipt of the material. The Contractor shall take all necessary precautions against any loss, deterioration, damage or destruction of the FIM from whatever cause arising whilst the said materials remain in their possession/custody or control. The FIM shall be inspected periodically at regular intervals by the Purchaser for ensuring safe preservation and storage. The contractor shall also not mix up the FIM with any other goods and shall render true and proper account of the materials actually used and return balance remaining unused material on hand and scrap along with final product and if it is not possible within a period of one month from the date of delivery of the final product covered by this purchase order. The Contractor shall also indemnify the Purchaser to compensate the difference in cost between the actual cost of the FIM lost/damaged and the claim settled to the Purchaser by the insurance company. The decision of the Director, Institute for Plasma Research, as to whether the Contractor has caused any loss, destruction, damage or deterioration of the FIM while in his possession, custody or control from

whatever cause arising and also on the quantum of damage suffered by the government, shall be final and binding upon the Contractor.

41.0 EXPORT LICENCE/EXPORT PERMISSION

41.1 It is entirely the responsibility of the vendors who are quoting for materials of foreign origin to ensure obtaining export permission/licence/authorisation as required from the respective Government before arranging shipment. This Department would not accept post supply inspection by any agency/authority of any foreign country. It is, therefore, necessary that the vendors offering materials from foreign countries shall have thorough knowledge of export contract regulations in vogue in those countries.

41.2 The vendors shall indemnify the purchaser against any consequences in respect of any end-use declaration they/their overseas Principals may furnish to the government/government agencies of the country of origin of the materials, while seeking export permission/licence. Post supply inspection, contrary to the terms and conditions of purchaser's contract shall be deemed to be null and void.

42.0 **END USE CERTIFICATE**

42.1 Whenever an End-use Certificate is desired by the vendor, the same shall be clearly mentioned in the quotation and the purchaser shall provide an Enduser Certificate as per the format given below. The Purchaser will not provide any other document/declaration in this regard.

END USER STATEMENT:

"We hereby certify that the item/s i.e._____, being procured from M/s_____ against our Purchase Order No._____ dated _____ will be used for _____. We also certify that the item/s will not be used in designing, developing, fabricating or testing of any chemical, biological, nuclear, or weapons of mass destruction or activities related to it. It is further certified that we will not re-export the Item/s prior to obtaining permission from the concerned authorities as may be required".

43.0 **COUNTRY OF ORIGIN**

43.1 Wherever the tenders are for imported stores, the Country of Origin of the stores must be clearly specified in the quotation.

44.0 **LIABILITY**

44.1 Vendors shall be liable for any damage to the purchaser or any third party out of any patent or latent defect in the goods supplied by him or sub-standard services rendered by him.

45.0 RIGHT TO REJECT QUOTATION

45.1 The Purchaser reserves the right to reject any quotation, which is not in conformity with the above instructions.

45.2 The Purchaser also reserve the right to reject any quotation without assigning any reason whatsoever.

46.0 **PRICE / PURCHASE PREFERENCE**

Purchase/Price preference to industries will be given as per the policy of the Government of India in force at the time of evaluation provided their offer is in compliance with the conditions of the policy.

47.0 **PERMANENT ACCOUNT NUMBER (PAN**

47.1 Vendors are required to upload a true copy of the PAN Card/Letter issued by the Income-tax Department, failing which the tenders are liable to be rejected.

48.0 MSE bidders should declare their UAM (Udyog Aadhar Memorandum) number on CPPP portal to avail benefits as per Public Procurement Policy for MSE's order 2012.

49.0 The bidder shall not be under a declaration of ineligibility for corrupt or fraudulent practices or blacklisted with any of the Government Agencies.

Any additional conditions attached to this Invitation to Tender shall also form part of the contract conditions.

SECTION ‘B’

GENERAL CONDITIONS OF CONTRACT

INSTITUTE FOR PLASMA RESESARCH
PURCHASE SECTION

GENERAL CONDITIONS OF ALL CONTRACT
&
SPECIAL CONDITIONS OF CONTRACT GOVERNING SUPPLIES OF PLANT AND MACNHINERY

GENERAL CONDITIONS OF CONTRACT

1. DEFINITIONS

1.1 The term 'PURCHASER" means the Institute for Plasma Research or its successors or assigns.

1.2 The term 'PARTICULARS' means the following:

1.2.1 Specification

1.2.2 Drawing

1.2.3 Sealed pattern denoting a pattern sealed and signed by the Inspector

1.2.4 Proprietary make denoting the produce of an individual firm

1.2.5 Any other details governing the construction manufacture and/or supply as existing for the contract.

1.3 The term 'CONTRACTOR' or 'SUPPLIER' means, firm or company with whom or with which the order for the supply of stores is placed and shall be deemed to include the Contractors/Successors (approved by the Purchaser), representatives, heirs, executors and administrators unless excluded by the contract.

1.4 The term 'CONTRACT' or 'PURCHASE ORDER' means and comprises of a Letter or Email or ink signed or digitally signed document conveying acceptance of Contractor's offer and invitation to tender, tender containing offer, advance acceptance of offer, general and special conditions of contract specified in the acceptance of offer and any subsequent amendments/alterations thereto made on the basis of mutual agreement.

1.5 The term 'STORES' or 'MATERIAL' means, the goods specified in the contract/purchase order which the contractor has agreed to supply under the contract.

1.6 The term 'SUB-CONTRACTOR' or 'SUB-SUPPLIER' means any contractor or supplier engaged by the contractor or the supplier with the prior approval of the Purchaser in relation to the contract/purchase order.

1.7 The term 'INSPECTOR' or 'QUALITY SURVEYOR' means any person nominated and deputed by the purchaser or their appointed Consultants or Quality Surveillance Agency or any other person from time to time authorized by the Purchaser to act as his representative for the purpose of inspection of stores under the contract/purchase order.

2. AUTHORITY OF PERSON SIGNING THE CONTRACT ON BEHALF OF THE CONTRACTOR

The person signing the contract or the purchase order or any other document in respect of the contract or purchase order on behalf of the contractor shall deemed to warrant that he has the authority to bind the contractor.

3. SUBLETTING OF CONTRACT OR BILLS OR ANY BENEFIT ACCRUING THEREFROM

3.1 The Contractor shall not sublet, transfer or assign the Contract or any part thereof or bills or any other benefits, accruing therefrom or under the contract without the prior written consent of the Purchaser (All Sub-contractors are required to be appraised and approved by the Purchaser before placement of orders by the Contractor/Supplier). However, such consent shall not be unreasonably withheld by the Purchaser, if such stores are not normally manufactured by the Contractor, such assignment or subletting shall not relieve the Contractor from any contractual obligation or responsibility under the Contract.

3.2 Any breach of this condition shall entitle the Purchaser to cancel the Contract or any part thereof and to purchase from other sources at the risk and cost of the Contractor and shall recover from the Contractor damages arising from such cancellations.

3.3 In case the Contractor sublets, transfers or assigns any part of the Contract with the prior written consent of the Purchaser, all payments to the Sub-Contractor shall be the responsibility of the Contractor and any requests from such sub-Contractor shall not be entertained by the Purchaser.

4. SECURITY DEPOSIT

4.1 On acceptance of tender, the Contractor shall at the option of the Purchaser and within the period specified by him, submit a Bank Guarantee from SBI or any one of the nationalized banks or reputed private banks, viz. AXIS Bank, ICICI Bank, IDBI Bank and HDFC Bank towards Security Deposit not exceeding 10% (ten percent) of the tendered value of the contract/purchase order valid till at least 2 months beyond the acceptance date of the material, as the Purchaser shall specify.

4.2 If the Contractor is called upon by the Purchaser to submit Security Deposit and the contractor fails to provide the same within the period specified such failure shall constitute a breach of the Contract and the Purchaser shall be entitled to make other arrangements for the repurchase of the stores contracted for at the risk and expenses of the Contractor in terms of clause 9.2.4 hereof and/or recover from the Contractor damages arising from such cancellation. No claim shall lie against the purchaser either in respect of interest if any due on Security Deposit or depreciation in value.

4.3 Offers wherein contractors declined to submit Security Deposit are liable to be rejected.

5. DRAWINGS & SPECIFICATIONS

5.1 The drawings and specifications are intended to be complementary and to provide for an comprise everything necessary for the completion of supply. Any material shown on the drawing even if not particularly described in specifications or vice versa is to be supplied by the Contractor as if it were both shown and specified.

5.2 Should any discrepancy be noted in the drawings and/or specifications and should any interpretation of the same be required, the matter shall be referred to the Purchaser for clarification which shall be binding upon the contractor. Otherwise, the contractor shall assume responsibility for the interpretation of the drawings and specifications including interpretation by his sib-contractors.

5.3 Should any difference or dispute arise with regard to the true intent and meaning of drawings or specification or should any portion of the same be obscure or capable of more than one interpretation, the same shall be decided by the Purchaser whose decision shall be final.

5.4 All lettering on the drawings is t be considered as part of the specification and contract. In all cases figured dimensions are to be followed rather than those indicated by scale. Large scale drawings will take precedence over small scale drawings.

5.5 The contractors drawings shall, when approved by the Purchaser, be deemed to be included in the list of drawings which form part of the contract. The Contractor shall not proceed with fabrication until all drawings associated therewith have been duly approved by the Purchaser.

5.6 The Contractor shall be responsible for and shall pay for any alterations of the stores and shall indemnify the Purchaser for any consequential expenditure incurred by the Purchaser due to any discrepancies, errors, omissions in the drawings or other particulars supplied by him whether such drawings or specifications have been approved by the Purchaser or not, provided that such discrepancies, errors or omissions be not due to inaccurate information or specifications furnished to the contractor on behalf of the Purchaser.

5.7 **General Warranty**

5.7.1 The stores supplied by the contractor under the contract shall be of best quality and workmanship. The contractor shall supply the stores in accordance with the contract specifications unless any deviation has been expressly specified in the contract and any amendments agreed thereto.

5.7.2 The contractor's offer to supply stores in accordance with the tender specifications shall be deemed to be in admission on his part that he has fully acquainted himself with the details thereof and no claim shall lie against the Purchaser on the ground that the contractor did not examine or acquaint himself fully with the tender specifications.

5.8 **Contractor's Liability for Defective Stores**

5.8.1 For a period of twelve months after the stores have been accepted by Purchaser the Contractor shall be responsible for any defects that may be discovered therein notwithstanding that such defects could have been discovered at the time of inspection or any defects therein are found to have developed under proper use, arising from faulty materials, design or workmanship and the Contractor shall remedy all such defects as aforesaid at his own cost provided he is called upon within a period of 14 months from the date of acceptance thereof to do

so, by the Purchaser who shall state in writing in what respect the goods are faulty and further if in the opinion of the Purchaser the defects are of such a nature that it is necessary to replace or renew any defective stores, such replacement or renewal shall be made by the Contractor without any extra costs to the Purchaser, provided notice informing the Contractor of the defect is given by the Purchaser within the said period of 14 months. The decision of the Purchaser notwithstanding any prior approval or acceptance of the Inspector as to whether or not the stores delivered are defective or any defect has developed within the said period of twelve months or as to whether the nature of defects renewal or replacement shall be final conclusive and binding on the Contractor.

6. ALTERATIONS

6.1 The Purchaser may, from time to time, make changes in the drawings specifications and issue additional instructions without altering the purchase order in any manner provided that no changes shall have been ordered which materially alter the character and scope of the supply under the contract.

6.2 It shall be lawful for the parties to the contract to alter by mutual consent at any time and from time to time the drawings and specifications and as from the dates specified by him stores to be supplied shall be in accordance with such altered drawings and specifications provided that if any such alterations involve increase or decrease in the cost of or in the period required for production, a revision of the contract price and/or the period prescribed for delivery shall be made by mutual agreement in respect of the stores to which the alteration applies. In all other respects, the contract shall remain unaltered.

7. SAMPLES

7.1 Samples submitted for any reason shall be supplied without charge and freight paid without any obligation of the Purchaser as regards safe custody or safe-return thereof. All samples submitted must be clearly labelled with the Contractor's name and address and tender number. If the Contractor submits the sample with his tender the same shall not govern the standard of supply except when it has been specifically stated in the Purchase Order that it is accepted instead of any sealed pattern. Should certified samples be lent to the Contractor by the Purchaser, the Contractor is responsible for the return in perfect order of all certified samples with the labels intact.

8. PACKING

8.1 The contractor shall be held responsible for the stores being sufficiently and properly packed for transport by rail, road, sea or air so as to ensure their being free from any loss or damages on arrival at their destination. The packing and marking of packages shall be done by and at the expenses of the Contractor. Each package shall contain a Packing

Note quoting Purchase Order number and date and showing its contents in detail.

8.2 Unless otherwise provided in the contract all containers (including packing cases, boxes, tins, drums and wrappings) in which the stores are supplied by the contractor shall be considered as property of the Purchaser and their cost as having been included in the contract price.

9. DELIVERY:

9.1 **TIME FOR AND DATE OF DELIVERY, THE ESSENCE OF THE CONTRACT:**

The time for and the date of delivery of the stores stipulated in the purchase order/contract shall be deemed to be of the essence of the contract and delivery must be completed not later than the date/dates stipulated.

9.2 **EXTENSION OF DELIVERY SCHEDULE**

9.2.1 If any delay in delivery shall have arisen from any cause such as strike, Lock-outs, fire, accidents, riot or the like which the purchaser may admit as reasonable ground for grant of extension of delivery schedule, the purchaser will allow such additional period for the purpose as he may consider necessary taking the circumstances into consideration.

9.2.2 If the contractor fails to deliver the stores or any instalment or part thereof within the period fixed for such delivery or such additional period allowed by the purchaser in accordance with foregoing paragraphs or any time before the expiry of such period repudiates the contract, the Purchaser may without prejudice to the rights of the purchaser.

9.2.3 Recover from the contractor as Liquidated Damages and not by way of penalty as detailed under clause No.222 given herein below for any stores which the contractor has failed to deliver within the period fixed for delivery in the contract or such additional period as mentioned in paragraph 9.2.1. during which the delivery of such stores, may be in arrears where delivery thereof is accepted after expiry of the aforesaid period. (For the purpose of computing the damages for delayed supplies under the clause, the cost of the entire plant/machinery/equipment/instrument will be taken into consideration if the plant/machinery/equipment/instrument cannot be put to the intended use for want of delayed portion of supply).

9.2.4 Purchase or authorise the purchase elsewhere without notice to the contractor, on account and at the risk of the contractor of the stores not so delivered or others of a similar description (where stores exactly complying with the contract specification are not in the opinion of the Purchaser, which opinion shall be final, readily procurable) without cancelling the contract in respect of the portion instrument not yet due of delivery, OR

9.2.5 Cancel the contract or portion thereof and if so desired purchase or authorise purchase of the stores not so delivered or others of a similar description (where stores exactly complying with the contract specification are not in the opinion of the Purchaser, which opinion shall be final, readily procurable) at the risk and cost of the contractor, if the contractor had defaulted in the performance of the original contract, the purchaser shall have the right to ignore his offer in response to risk purchase enquiry even though the lowest.

9.2.6 Where action is taken under sub-clause 9.2.4 or sub-clause 9.2.5 above the contractor shall be liable for any loss which the purchaser may sustain on that account provided that the repurchase, or if there is an agreement to repurchase then such agreement, is made within a reasonable period from the date of such failure, depending upon the nature / merit of the purchase and in case of repudiation of the contract before the expiry of the aforesaid period of delivery, shall not be entitled to any gain on such purchase and the manner and method of such purchase shall be in the entire discretion of the Purchaser. It shall not be necessary for the purchaser to serve a notice of such purchase on the contractor.

10. INSPECTION

10.1 The contractor shall be responsible for and perform all inspection and testing required in accordance with the contract/purchase order and specifications included herewith.

10.2 The Purchaser may at his option depute his representative for Inspection of the stores to be supplied under the contract or authorize and nominate a Quality Surveillance Agency of his choice for the purpose hereinafter called, in either case, the inspection.

10.3 The contractor shall give notice of readiness for inspection to the Inspector (deputed under clause 10.2 above) so that the Inspector can be present at the requisite time. In such an event delivery shall not be effected until an authorization or shipping release is obtained from the Purchaser's Inspector.

10.4 The contractor hall allow reasonable facility and free access to his work/factory and records to the inspector for the purpose of inspection or for ascertaining the progress of delivery under the contract.

11. RECTIFICATION AND REPLACEMENT OF DEFECTIVE STORES

11.1 If the inspector find that the contractor has executed any unsound or imperfect work, the inspector shall notify such defects to the contractor and the contractor on receiving the details of such defects or deficiency, shall at his own expenses, within seven days or otherwise within such time as may be mutually agreed upon as reasonably necessary, proceed to alter, reconstruct or remanufacture the stores to the requisite standard and specifications as called for by the tender specification.

12. INSPECTION AND REJECTION

12.1 **Inspection and Rejection**: The stores shall be tendered by the Contractor for inspection at such places as may be specified by the Inspector, at the Contractor's own risk, expenses and costs and shall lie at such places of inspection at the risk of the Contractor and the stores will be subject to inspection and test as may be considered necessary by the inspector and his decision as regards rejection of goods shall be final and binding on the Contractor. If any goods are rejected as aforesaid, then without prejudice to the foregoing provision, the Purchaser shall be at liberty to

12.1.1 Allow the Contractor to re submit without prejudice to the Purchaser's right to claim and recover Liquidated damages as provided in clause 9.2.3 hereof, stores in replacement of those rejected within a time specified by the Purchaser (which time shall be essence of the contract), the contractor bearing the

cost of freight for such replacement without being entitled to any extra payment, or

12.1.2 Buy the quantity of stores rejected or others of a similar nature elsewhere at the risk and cost of the Contractor in accordance with the provisions contained in second paragraph of clause 9.2.4 thereof without effecting the Contractor's liability as regards the supply of any further consignments due under the Contract, or

12.1.3 Terminate the Contract and recover from the Contractor the loss Purchaser thereby incurred

12.2 **Removal of rejection**: Any stores submitted for inspection and rejected by the Inspector must be removed by the Contractor within fourteen days from the date of receipt of intimation of rejection, provided that in the case of dangerous infected or perishable stores, the Inspector (whose decision shall be final) shall notify the Contractor to remove such stores within 48 hours of receipt of intimation of rejection and it shall be the duty of the Contractor to remove them accordingly. Such rejected stores shall lie at the Contractor's risk from the time of such rejection and if not removed within the aforementioned time, the Purchaser shall have the right either to return the rejected stores to the Contractor at the Contractor's risk by such mode of transport as Purchaser may select or to dispose off or segregate such stores as he thinks fit at the Contractor's risk and on his accounts and to appropriate such portion of the proceeds as may be necessary to cover any loss or expenses incurred by the Purchaser in connection with the said sale. Freight to destination of stores rejected after examination at destination shall be recoverable from the Contractor at the Tariff Rate.

12.3 **Test Certificate and Guarantees:** Test Certificate Guarantees, if required by the Inspector shall be obtained and furnished by the Contractor free of costs.

13. RECOVERY OF SUMS DUE

13.1 Whenever any claim for payment of, whether liquidated or not, moneys arises out of or under this contract against the Contractor the Purchaser shall be entitled to recover sum by appropriating, in part or whole, by encashing the Bank Guarantee submitted towards Security deposit by the Contractor, if a Security Deposit is taken against the Contract. In the event of the security being insufficient or no Security Deposit has been taken from the Contractor then the balance or the total sum or which at any time hereafter may become due to the Contractor under this or any other contract with the Purchaser, should this sum be not sufficient to cover the full amount recoverable, the Contractor shall pay to the Purchaser on demand the remaining balance due. Similarly, if the Purchaser has or makes any claim, 'whether liquidated or not against the Contractor under any other contract with the Purchaser the payment of all moneys payable under the contract to the contractor including the security deposit shall be withheld till such claims of the Purchaser are finally adjudicated upon and paid by the Contractor.

13.2 All demurrage, wharfage and allied expenses incurred by the Purchaser, if any, due to delayed clearance of Stores in view of non receipt, incomplete or delayed receipt of documents by the Purchaser, shall be recovered from the payment due to the Contractor.

14. BAR/PERT CHART

14.1 The contractor at the discretion of the Purchaser shall submit the BAR/PERT chart indicating various activities from the date of purchase order to handing over of the stores.

15. PERFORMANCE BANK GUARANTEE

15.1 In the event of acceptance of the offer in respect of plant, machinery, equipment, instrument, etc. the tenderer will be required to submit a performance bank guarantee for 10% of the total value of the stores inclusive of all statutory levies and other charges admitted in the contract, from SBI/any nationalized bank or private sector banks, namely, ICICI Bank, IDBI Bank, HDFC Bank and AXIS Bank, on a non-judicial stamp paper of appropriate value valid till 2 months beyond the expiry date of warranty period as per the Purchaser's format towards satisfactory performance of the plant, machinery, equipment, instrument, etc. during the warranty period. In case of bids in currency other than INR performance bank guarantee shall be furnished from any bank of international repute.

15.2 In case of non-submission of performance bank guarantee by the Contractor, an amount equivalent to 10% of the total value of the stores and other charges admitted in the contract will be retained by the purchaser till the expiry of the warranty period of the stores.

15.3 Offers of the tenders who are not agreeable to furnish performance bank guarantee or retaining of an equivalent amount by the purchaser as per clause No.15.1 and 15.2 above, are likely to be rejected.

16. PERMIT AND LICENCES

16.1 The contractor shall secure and pay all licenses and permit at his end which he may be required to comply with all laws ordinances and regulations of the public authorities in connection with the performance of his obligations under the contract. The contractor shall be responsible for all damages and shall indemnity and save the purchaser harmless from against all claims for damages and liability which may arise out of the failure of the contractors to secure and pay for any such licenses and permits or to comply fully which any and all applicable laws ordinances and regulations.

17. PATENTS & PATENT RIGHTS INDEMNIFICATION

17.1 The Contractor shall indemnify and keep indemnified the Purchaser from and against any and all claims, actions, costs, charges and expenses arising from or for infringement of patent rights, copy right or other protected rights, of any design plans, diagrams, drawings in respect of the stores supplied by the contractors or any of the manufacturing methods or process adopted by contractor for the stores supplied under the contract.

17.2 In the event of any claim being made or action being taken against the purchaser in respect of the matter referred to clause 17.1 above, the contractor shall promptly be notified thereof and he shall at his own expense, conduct all negotiations for the settlement of the same and any litigation that may arise therefrom.

17.3 In the event of any designs, drawing, plans or diagrams or any manufacturing methods or process furnished by the contractor constituting infringement of patent or any other protected rights and use thereof is restrained, the contractor shall procure for Purchaser, at

no cost to the latter, the rights to continue using the same or to the extend it is possible to replace the same so as to avoid such infringement and subject to approval by the Purchaser or modify them so that they become non-infringing, but such modifications shall otherwise be to the entire satisfaction of the Purchaser.

17.4 The provision of the clause remains effective and binding upon the Contractor even after the completion, expiration or termination of the contract.

18. LAW GOVERNING THE CONTRACT

18.1 This Contract shall be governed by the laws of India for the time being in force. The marking of all stores supplied must comply with the requirements of India Acts relating to Merchandise Marks and all the rules made under such Acts.

19. JURISDICTION

19.1 The Courts within the local limits (i.e. Gandhinagar) of whose jurisdiction the place from which the purchase order is issued is situation only shall, subject to Arbitration Clause, have jurisdiction to deal with and decide any matter out of this Purchase Order/Contract.

20. SETTLEMENT OF DISPUTES

20.1 The Purchaser and the Contractor shall make every effort to resolve amicably by direct informal negotiation any disagreement or dispute arising between them under or in connection with the Contract.

20.2 If the parties have failed to resolve their dispute or difference by such mutual consultation, then either the Purchaser or the Supplier may give notice to the other party of its intention to commence arbitration, as hereinafter provided, as to the matter in dispute, and no arbitration in respect of this matter may be commenced unless such notice is given. Any dispute or difference in respect of which a notice of intention to commence arbitration has been given in accordance with this Clause shall be finally settled by arbitration. Arbitration may be commenced prior to or after delivery of the Goods under the Contract.

21. ARBITRATION

21.1.1 In the event of any dispute or difference arising out or of in connection with any of the terms and conditions of the Purchase Order/Contract, the matter shall be referred to the Director, IPR for settlement. In case the parties to the Purchase Order are not in a position to settle the dispute mutually, the matter shall be referred to a Sole Arbitrator to be appointed in accordance with the Arbitration & Reconciliation Act, 1996 & Arbitration and Conciliation (Amendment) Act, 2015 as amended time to time.

22. LIQUIDATED DAMAGES

22.1 As per Standard Terms & conditions, the Purchaser reserves the right to levy the Liquidated Damages, for delay in supply beyond the contractual delivery date at the rate of half percent (0.5 percent) of the total Contract price (Basic price) for each calendar week of delay. The total liquidated damages shall not exceed five percent (5%) of the contract price (Basic price). Stores/Goods will be deemed to have been delivered only when all its component parts are also delivered. If certain

components are not delivered in time, the Stores/Goods will be considered as delayed until such time as the missing parts are delivered.

22.2 Where the Contract entered into is a composite one with supply cum erection and installation/commissioning activities and the completion of erection and installation/commissioning is delayed irrespective of the fact that whether supply of material has been made within the original delivery period, the contract is to be considered as a whole and Liquidated Damages will be recovered on the total contract value.

23. EXERCISING THE RIGHTS AND POWERS OF THE PURCHASER

23.1 All the rights, discretions and powers of the Purchase under the contract shall be exercisable by and all notices on behalf of the Purchaser shall be given by the Purchase Officer and any reference to the opinion of the Purchaser in the terms and conditions contained in these General Conditions of all Contracts shall mean and be construed as reference to the opinion of any of the persons mentioned in this clause.

24. TRAINING

24.1 The successful tenderer shall, if required by the Purchaser, provide facilities for the practical training of Purchaser's engineering or technical personnel for their active association on the manufacturing process throughout the manufacturing period of the Contract/stores, number of such personnel to be mutually agreed upon. If demanded by the Purchaser, such training shall be conducted at Purchaser's site by the Contractor free of charge. The duration of training shall be mutually decided upon by the Purchaser and the Contractor.

25. RISK PURCHASE

25.1 In the event supplier fails to fulfill the contractual obligations as per the terms and conditions of the Contract, the Purchaser has an option of completing the Contract at the risk and expenses of the Contractor. While initiating risk purchase at the risk and expenses of the supplier, the Purchaser must satisfy himself that the supplier has failed to deliver and he has been given all the opportunities as per the Contract to execute the Contract and also adequate and proper notice. Wherever risk purchase is resorted to, the supplier is liable to pay the additional amount spent by the government, if any as compared to contracted amount. All the factors including the method of recovering such amount should also be considered while taking a decision to invoke the risk purchase.

26. LIEN IN RESPECT OF CLAIMS IN OTHER CONTRACTS

26.1 Any sum of money due and payable to the Contractor under any contract may be withheld or retained by way of lien by the purchaser or any other person or persons contracting through the Director, IPR against any claim of the Purchaser or such other person or persons in respect of payment of a sum of money arising out of or under any other contract made by the contractor with the Purchaser or with other such person or persons.

26.2 It is an agreed term of the contract that the sum of money so withheld or retained under this clause by the Purchaser will be kept withheld or retained as such by purchaser till this claim arising out of in the same

contract or any other contract is either mutually settled or determined by the arbitrator, and that the contractor shall have no claim for interest or damages whatsoever on this account or on any other ground in respect of any sum of money withheld or retained under this clause and duly notified as such to the contractor.

SPECIAL CONDITIONS OF CONTRACT GOVERNING SUPPLIES OF PLANT AND MACHINERY

In addition to the General Conditions of Contract hereinbefore set out the following special conditions shall apply to contracts for the supply of Plant and Machinery and manufactured equipment. These Special Conditions where they differ from the General Conditions shall over-ride the later.

27. DEFINITION OF PLANT

27.1 The word “”PLANT” wherever, appears in these "Special Conditions of Contract governing supplies of Plants and Machinery" shall mean all machinery, plants, equipment or parts thereof or what the Contractor agrees to supply under contract as specified in the Purchase Order.

28. MISTAKES IN DRAWING

28.1 The Contractor shall be responsible for and shall pay for an alterations of the works due to any discrepancies, errors or omissions in the drawings or other particulars supplied by him whether such drawings or particulars have been approved by the Purchaser or not.

29. RESPONSIBILITY FOR COMPLETENESS

29.1 All fittings or accessories which may not be specifically mentioned in the specification but for which are usual or necessary, are to be provided by the Contractor without extra charge and the plant must be complete in all respects.

30. REJECTION OF DEFECTIVE PLANT

30.1 If the completed plant or any portion thereof before it is finally accepted is found to be defective or fails to fulfill the requirements of the contract, the Purchaser shall give the Contractor notice setting forth with the details of such defects or failure and the contractor shall forthwith rectify the defective plant or alter the same to make comply with the requirement of the contract. Should the contractors fail to do so within a reasonable time the Purchaser may reject and replace at the cost of the Contractor, the whole or any portion of the Plant as the case may be, which is defective or fails to fulfill the requirement of the contract. Such replacement shall be carried out by the Purchaser within a reasonable time and at reasonable price and where reasonably possible to the same specifications and under competitive conditions. The Contractor shall be liable to pay to the Purchaser the extra cost, if any, of such replacement delivered and or erected as provided for in the contract such extra cost being the difference between the price paid by the Purchaser under the provisions above mentioned for such replacement and the contract price for them. Contractor shall refund to Purchaser any sum paid by the Purchaser to the Contractor in respect of such defective plant.

31. INSPECTION AND FINAL TESTS

31.1 All tests necessary to ensure that the plant complies with the particulars and guarantees shall be carried out at such place or places as may be determined by the inspector. Should, however, it be necessary for the final tests as to performance or guarantees to be held over until the Plant is erected at site they shall be carried out within

one month of completion of erection.

32. TRANSPORT AND RESPONSIBILITY FOR BREAKAGES EN-ROUTE

32.1 Unless otherwise specified the Purchaser will take delivery of the plant from the place named in the purchase order but the contractor will be responsible for any damage which may be caused to the Plant during transit to the site of erection thereof.

33. ERECTION AND COMMISISONING

33.1 In all cases where contracts provide for supervision of erection and commissioning or for test at the Purchaser's premises the Purchaser except where otherwise specified, shall provide free of charge, such labour, materials, fuels, stores, apparatus and instruments as may be required from time to time and as may reasonably by demanded by the contractor to carryout efficiently such supervision of erection and commissioning and for the requisite test. In case of contracts requiring electricity for the completion of erection, commissioning and testing at site, such electricity shall be supplied free to the contractor.

33.2 Action by the Purchaser under the clause shall not relieve the contractor of his warranty obligations under the contract.

34. WARRANTY

34.1 The contractor warrants that stores to be supplied under the contract shall be free from all defects and faults in materials, workmanship and manufacture and shall be of the highest grade and consistent with the established and generally accepted standards for stores of the types under the contract in full conformity with the specifications, drawings or samples, if any and shall if operable, operate properly. This warranty shall expire (except in respect of complaints notified to the contractor prior to such date) twelve months after the date of receipt of the last lot of stores under the contract at the ultimate destination stipulated in the contract.

34.2 For a period of twelve calendar months after the plant/ machinery/equipment/instruments has been put into operation (or a suitable mutually agreed longer period to be reckoned from the date of last major shipment depending upon the nature of the plant/machinery/equipment/instrument) the Contractor shall be responsible for any defects that may develop under conditions provided for the contract and under proper use, arising from the faulty materials, design or workmanship in the plant or from faulty erection of the plant by the Contractor, but otherwise and shall rectify such defects at his own cost when called upon to do so by the Purchaser who shall state in writing such defects.

34.3 If it becomes necessary for the Contractor to replace or renew any defective portions of the plant for purpose of rectification under this clause, the provisions of this clause shall apply to the portions of the plant so replaced or renewed under the expiration of six months from the date of such replacement or renewal or until the end of the above mentioned period of twelve months whichever may be the later. If any defects not rectified within reasonable time, the purchaser may proceed to get the work done at contractor's risk and expenses but without prejudice to any other rights which the Purchaser may have against the Contractor in respect of such defects as provided in clause 9.2.4 or 9.2.5.

34.4 All inspections adjustments, replacements or renewals carried out Contractor during the warranty period shall be subject to the same conditions as in the contract.

34.5 Contractor shall, spare parts of equipment before going out of production, give adequate advance notice to the purchaser so that the latter may order requirement of spares in one lot if so desires.

34.6 The contractor shall further guarantee that if spare parts go out of production, will make available blue prints, drawings of spare parts and specifications of material at no cost to the Purchaser, if and when required in connection with the equipment to enable Purchaser to fabricate or procure spare parts from other sources.

34.7 The provision of this clause shall remain effective and binding upon the Contractor even after the completion or expiration of the contract and till the plant/machinery/equipment supplied under the contract is in use by the Purchaser.

35. MODE OF PAYMENT

35.1 Unless otherwise agreed to in writing between the Purchaser and the Contractor, payment for the delivery of the material will be made as follows.

Within 30 days from the date of final acceptance and on receipt of Performance Bank guarantee for 10% of the contract value amount from SBI/nationalized banks or any one of the scheduled banks mentioned in the bracket (Axis Bank, HDFC Bank, ICICI Bank and IDBI Bank) valid through out the guarantee period mentioned in the contract/purchase order.

35.1.1 In case any of the vendors seek advance or progressive payment prior to delivery of the material, such requests can be considered only in exceptional cases of large value items, in which case the vendor will be required to furnish a bank guarantee for an equivalent amount of the advance/progressive payment sought for, valid till the execution of the contract. The bank guarantee shall be got executed as per the Purchaser's format from the State Bank of India (SBI)/nationalized banks or any one of the scheduled banks mentioned in the bracket (Axis Bank, HDFC Bank, ICICI Bank and IDBI Bank).

35.1.2 Besides, the offers of the vendors seeking advance/progressive payment will be evaluated by loading 12% interest charges per annum on the amount of advance desired up to the delivery period quoted.

35.1.3 In case any of the vendors seek pro-rata payment for the stores to be supplied they should clearly mention in their offer the maximum number of installments of supply. However, such installment delivery and pro-rata payment will be considered only in respect of contract involving large value and sizeable quantity of the item and the maximum number of installments shall be normally restricted to four. Acceptance or otherwise of this condition is reserved by the purchaser.

35.1.4 **Bank Charges:** All bank charges to be borne by the Contractor/Supplier.

35.1.5 No correspondence will be entertained within 30 days from the date of receipt of material and bills, whichever is later.

35.1.6 **Interest for delay in supply beyond the contractual delivery date:** Wherever advance payments are sought for by the contractor and

admitted in the contract, against Bank Guarantee for equivalent amount, in the event of any delay in supply beyond the contractual delivery date for reasons attributable to the contractor, interest charges @ 12% shall be levied for the period beyond the contractual delivery date, on the amount of balance advance payment to be adjusted.

36. DELAY IN ERECTION

36.1 Wherever erection of a plant or machinery is the responsibility of the Contractor as a term of the contract and in case the Contractor fails to carry out the erection as and when called upon as to do within the period specified by the Purchaser, the Purchaser shall have right to get the erection done through any source of his choice. In such an event, the contractor shall be liable to bear any additional expenditure that the Purchaser may incur towards erection. The Contractor shall, however, not be entitled to any gain due to such an action by the Purchaser.

SECTION 'C'

TECHNICAL SPECIFICATIONS OF STORES AND DRAWINGS

Please refer tender document

SECTION ‘D’

FORMAT FOR SUBMISSION OF PART-II (PRICE)

Please refer tender document

TENDER FORM

INSTITUTE FOR PLASMA RESEARCH

(An Aided Institute of
Department of Atomic Energy, Government of India)
Near Indira Bridge; Bhat; Gandhinagar-382428; India

Following terms are replaced in our Form for Tender No.IPR/TN/PUR/TPT/ET/19-20/22 dated 1-8-2019.

1) Sr.No.3.1 (Section-A) under heading "Earnest Money Deposit (EMD)" of Form No.IPR-LP-ET-02.V5 (Terms and Conditions) is replaced with the following:
The Tenderer shall submit, as part of its bid, interest free Earnest Money Deposit (EMD) for an amount as specified in the Tender Notice. EMD shall be submitted by way of Demand Draft from **SBI/nationalized banks or any one of the scheduled banks mentioned in the bracket (Axis Bank, HDFC Bank, ICICI Bank and IDBI Bank)** issued in favour of "***Institute for Plasma Research***" and payable at **Ahmedabad**. **Tender received without EMD will be rejected at the discretion of IPR.**
(***Copy of Demand Draft to be uploaded with the quotation, Original DD should be sent to IPR on or before the specified closing date and time***)

2) Sr.No.3.4 (Section-A) under heading "Earnest Money Deposit (EMD)" of Form No.IPR-LP-ET-02.V5 (Terms and Conditions) is replaced with the following:
Exemption from payment of EMD: The firms registered with DGS&D, NSIC, DPS or Micro & Small Enterprises (MSEs) which are actual producers/manufacturers of tendered items are exempted from payment of EMD provided valid registration certificate is uploaded along with the offer.

3) Sr.No.18 (Section-A) under heading "Statutory Levies such as Customs Duty, Goods and Service Tax" of Form No.IPR-LP-ET-02.V5 (Terms and Conditions) is replaced with the following:
Clause Nos.18.1, 18.2, 18.3, 18.5.2 and its sub-clauses deleted from Form No: IPR-LP-ET-02.V5.

4) Sr.No.31 (Section-A) under heading "Delivery" of Form No.IPR-LP-ET-02.V5 (Terms and Conditions) is replaced with the following:

Delivery: All equipments/machinery/plant/component covered by this tender document should be supplied as per the Delivery schedule given under clause No.4 of Section-C. The prices quoted by the tenderer should include all charges involved for direct and safe delivery of the items by Road to the project site of the Purchaser. If a tenderer so desires/separate lumpsum charges for transportation and safe delivery to Purchaser's site could be furnished. Purchaser will neither undertake responsibility for transit insurance nor pay for it separately. No other, delivery term will be accepted by the Purchaser

5) Sr. No. 35 (Section-B) under heading Mode of Payment of "General Conditions of Contract" of Form No.IPR-LP-ET-02.V5 (Terms and Conditions) is replaced with the following:

Payment: Unless otherwise agreed to in writing between the Purchaser and the Contractor, payment for the delivery of the tendered items, will be made as follows.

(a) 10% of supply portion will be paid as advance against submission of Bank Guarantee for equivalent amount from SBI/nationalized banks or any one of the scheduled banks mentioned in the bracket (Axis Bank, HDFC Bank, ICICI Bank and IDBI Bank) valid till delivery of the entire material and on receipt of proforma invoice triplicate.

(b) 70% of supply portion will be paid against delivery of materials at IPR site, its verification by IPR representative and on receipt of Invoice in triplicate.

(c) 20% of supply portion + 100% of installation & commissioning charges will be paid within 30 days from the date of acceptance and on receipt of Performance Bank Guarantee for 10% of the order value from SBI/nationalized banks or any one of the scheduled banks mentioned in the bracket (Axis Bank, HDFC Bank, ICICI Bank and IDBI Bank) valid throughout the warranty period and on receipt of final invoice.

Following terms is **added to** our Form No. IPR-LP-ET-02.V5 for Tender No. No.IPR/TN/ PUR/TPT/18-19/22 dated 1-8-2019.

a) **TDS as per CGST Act**: As per the provisions mentioned under Section No. 51 of the CGST Act 2017, TDS @ 2% (IGST 2% or CGST 1% and SGST 1%) will be deducted while making payment to the suppliers where total value of the purchase order/contracts/work orders exceeds Rs.2.5 Lakhs. Necessary TDS Certificate will be issued to the supplier after TDS deduction.

IMPORTANT NOTE:

[1] QUOTATIONS ARE INVITED IN INDIAN CURRENCY ONLY
[2] QUOTATIONS RECEIVED OTHER THAN "INR" QUOTE SHALL SUMMARILY BE REJECTED.

Technical Specification

for

Fabrication, Installation & Commissioning of

TWIN SOURCE WATER DISTRIBUTION SYSTEM

(Piping and Instrumentation)

Reference Project:

TWIN Source Experiments

Installation and Commissioning Site:

DNB Lab, ITER-India Building

Institute for Plasma Research

Gandhinagar-382428

Contents

1.0. Introduction:

Twin source experiments are planned at IPR to get an operational experience on multi driver RF based negative ion source where source, driver and matching circuits will be operated in both vacuum and air modes. Twin source project is planned and located inside DNB lab of IPR building at IPR. Source will receive a RF power of 180 Kw by 1 MHz RF generator where plasma would be generated inside the two driver through the process of RF based inductive coupling. Further negative ions would be extracted and accelerated with a potential of 50 KV and a beam current of 8A is expected. Thus, an expected heat load for the experiment is near about 680 k W which needs a dedicated thermal management system for heat removal across various components of twin source.

Scope of work briefly includes the Design Review, fabrication, installation and commissioning of water distribution system and connecting it with main supply /return line (DN 80 line) already provided in DNB lab from Cooling water plant at IPR. Scope of work also includes connection to each of the system/sub-systems/components as highlighted in P&ID diagram.

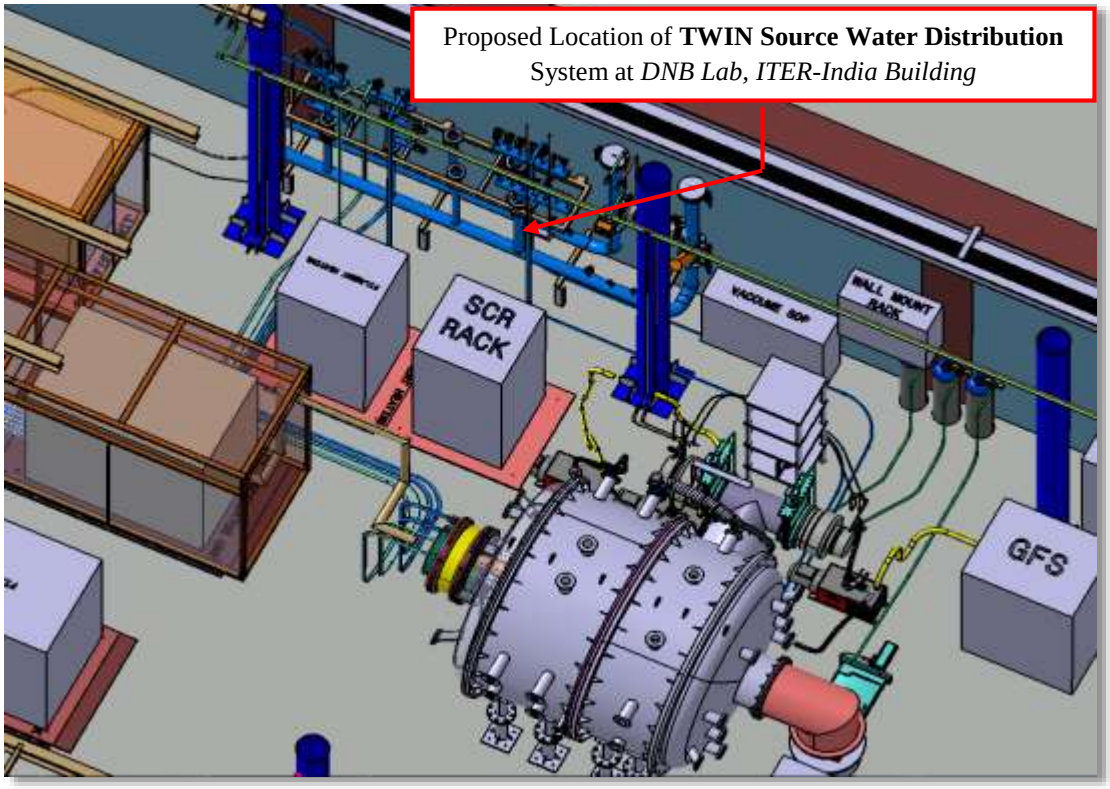


Fig 1: TWIN Source experiment layout

Pre-Engineering Assessment Prior to Bid Submission by Vendor

Vendor is requested to review the attached P&ID supplied by IPR with tender document and carry out a pre-engineering assessment before submission of the bid. Pre-assessment work needs to be carried at vendor's own end which would basically include the review on the details provided by IPR in P&ID in terms of pipe sizing, pressure rating, instrumentation, valves, flow rates etc. Any suggestions, modification, insufficient information to the scope of work & technical specifications (as provide with tender document) should be brought in notice to IPR and must be highlighted separately during bid submission. However IPR reserves the right to accept or reject such modifications or suggestions without any reasoning.

Vendor's scope of work in Design

Vendor scope of work in design is limited to following:

a. Review the P&ID diagram supplied by IPR for appropriate line sizing, vales, instrumentations, pressure rating and Flow Rates.
b. Vendor needs to provide inputs on length of manifolds, piping distribution length, fittings, pipe end connections and MS supports. All these inputs should be highlighted in manufacturing drawing to be approved by IPR.

2.0. Detailed Scope of Work:

a. Review of P&ID diagram supplied by IPR for appropriate line sizing to achieve desired flow rate at operating conditions.
b. Generating detailed manufacturing drawing and getting approval on the same as per the requirement provided by IPR in the P&ID diagram supplied with tender document.
c. Preparation of detailed Manufacturing inspection plan(MIP) and getting approval on the same with IPR.
d. Fabrication of SS piping, flange, end connections and all the support structures like I-beam, C-channel, plates and clamps etc as per approved drawings & MIP.
e. Supply of necessary valves, instrumentations, pipe, fittings, hoses, hose nipples, nut, bolts, washers, pressure transmitter, RTDs, flow meter, pressure gauge etc as per requirement of approved P&ID and drawings.
f. Installation and commissioning of TWIN source water distribution system with piping and instrumentation, connection with main supply /return line coming from cooling water plant to DNB lab with all the supports structures.
g. Connection to each available systems/sub-systems/components.
h. Supply of all quality documents, test certificates and calibration certificates all the components, raw materials and instruments.

i. Inspection and testing of installed piping works. (Including all weld examination)
j. Final acceptance conforming to flow, pressure drop and safety requirements as mentioned in tender documents.

Work related to Data Acquisition and Control System (DACS):

Vendor shall provide all instruments related to data acquisition and control which shall briefly include:

(i) Description of each signal like type: AC/DC or voltage output or current output
(ii) Range of each signal: 4-20mA, 0-5V etc.
(iii) Engineering value (e.g. 4-20mA) and process value (e.g. 0-100 *lpm*) for each signal calibration of all the instrumentation needed.
(iv) Cabling work from the field instrument (i.e. cooling water system) to the junction box.
(v) Signal output at junction box for all instruments.
(vi) Relay card for all the required control logics.
(vii) Displays for all the flow meters, temperature-Pressure transmitters, etc. if required.
(viii) Vendor needs to carry out an acceptance test (e.g. pressurized with water in whole CWS line) at IPR to check the CWS instrumentation with PLC (i.e. control, status and values).
(ix) Appropriate DAQ junction boxes should be installed both for TWIN Source water Distribution system. The procurement and installation of these junction boxes is in the scope of vendor. The locations for installation of these junction boxes shall be indicated by IPR. The vendor needs to procure both signal cables and power cables. Also assemble and layout of the same in the scope of vendor.
Vendor needs to demonstrate the cooling parameters in the display of the junction box.

3.0. General Terms and Condition:

a. IPR shall provide free power and water.
b. IPR shall provide free instrument air, other purging gases required during testing & commissioning.
c. IPR shall provide main incoming power supply.
d. IPR shall provide instrumentation air for pneumatic valves at one point (if applicable).
e. IPR shall provide power supply to field instruments at junction box as required.
f. IPR will not provide covered site office cum stores for the execution of the project.
g. All the insurance after delivery of materials at the site will be in the contractor's scope.
h. Vendor should deploy qualified personnel all the time at IRR site for the supervision of the work.
i. Structural design of support members should ensure the safety, serviceability and strength at an environmental temperature of up to 50^0c and relative humidity of 95%.
j. Support from existing walls and pillars are permitted only up to limited extent.
k. The job needs to be carried out in an in-house building structure, safe procedure to be adopted for working all the time.

l. Contractor shall arrange supervision for fabrication & erection activity. Also contractor shall obey IPR safety rules/norms during site work.

m. Contractor need to obtain work permit from IPR in conformance to safety procedures prior to fabrication or commissioning activities at IPR site.

n. The contractor has to take necessary precaution for the safe transportation of the material.

o. All the safety precautions including supplying & providing localised fire screens for welding of elements etc shall be arranged by the Contractors.

p. Time for completion shall be reckoned from the date of issue of Fax/Letter of Intent/Purchase Order by IPR. Time for completion shall include the time required for mobilization, demobilization, carrying out the works as per requirements of Contract Document and instructions of IPR representatives. The job scope is as defined in tender.

q. Ensuring safe and healthy environmental condition during the erection work.

r. **Ensuring non-damage of pre-installed RCC structures, electrical cables and pre-installed facilities during erection work.**

4.0. Completion Period:

The schedule of completion period is **10 months** from the date of release of purchase order with following work breakdown schedule:

a. 2 months for manufacturing drawing, P&ID & MIP approval from the date of release of purchase order.

b. 4 month for site delivery of materials from date of release of approved manufacturing drawings.

c. 4 months for fabrication, installation and commission work with site acceptance from the date of approved manufacturing drawing.

d. The work in totality must be completed within the completion time period as per approved Bar chart / Project schedule. The entire project is to be completed at the earliest; hence the Bidder's labour may have to work on 24 hours basis/ round the clock if required, with necessary prior permission. Necessary penalty shall be applied as per the Penalty /LD clauses in case of delay on part of Bidder. Any deviations should be indicated separately and clearly in their offer by the bidder.

The Bidder shall provide preliminary Bar chart along with the offer to justify the specified completion period.

5.0. P&ID Diagram and Manufacturing Drawing:

P&ID Diagram given with the tender document as per Annex-A provides the extent of work, nos of water channels, proposed instrumentation, routing, sizing and distribution of water lines. It also provides the required flow rate, pressure, and pressure drop and temperature requirement across all water channels. Any modifications / changes required to coordinate installation work as per site conditions, shall be made in

consultation with and approval of Engineer In-charge. After the award of the contract, the Bidder shall furnish three sets of detailed drawings, including overall system flow diagram (P& ID), Piping & instrument layout, foundation/ support details etc. with necessary sectional views as required for the approval of IPR within 2 months' time from the date of PO/WO. All drawings (as built) shall be submitted for approval in hard as well as soft copies in the size as desired by the IPR. However preliminary soft copies prepared by IPR will be furnished to the successful bidder. Where drawings are approved, said approval does not mean that drawings supersede the contract requirements nor does it in any way relieve the Bidder of the responsibility or requirement to furnish material or perform work as required by the contract.

6.0. Sub-Contractors/Suppliers:

List of sub-contractors, vendors and suppliers proposed for any part of work, system components, must be submitted to IPR for approval before placing the WO/ PO by the main contractor. The decision of the IPR Engineer In-charge to approve or reject sub-contractors, vendors and suppliers proposed for any part of work, system components shall be final. After getting approval of IPR Engineer In-charge, Copy of such orders shall be submitted for confirmation along with all specifications thereafter.

7.0. Deviations:

Vendor can submit the deviation (if any) to IPR while submitting the bid against the technical specifications as asked in the tender document. IPR reserves right to accept or reject such deviation without explaining reasons.

8.0. Material Test Certificates:

All materials and equipment shall confirm to the relevant International / Indian/equivalent standards and shall be of the approved make (Refer section 20.0). All the equipment / system components specifications shall be approved before placing the order to suppliers / sub-contractors. A copy of purchase / work order with specifications must be submitted for confirmation to Engineer In-charge.

The contractor shall furnish following Test certificates:

a. Material testing of various components of the equipment.
b. Welder's qualification certificate.
c. Performance test certificates carried out by manufacturer.
d. Performance guarantee certificate / calibration certificate/ balancing certificate.

9.0. Inspection and Testing:

Vendor must submit a detailed manufacturing and Inspection plan (MIP) for approval to IPR within 2 months from date of release of purchase order.

All the tests shall be carried out **in the presence of the representative of IPR**. The contractor shall provide services, required for the tests of all instruments. All the system components will be physically inspected and tested before and after installation according to approved specifications and drawings. For detail procedure, refer the following:

1. All the system / equipment shall be checked before / after satisfactory commissioning, at site as may be required for the approved technical specifications, performance data provided by supplier / manufacturer. Performance acceptance is subject to comparison of test results with supplier / manufacturer's performance data and contract specification. Acceptance is subject to satisfactory Installation, commissioning and performance testing with respect to technical specifications. Rejected items must be replaced or rectified for the defects. In case of system modification / rectification complete performance tests are to be repeated. Site test readings shall be jointly recorded.

2. In general, following Inspection / tests are involved. Type of test, duration of test, testing procedure / parameters, will be as per the applicable BIS codes:
   a. Physical at site.
   b. Inspection / Pre-installation at site.
   c. Welding joint inspection at site.
   d. Pressure testing at site.
   e. Performance testing at site. (Capacity, Power consumption, Pressure drop, Vibration, etc.)

Sr. No.	Item/ Equipment	Inspection /Test Involved.
1	Piping and fittings	a, c, d
2	Valves & Strainer	a, e
3	Instruments and controls	a, b, e
4	Insulation	a
5	MS structural work	c, d,

Imported valves / instruments shall be accepted against the production of internal test reports of the manufacturer. However, it is left to the vendor to show the satisfactory performance of the valve / instrument at the site.

a. All the arrangement for the said inspection and testing must be made and contractor shall absorb charges. The purchaser shall be intimated sufficiently in advance for 'a' and 'b'.
b. Pre-dispatch inspection and clearance issued by purchaser / representative of purchaser, will not relieve the contractor from responsibility of showing the performance of the integrated system at IPR.

c. Loop checking of all instruments at the site.

10.0. Final Acceptance (At IPR Site):

All piping, instruments and other components shall be tested to hydrostatic test pressure of at least one and half times the maximum operating pressure, but not less than 10 kg/cm^2 gauge for a period of not less than 4 hours. All leaks and defects in joints revealed during the testing shall be rectified and gotten approved at site. **For flow test and pressure test purpose any additional arrangements are also included in the scope of works.** Piping repaired subsequent to the above pressure test shall be re-tested in the same manner. System may be tested in sections and such sections shall be securely capped, then re-tested for entire system. The Contractor shall give sufficient notice to all other agencies at site of his intention to test a section or sections of piping and all testing shall be witnessed and recorded by Contractor's site representative. The Contractor shall make sure that proper noiseless circulation of fluid is achieved through all water lines in the system concerned. If proper circulation is not achieved due to air bound connection, the Contractor shall rectify the defective connections. He shall bear all expenses for carrying out the above rectification including the tearing up and re- finishing of floors and walls as required.

System components or system as a whole shall be tested for performance as per the approved MIP. System can be accepted and taken-over by IPR for regular operation only after satisfactory performance testing including electrical isolation test in all respect. Flow balancing and flow test will be completed with shorting the supply and return lines of each subsystem(if not available) by appropriate size and length of nylon breaded flexible PVC hose pipes and worm type hose clamps. Values water pressure, flow rate, temperature etc. shall be checked at IPR make Data Acquisition and Control System (DACS) during online test. All the system components shall meet the guaranteed performance requirements to the satisfaction of IPR.

Necessary replacement / modification / rectification shall be carried out with the approval of Engineer In-charge. The installation shall be tested again after removal of defects and shall be commissioned only after approval by the Engineer In-charge.

The Contractor shall provide all materials, tools, equipment, instruments, and services and labour required to perform the test and to remove water resulting from cleaning and after testing.

11.0. Welding and Inspection:

Welding samples shall be prepared by the vendor to qualify the welding (e.g. GTAW) and tests (list of required tests are mentioned below) certificated to IPR. Argon gas, used in GTAW process for shielding purpose, shall be 99.9% pure. Normal rate of flow is around 12.2 CFPM (Cubic flow per minute). Supply of argon will be in contractor's scope at his own expense. Where GTAW process or a SMAW process is recommended for the welding of a particular joint, the purging shall be maintained during the root pass and for

the first filling pass to minimize oxidation on inner side of the pipe. Purging shall be done by Argon gas. Argon will not be provided by IPR. Some sample (number of required samples to be decided by mutual discussion between vendor and IPR) vendor needs to hand over to IPR.
The vendor shall submit detailed welding process and following control specifications before welding work begin:

(a) Base material details: grade, thickness
(b) Welding procedure (GTAW)
(c) Type and preparation of joint
(d) Filler material
(e) Welding sequence
(f) Tests during and after welding

Use of electrodes: Advani / ESAB / D & H should be used for carrying out welding. Welding will be carried out by certified welders only.

All weld joints shall comply with the specification laid down under the relevant Subsections of Article 1 of ASME standard for Boiler and Pressure vessels, section IX.

Latest edition of the following shall be the applicable code / specification:

ASME Sec IX : Welding and Brazing Qualification

ASME Sec V : Non-destructive Examination

ASME Sec II Part C : Specifications for Welding Rods, Electrodes and Filler Metals.

Welding various materials under this specification shall be carried out using one or more of the following processes:

a) SMAW: Shielded metal arc welding for other than stainless steel

b) GTAW: Gas Tungsten arc welding for stainless steel

GTAW Welding Information

All welding should be carried out by GTAW with argon gas environment. Argon gas, used in GTAW process for shielding purpose, shall be 99.9% pure. Normal rate of flow is around 12.2 CFPM (Cubic flow per minute). Supply of argon will be in contractor's scope at his own expense. Where GTAW process or a SMAW process is recommended for the welding of a particular joint, the purging shall be maintained during the root pass and for the first filling pass to minimize oxidation on inner side of the pipe. Purging shall be done by Argon gas. Argon will not be provided by IPR. Full penetration shall be done wherever possible as per IPR's design requirement. All GTAW welded joints should be cleaned thoroughly with wire brush then with K2 paste for passivation. After installation of assembled systems, all welds should be cleaned with acetone

wherever possible. In case of defective welding/product, vendor is responsible for the corrective action on the same. The vendor shall prepare written procedures and methods for distortion control for weld joint giving sequence of welding; heat input to weld etc. Welding parameters, distortion etc. shall be noted and record of the same shall be submitted to IPR at regular intervals during execution of work. Weld consumable (Weld filler material, inserts): All welding consumable for type SS316/SS316L welding are ***AWS SFA A5.9 ER 316LMnNF (Nil Ferrite).*** Vendor should strictly adhere to this weld consumable. Size of Weldment of each weld should be at-least equal to the thickness of the material being welded.

Alignment and Spacing

Components to be welded shall be aligned and spaced as per requirements. A wire spacer of suitable diameter may be used for maintaining the weld root opening while tacking. It is the responsibility of the contractor to ensure proper fit up and alignment of pipe joint prior to commencement of welding. *Vendor may be asked for Re-work in case of improper alignment as per discretion of Engineer- In charge.*

Welding General Requirement

Welding shall be done on the job, strictly following the approved welding procedures using approved welding consumables and qualified welders / welding operators. Suitable sequencing of welds shall be carried out to avoid buildup of residual stress and distortion. The manufacturer shall prepare written procedure for distortion control for each typical joint giving the sequence of welding; heat input to weld etc. and shall submit the same to purchaser before taking up manufacture. The same shall be displayed in manufacturer's shop during welding. The weld fit-up tolerance shall be as indicated in drawing. Clearance shall be obtained from the purchaser's inspector for fit-up before welding. The shrinkage and distortion of the welded joints shall be measured and recorded. The average heat input as per qualified PQR shall be maintained by properly controlling voltage, current and welding speed during welding to meet the mechanical and metallurgical properties.

The ferrite content in SS welds shall be as low as possible and be within 3 - 8%. All the welding consumable shall be manufactured, inspected, tested, packed, supplied and stored as per the requirements of ASME Sec II Part C. Each batch of welding consumable is required to be qualified at vendor's shop as per the requirements of ASME Sec II Part C.

Welding process and control specification (Relevant subsection of article 2 under ASME standard for Boiler & Pressure Vessel Section IX)

Welding qualification samples shall be prepared by the vendor to qualify the welding and control specification for each type of weld to be used during manufacture. A complete requalification has been carried out when any change in essential variables.

The vendor shall draw up and submit to IPR a detailed welding process and control specification for each type of weld to be used. This specification shall include information on the following:

1. Weld reference numbers according to drawings.
2. Base material details grade, product form, thickness.
3. Welding procedure (manual, TIG, EB etc.)
4. Type and penetration of joints.
5. Applicable WPS, PQR & WPS No.
6. Jigs fixtures.
7. Tests during and after welding

Acceptance tests for welds

Following Inspection and testing shall be carried out:

- Root and final run for Butt-welds, Nozzle welds, Structural attachment weld, Hanger, Support welds, socket welds etc. shall be checked with
- 100 % Visual examination + 100 % DP (Dye Penetration) examination + 10 % sample Radiography (SS piping- 25 NB and above)
- 100 % Visual examination + 10 % DP examination for Structural welds.

- *Visual check-up includes*: Base metal identification, Base metal defects rectification, Edge preparation, Joint - Fit-up checking for both longitudinal and circumferential welding, Check of pipe –dia., Cleanliness, Tacking, Root pass & subsequent pass appearance, Cleaning between the passes, Completed weld appearance, Condition of the base metal in the area adjoining the welds, Excessive distortion if any due to welding.
- *DP examination:* Procedure shall be as per Pr. Vessel code. However it includes Check for any crack or linear indication, porosity, or slag inclusion.
- *Radiography:* For pipe 25 mm and above, selection of the location and dia. of the pipe and sample size shall be at the discretion of quality supervisor from Purchaser. If a joint or weld length is acceptable, the remaining length by same welder or group length shall be acceptable. In case of rejection two more length from the same lot / group shall be examined at the discretion of quality supervisor from Purchaser. If weld joints found defective after second radiography examination, all the remaining group joints shall be rejected. However the contractor shall have option of 100 % radiography. Welds with the crack, slag inclusions, cavity and incomplete fusion shall be rejected.

Weld Repairs

Welds shall be repaired by additional welding in case of dimensional problem, but new weld joint to be done for deficient quality. Cracks can be removed by grinding, chipping, arc or flame gouging with DP test.

12.0. Fabrication tolerances for pipes and fittings:

Tolerances for Fabrication of pipes and fittings:

Pipes: Dia: Tolerance: ± 0.5 % of OD (Check by measurement of circumference), Length: < 5 mm for 3 m length., Roundness: 1 % of Pipe Dia.

Fittings: Angular Dimension: ± 1/8" degree.

OD at Bevel: Nominal + 6.25 mm - 4.5 mm.

ID at Bevel: Nominal ± 2.25 mm

Reinforcement Pads for Structural attachment: with gap < 1.5 mm.

13.0. Measurement of Works:

- For all payment purposes physical measurements will be taken by contractor as per respective method as specified in the tender and relevant BIS code, in presence of IPR representative, in units indicated in SOQ. Payment shall be made on actual measurements.
- Measurement of weights will be in metric tons corrected to the nearest kilogram.
- Linear measurement will be in meters corrected to the nearest Centimeter.
- Measurement for supply of items shall be made as per units and quantities indicated item-wise in SOQ.
- All materials / equipments issued by the owner shall be stored properly. Any damage to free issue material shall be recovered from the contractor.

Measurement for Piping

Unless otherwise specified, measurement for piping for the project shall be on the basis of centre line measurements described herewith. Piping shall be measured in units of length along the centre line of installed pipes including all pipe fittings, flanges (with gaskets, nuts, and bolts for jointing), unions, bends, elbows, tees, concentric and / or eccentric reducers, inspection pieces, expansion loops etc. The above accessories shall be measured as part of piping length along the centre line of installed pipes, and no special multiples of pipe lengths for accessories shall be permitted. Measurement of expander/ reducer shall be taken in bigger dia. size category. **The quoted rates for centre line linear measurements of piping shall include all wastage allowances, pipe supports including hangers, MS channel, wooden haunches, nuts, check nuts, vibration isolator suspension where specified or required, and any other item required to complete the piping installation as per the specifications. None of these items will be separately measured nor paid for**. However, all valves (globe / check / butterfly / ball), thermometers, pressure gauges shall be separately counted and paid as per their individual unit rates, which shall also include their insulation as per specifications. Piping measurements shall be taken before application of the insulation. Fabrication of all types of pipe supports, provided as per the instruction of Engineer In-charge, will be paid on weight basis, excluding weight of fasteners. All temporary lines or equipment required for flushing, testing, draining or drying should be provided, installed and

dismantled by the contractor within his quoted rates. Open end of the pipes shall be blanked within his quoted rates.

Radiography charges shall be born by contractor. Additional radiography required due to poor quality of contractor's welder, will be done at contractor's cost.

Measurement for Insulation

Unless otherwise specified measurement pipe insulation for the project shall be on the basis of centreline measurements described herewith:

Pipe insulation: Shall be measured in units of length along the centreline of the installed pipe, strictly on the same basis as the piping measurements described earlier. The linear measurements shall be taken before the application of the insulation. It may be noted that for piping measurement, all valves, orifice plates and strainers are separately measurable by their number and size. It is to be clearly understood that for the insulation measurements, all these accessories including cladding and valves shall be considered strictly by linear measurements along the centreline of pipes and no special rate shall be applicable for insulation of any accessories, fixtures or fittings whatsoever.

14.0. Color Application:

All equipment shall be supplied with approved finish. Shop coat of paint that have become marred during shipment or erection shall be cleaned off with mineral spirits, wire brushed and spot primed over the affected areas, then coated with two coats of enamel paint. Painting of all MS support structure shall be done by one coat of primer and two coat of enamel paint. Also the flow direction marking by standard size of arrow on all pipes included in the scope. All painting colour code shall be approved before execution. No separate payment shall be made for painting work. Reputed make like Asian/Berger etc are only to be used.

15.0. Marking/Tagging of cooling lines with stickers:

All the water cooling lines (including inlet and outlet water flow direction) mentioned in PID should be marked / tagged with suitable front size letters and long life stickers.

16.0. Dismantling and Free usage of available materials:

While dismantling all the re-usable items like pressure transmitters, RTDs, must be stored and handed over to IPR representatives carefully without any damage.

17.0. Handing Over:

Site clearance:

The Scope of work includes site clearance, after completion of job. Hence all the area shall be cleared of debris and excess material left due to the contract and related work.

Handing over documents:

On completion of the work in all respects, the vendor shall furnish 4 Nos. handing over documents in a good quality box - file containing minimum of:

- Complete set of detail as-built drawings on approved scale (both hardcopy and Softcopy)
- Equipment technical data, Material test reports, rating charts, Performance curves etc.
- Inspection and performance test reports
- List of recommended spares.

18.0. Technical Specification:

Following components are to be interconnected to satisfy the system requirements. **Bidder has to provide a separate sheet confirming to the following specifications. Change in the specifications will not be accepted unless prior permission is taken from IPR.**

Specification of Components

18.1. For DM water application:

(Water quality to be supplied by IPR cooling water plant, Vendor is only responsible for noiseless operation achieved with desired flow rate and operating pressure as mentioned below.)

Flow Rate	Total 650 lpm
Operating Pressure	6-15 Bar*
Operating Inlet Temperature	20-22 degree Celsius
Conductivity	Less Than 1 micro-Siemens/cm

**Different Branching have different Operating Pressure requirement. Please refer to P&ID for detailed requirement*

18.2. Pipes:

To be used to interconnect the system components for circulation of DM water through the water loops. It is proposed to install SS316L Sch. 40/10 piping (as per ASME B31.3), ERW type (For 50 NB and above otherwise seamless) with accessories as per system requirements mentioned in P&ID as per standards. The SS piping should be as per ASTM - A312 TP 316L specification with dimensional tolerances as per ANSI B36.19M. Each length of the pipe shall be legibly marked with the manufactures name, brand, specification, grade, Heat number, Nominal pipe size, wall thickness, marking shall begin approximately 12 inch (300mm) from the end of pipe. The pipe sizes shall be as required for the individual fluid flows. Various pipe sizes have

been indicated in the drawings, these are for vendor's guidance only and shall not relieve responsibility of vendor for providing smooth noiseless balanced circulation of fluids.

18.3. Pipe Joints:

All pipe joints including Tee, Elbow, Bend, Reducer shall conform to Class 300 as per ASME B16.9. All joints in the pipe system shall generally be done by welding, GTAW process with argon purging unless otherwise mentioned, or directed at site. All welding shall be done by qualified welders and shall strictly conform to ASME Code of practice. Before welding of pipes, make proper 'V' notch at the joints(as applicable) by chamfering the end of pipe with surface grinder. All electrodes shall be selected to match the mechanical and chemical properties of the parent material. The welding rods shall be selected as per AWS-E-7018 or Equivalent BIS code, subject to Purchaser's approval.

18.4. Pipe flanges, fastener and gaskets:

All flanges including flanges of valves are to be slip on serrated raise face (SORF) finished flanges of respective pressure class 300. Set of fasteners will be **metric thread stud/hex head type** with nuts and washer of Stainless Steel. All gaskets are of Teflon of 3 / 5 mm thick. All bushes (for electrical isolation) are made up of FRP/G10.

18.5. Non-Conductive Hoses:

In high pressure demineralised water lines for providing flexible connection between end components and to maintain a voltage isolation (~50 KV for a gap of 1 meter) in between them.

Material of Construction for non-conductive hoses:

Inner core/Tube	NYLON
Reinforcement	FIBRE
Cover	Urethane/POLYURETHANE

End Connections for Hoses:

One End of all the Hoses should be **crimped flange connection** and other end should be supplied with **TWIN ferrule based Mechanical fittings.** One side of end fittings shall be crimped on non-conductive hose while other side would be used for connection on tube/pipes.

Working Pressure and Temperature for hoses:

Our working pressure is limited to 10 -15 bar and operating temperature is 20 degree Celsius. However, Vendor may supply items as per their original manufacturing specification which must be higher than our operating pressure requirement and lower than operating temperature requirement in any case.

Operating pressure – (10 -15) bar

Operating Temperature < 20^0 C

Minimum Burst pressure at 20^0C:

It shall be approximately equal to or more than 4 times the rated operating pressure as per manufacturer's specification.

Burst Pressure ~4 x (Rated Operating Pressure)

Electrical Standards: Non-Conductive hoses:

Shall meet SAE J517/100R8 requirements on hydro-electric standards. Should have a dielectric strength not less than 8000V/mm.

18.6. Butterfly Valves (Manual):

Butterfly valves are to be used for isolation of equipment / components in DM water lines.

a. The valves should be of wafer type with total stainless-steel construction, pressure class 300 as per the details in SOQ. Design standard: API 609.
b. Valves shall have mounting flange as end connections (Class 300) as per ISO 5211, centring lugs, locking lever handle. Preferably, the valves will be of single-piece body.
c. The disc should provide bubble tight shut off (class VI leak tightness) in both flow directions with minimum torque and longer seat life.
d. The valves should give higher C_v values. The valves should be with stainless steel disc & stem, replaceable EPDM seat.

18.7. Ball Valves (Manual):

Ball valves are to be used in process pipeline

- The valves should be of flange ended with pressure class 300 with total stainless steel construction.
- Flanged End connections shall be as per ANSI/ ASME B16.5, Class 300.
- The valves should be of 3-Piece Design for easy In-line Maintenance, full bore design only and the seat will be of PTFE.
- The disc should provide bubble tight shut off (class VI leak tightness) in both flow directions with minimum torque and longer seat life.
- MOC of handle should be MS/ MI with plastic cover.
- The valve design shall be as per BS: 5351/ API: 6D

Ball valves are to be used for drain and vent the pipelines

- The valves should be of female thread end (class 300) with total stainless steel construction.
- The valves shall be of full bore design only and the seat will be of PTFE.
- MOC of handle should be MS/ MI with plastic cover.

- The valve design shall be as per BS: 5351/ API: 6D

18.8. Globe Valves:

Globe valves are used for manual flow control and should provide bubble tight throttling.

- The valves should be of stainless steel construction, class 300.
- Flanged End connections shall be as per ANSI/ ASME B16.5, Class 300.
- The disc should provide bubble tight shut off (class VI leak tightness) with minimum torque and longer seat life.
- The bonnet / disc should be of stainless steel as per the details in SOQ. Preferably, the bonnet will be of removable type.
- The valve design shall be as per BS: 1873/ API: 600/ ASME / ANSI B16.34

18.9. Self-acting non-return valves (Check Valves):

Self-acting non-return valves are used to prevent reverse flow.

- The body should be of stainless steel constructions, class 300 as per the details in SOQ.
- The valves shall be of 'lift type' for sizes 50 NB and below, 'flapper / swing / dual plate spring type' for sizes above 50 NB.
- The body / Bonnet / Stem / gland / hinge / disc will of SS material and seat O-ring / gasket shall be of 3 mm thick PTFE and / or EPDM. The spring and hinge/stop pin shall be SS and bearing PTFE material.
- The valves should be of flange ended.

18.10. Self-acting (Pilot Operated) pressure reducing valves(PRV):

Self-acting pressure reducing valves are used for protecting the system components against higher supply / inlet pressure by controlling / maintaining the downstream pressure at desired level.

- The controlled downstream pressure should remain constant irrespective of changes in the inlet pressure and / or flow rate.
- The valve should be of self-acting, pilot operated type.
- The valves should be of flange end connections as per ANSI/ ASME B16.5, Class 300.
- The body and trim should be of stainless steel construction respectively and pressure rating class 300 as per the details in SOQ. The disc/ diaphragm should be of EPDM/ Teflon/BUNA-N.
- The internal parts like valve disc, trim parts may be of easily replaceable type without removing the whole body from the line.
- The valves should be delivered with 'built-in safety provision' against high-pressure build-up in the inlet side, also '1/4 inch pressure gauge connection' with one set of 2” dial size pressure gauge connected for downstream pressure measurement.
- The valves should provide class VI leak tightness.

- Valve should be fitted with suitable Y-Strainer (1/2" size) in controlling tubing interconnection line.
- The set pressure as per in SOQ and should be easily adjustable by adjusting the spring setting.

18.11. Pressure safety valves/Pressure Relief Valve(PSV):

The relief valves are provided to release excess pressure in the line, when pressure in the water line exceeds the set value.

- The valves should be of stainless steel construction, class 300 as per the details in SOQ.
- The valves should be of flange end connections as per ANSI/ ASME B16.5, Class 300.
- The valves should be of self-actuated quick release, close discharged type.
- The spring / pallet / piston / trim should be of SS. The seating can be of neoprene / EPDM / PTFE / equivalent
- The valves should ensure bubble tight shut off.
- The set pressure as per in SOQ and should be easily adjustable by adjusting the spring setting.

18.12. Instrumentation and Controls:

Necessary instruments (new required and existing installed), sensor- transmitters, are to be used for the purpose of process measurement, indication, providing required output signals for data acquisition- monitoring and control system for the integrated operation of water distribution system with communication to the system control rooms.

18.13. Temperature gauges:

Necessary dial type bimetallic temperature gauges are to be installed to measure the water temperature at the locations shown in the P & I diagram.

- Thermometers shall be dial type 100 mm dia. in aluminum white background with black markings.
- Thermometers should have SS thermowell attachment.
- The case should be of SS with screwed bezel rotatable on stem 90 degree to adjust at different angle.
- The windows should be of shatterproof glass.
- The pointer should be of aluminum, coated with black colour.
- The weather proof protection should be provided as per IP-65 (IS:2147)
- Stem material / dia / length: SS 316 / 6-8 mm / 180 mm long (or to suit the pipeline). The gauge should be installed on lines as shown on the drawings and included in Schedule of Quantities. (Type/shape of capillary / stem to be selected as per the design requirement)
- The sensing element should be of chrome molybdenum.
- The mounting connection will be "all - angle" type to suit the piping.
- Range of scales can be 0- 100^{o}C with 1^{o}C scale spacing.
- The accuracy should be ±1% FSD with over-range 125% FSD

- The connection shall be 1/2" NPT (M) SS 316 with adjustable three piece compression fitting.
- The reset should be external.

18.14. Pressure gauges:

Necessary dial type pressure gauges are to be installed to measure the water pressure at the locations shown in the P & I diagram.

- Pressure gauges shall be dial type 100 mm dia. in aluminum white background with black markings.
- The gauges shall be connected to the pipes by SS siphon and needle valve for isolation.
- The bourdon should be of phosphor bronze / SS 316 Ti, socket should be of brass / SS 316.
- The case (glycerin filled type) can be of SS 304L/ SS 316 with screwed bezel.
- The weather proof protection should be provided as per IP-65 (IS:2147)
- Range of scales should be 0-20 bar with 0.2/0.1 bar scale spacing
- The accuracy should be ±1% FSD with over-range 125% FSD
- Working temperature range can be 0- 100^{o}C.
- The connection shall be 1/2 " NPT (M) / as per design requirement.
- Blow out disc should be provided.
- There should be zero point adjustment.
- Refer standard EN - 837.

18.15. Temperature transmitters(RTD):

Necessary two wires, PT 100 temperature sensors – transmitters can be installed for necessary data acquisition required for overall monitoring and control system in the water distribution system.

- The instrument should be of 4 - 20 mA current output transmitter type as mentioned in the SOQ.
- Signal cable laying with termination from field instruments to junction box.
- The sensor can be of SS of diameter 6 to 8 mm and should be aluminum head mounted type and easily removable from head.
- SPAN-ZERO adjustments should be provided from outside.
- Range of scales should be 0-50 / 80 / 100 degree C depending on design requirements.
- The accuracy should be ±0.5 % FSD with over-range 125% FSD.
- The thermos-well should be compact type of SS as per requirement and can be of fabricated / barstock type.
- The weather proof protection should be provided as per IP-65 (IS:2147)
- The connection should be of screwed type / as per requirement.
- The transmitter should be compatible with 24 V DC supply with built -in electronic voltage stabilizer.
- Refer standard DIN - 43760, also CMRS certificate.

18.16. Pressure transmitters:

Necessary pressure sensors – transmitters can be installed for necessary data acquisition required for overall monitoring and control system in the water distribution system.

- The instrument should be of 4 - 20 mA current output transmitter type as mentioned in the SOQ.
- Signal cable laying with termination from field instruments to junction box.
- The sensor should be with ceramic / SS with viton / EPDM sealing.
- The connection should be of threaded nipple type.
- The response time should be less than 5 msec.
- The weather proof protection should be provided as per IP-65 (IS:2147)
- Range of scales should be 0-20 bar.
- The accuracy should be ±0.5 % FSD.
- The sensor should have negligible sensitivity to temperature fluctuations and high resistance to extreme temperatures.
- The transmitter should be compatible with 24 V DC supply with built -in electronic voltage stabilizer.
- The sensor should be mounted with needle valve for process isolation.

18.17. Flow meters:

Necessary water flow meters (sensor cum transmitter) of turbine type are to be installed to measure the water flow mainly at inlet or out let of each system loads as indicated in P&I diagrams.

- The instrument should be of 'transmitter with display type'
- The instrument should be of 4-digit LCD display, backlit type and suitable for 4 – 20 mA current output to Data Acquisition and Control System (DACS) for sizes & flow range (lpm) mentioned in SOQ. Flexible signal cable from field instruments to junction box, length up to 15 m (or more) is to be included with each instrument / sensor.
- The body should be of stainless steel, **rotor should be of Stainless steel**, bearing should be tungsten carbide/ stellite/ceramic/ bush and bearing support should be SS 316.
- The accuracy should be ±0.5 % FSD.
- Working temperature range can be 0- 100^{o}C and DM water will be the working media.
- The protection should be provided as per IP-65 (IS:2147)
- The maximum pressure drop should be $\leq$ 0.5 kg/cm^2 at 100% flow range.
- The connection should be flange ended as per ANSI/ ASME B16.5, Class 300.
- The display unit should be compatible with 230 ±10% V, 50 Hz single phase AC supply with built -in electronic voltage stabilizer.

18.18. Conductivity Meter:

Online fluid quality is to be measured through a conductivity meter. Material of construction should be stainless steel with local output display (4 ½"LED). Resolution should be 0.1micro-siemens/cm. Accuracy should be +/- 1%. It should be provided with ½ inch NPT connections and must be able to withstand a pressure up to 15 bar within temperature range of 20-50 degree Celsius.

18.19. pH Meter:

Measurement Range: 0-14 pH (low NA+ ion error)
Temperature Range: 0-100^0 C
Pressure Range: 0 – 250 PSIG
Body Construction: Stainless Steel
Protection Range: IP68
Local Display: Local Output Display (LED, 41/")
Resolution = 0.1
Response Time: 95% in 1 second
Isopotential: 7.00 pH
Offset: 0.2%
Span: > 97%
Connector: BNC or Tinned Leads
Cable Length: 10 feet (3 meters) or 20 feet (6 meters)

18.20. Y-strainer:

Should be used for fluid to be free of foreign solid matter and assure proper flow and prevent damage to valves, controls, and other equipment. Material of construction of Y-strainer should be stainless steel. It should have flanged end connection of pressure class 300. It should contain perforated stainless steel screen of bolted type with mesh size 100. Pressure drop across strainer should be less than 0.2 bar for NB 80 Line. . Gasket should be stainless steel spiral wound non-asbestos.

18.21. Calibration and Testing:

All automatic controls and instruments shall be factory calibrated and provided with necessary instructions for site calibration and testing. Various items of the same type shall be completely interchangeable and their accuracy shall be guaranteed by the manufacturer. All automatic controls and instruments shall be tested at site for accuracy and reliability before commissioning the installation. The vendor should submit the calibration certificates with all instruments.

18.22. Insulation with Aluminium cladding:

Insulation shall be applied only after the piping system has been satisfactorily tested for leaks at 1.5 times the working pressure or at minimum 10-kg/mm^2-test pressure. Each lot of insulation material delivered at site shall be accompanied with manufacturer' test certificate for thermal conductivity values and density. Samples of insulation material from each lot delivered at site may be selected at random for approval and shall be got tested for thermal conductivity values. The insulation shall be continuous over the entire run of piping, fittings and valves. Insulation shall be finished in neat and clean manner to achieve true surface. Skilled workmen specially trained in this kind of work shall carry out all insulation work. All water piping shall be insulated

in the manner specified herein. Before applying insulation, all pipe work and fittings shall be brushed and cleaned, and dust, dirt, mortar and oil removed. Thermal insulation shall then be applied as follows:

Post insulation the lines should be covered with aluminium cladding/shield as protective casing.

Lines for "DM water" applications:

The insulation shall be flexible and lightweight elastomeric nitrile foam material. The thermal conductivity of the material shall not exceed 0.04 W/m^{o}C. at 10 ^{o}C mean temperature and density should not be less than 60 kg/ m^{3}. Thickness of the insulation shall be as specified below for the individual applications. The insulation material can be readymade pipe section upto 3" pipe sizes. Above 3" pipelines, the insulation can be of precut sheets. Cold adhesive or equivalent can be used for setting the insulation on the pipes.

Pipe size (mm)	Thickness of insulation (mm)
3" (80 NB) and below	9
4" (100 NB) and above	13

Pre-molded/ extruded pipe sections shall be placed over the pipes, the joints of these pipe sections shall be sealed with cold adhesive compound and self-adhesive rubber tape as per manufacturer's recommendation.

All the insulation shall be covered with proper aluminium sheet or cladding for safety and shield casing.

18.23. Specification for Pipe Installation:

Tender drawings indicate schematically the size and location of pipes. The Contractor, on award of the work, shall prepare detailed shop drawings, showing the cross- section, longitudinal sections, details of fittings, locations of various valves, and all pipe supports. He must keep in view the various equipments installed nearby.

Piping shall be properly supported on, or suspended from, stands, clamps, and hangers as specified and as required. The Contractor shall adequately design all the brackets, saddles, anchors, clamps and hangers and be responsible for their structural sufficiency. All pipes shall be supported with MS structural steel like C-channel, I-Beam, angle and M S Class 'C' pipes, supported from floor or column. Where pipe and clamps are of dissimilar materials, a gasket shall be provided in between. Spacing of pipe supports shall not exceed the following:

Pipe size	Spacing between supports
Up to 12 mm	1.5 Meter
15 to 25 mm	2.0 meter

30 to 150 mm	2.0 meter
Over 150 mm	2.5 meter

All piping work shall be carried out in a workman like manner, causing minimum disturbance to the existing services, buildings and structure. The entire piping work shall be organized, in coordination with other agency's work, so that laying of pipe supports, pipes and pressure testing for each area shall be carried out in one stretch. The Contractor shall make sure that the clamps, brackets, clamp saddles and hangers provided for pipe supports are adequate. Piping layout shall take due care for expansion and contraction in pipes and include expansion joints wherever required.

All pipes shall be accurately cut to the required size in accordance with relevant BIS Codes and burrs removed before assembly. Open ends of the piping shall be closed as the pipe is installed to avoid entrance of foreign matter. Where reducers are to be made in horizontal runs, eccentric reducers shall be used for the piping to drain freely. In other locations, concentric reducers may be used. The provision for vent and drain should be provided at all top and bottom point of pipelines respectively with ball valve for isolation. The cost of provision for vent and drain should be included in piping works. The size of ball valves for vent and drain will be 25 NB respectively and free end of ball valves fitted with dummy plug.

18.24. Specification for Flow Balancing:

After completion of the installation, all systems shall be adjusted and balanced to deliver the water quantities as specified, quoted, or as directed. Water circuit shall be adjusted by balancing the valves, these shall be permanently marked after balancing is completed so that they can be restored to their correct positions, if disturbed. Complete certified balancing report shall be submitted for evaluation and approval. Upon approval, four copies of the balancing report shall be submitted with the as- installed drawings and completion documents.

18.25. Draining & venting operation:

For Draining & venting purpose, the drain lines with vent valve shall be provided at appropriate places. Also, whenever the components need servicing, the water contained in them shall be removed through drain lines after isolating the components from the branch lines. Each header is having its own drain line with vent valve and the draining is done by the common drain line of 25 NB. Vent of 25 NB and drain of 25 NB/ suitable size thread end ball valves(**capable of handling up to 20 bar of pressure**) should be provided at all top and bottom points of pipe lines respectively. The other free end of ball valve fitted should be with dummy SS plug. ***There is no any extra payment for drain / vent provision with isolation valves in the pipe lines. The cost is included in piping works.***

18.26. Specification for Control Cables:

Control cables shall be of 1100 Volts grade, annealed copper conductor, PVC insulated, extruded FRLC PVC inner sheathed, overall FRLS PVC sheathed confirming to IS 1554/Pt.I/1988.

Cables laid on trays and risers shall be neatly dressed and clamped at an interval of 1500 mm and 900 mm for horizontal and vertical cable runs. The vendor shall supply the required cable trays of suitable size. The cable trays shall be of suitable size and material. Each cable run shall be tagged with number that appears in the cable schedule. Cables shall be tagged at their entrance, every 30 m and exit from any equipment, junction box. The tags shall be of aluminum with number punched on it and securely attached to the cable by not less that two turns of 16 SWG GI wire. The termination and connection of cables shall be done strictly in accordance with drawing and/ or directed by the Engineer. The work shall include all clamping, glanding, fitting, fixing, tapping, crimping and grounding as required. The vendor shall perform all drilling, cutting on the gland plate and any other modification required and plugging the extra holes. The vendor shall provide on control cable cores at all terminations. Termination and connections shall be carried out in such a manner as to avoid strain on the terminals.

The vendor shall supply the required cable glands of suitable type and size. Cable glands shall be of heavy duty, tinned brass, and single/ double compression type complete with necessary armor, clamp and tapered washer etc. Cable gland shall match with the size of different control cables. They shall provide dust and leak proof terminations. The vendor shall make every effort to minimize wastage during erection work. In any case, the wastage shall not exceed 2.5 % for total quantity of cable supplied**.**

<u>The scope of the EMS vendor shall also include:</u>

a. Submission of cable schedules, wiring schedules, test reports, final "AS BUILT" drawings etc.
b. Handing over the system as a whole after becoming fully operational to IPR.

Although it may not be specified here, but all other work required for successful installation, testing and commissioning shall be in vendor's scope. The system shall be deemed to have been handed over only after IPR's final acceptance.

No.	Equipment	Cable Size
1	Transmitters like Pressure, Temperature, pH Conductivity, Flow transmitters (2 wire type).	2C x 1.5 sq. mm Cu screened & shielded (armoured cable (includes power signal also).
2	Temperature sensors (RTD Ni-1000).	2C x 1.5 sq. mm Cu screened & shielded (armoured cable.
3	Solenoid Valves and for ON/OFF status signals from Panel and Controller.	2C x 1.5 sq. mm Cu armored cable for each signal.

19.0. Technical Data Sheet:

List of technical information's to be furnished by the bidder to IPR as per annexure-B

- Separate technical data sheets shall be furnished for different type/ model/ configuration for different items.

-Take copies of the data sheet for different sizes/ category and furnish the information asked for.

-All the data sheets shall be endorsed with stamp and signature by the bidder.

-Bidder has to provide minimum technical details as enclosed herewith, however shall also provide remaining / additional details.

-All the Items shall be ordered only after Technical specification approval.

-Attach Technical leaflets, performance curves, etc. for all products / system parts offered.

-Please refer technical specifications asked for before filling the blank data sheets.

20.0. Recommended Makes for equipment & Instrumentation:

The following makes are approved by IPR. Deviations in the approved make will not be allowed unless authorised by IPR in writing. . So, the vendor has to consider this while submitting price bid. Also, refer technical specifications, accordingly select approved makes.

Description of item	**Recommended makes**
1. Piping	
▪ SS pipe (Seamless / ERW)	M/s R. Natverlal/Ratnamani/ Remi/SAIL/Jindal/Indian seamless/*
▪ Braided PVC pipe / Rubber hose pipe / flexible metal hose fittings	Semsonex/ Samson/Jay Industries/Abcoflex/Sakhi/ Libra Flex / Micron (Legris) / Duplon/Parkar/*
2. Valves (DM water applications)	

▪ *Butterfly (manual)*	Intervalve / BDK /Virgo/ Fisher control / AMRI/ Technova / Advance / Saunders / Audco / Bray Control make
▪ *Globe (manual)*	Audco / Advance / Saunders / BDK/ Trishul
▪ *Ball Valves (manual)*	Virgo/ Velan / Saunders / Audco/ Accuflow / BDK/Trishul
▪ *Pressure reducing valves*	Nirmal / Darling Muesco / Crescent / Forbes Marshall
▪ Needle valves	Altop instruments / Laptop instruments / Trishul/ Accuflow
▪ Pressure relief valves	Nirmal / Darling Muesco / Forbes Marshall
▪ Y-Strainer	Trishul/ Triveni/Advance/Flowtech/ Crescent valves/ Flairs/ *
3. Insulation materials	
▪ Expanded polystyrene	Llyods / Beardsell / Cooline
▪ Elastomeric EPDM foam	Superlon / Armaflex / Arcoflex/*
4. Instruments & Controls (Only DM water applications)	
▪ Temperature / Pressure gauges	WIKA / Bell Controls / IRA / Forbes Marshall/ WAREE
▪ RTD / Pressure Transmitter	WIKA/ Siemens/ E+H/ Honeywell/ Rosemount/IRA
▪ Conductivity meter	Indion / Cole-Parmer / Forbes Marshall / Weller
▪ Flow meter (Turbine)	Rockwin / Sanvij / Hoffer/ RR/ Honeywell

21.0. Codes & Standards:

The following latest equivalent applicable codes are applicable for the proposed work:

IS: 2379 - 1963	▪ Colour code for identification of pipelines.
ASME –sec V	▪ Welds test volumetric examination
IS : 6392 - 1971	▪ Steel pipe flanges.
IS : 628	▪ Rubber gasket, Teflon gasket for SS piping.
IS : 554 – 1975	▪ Dimensions for pipe threads for pressure tight joints
IS : 7240 - 1981 7413 - 1981	▪ Code for practice for application and finishing of thermal insulation material at temp. From -80°C to 40°C. & 40°C to 700°C.
IS : 1367	▪ Bolts, nuts, and studs./ threaded fasteners.
ANSI - B36.19	▪ Stainless Steel pipes.

IS : 444/87	▪ Insulated rubber hose manufactured in woven textile / braided yarn reinforcement.
IS: 1475 / 78, 1391/ 71	▪ Fan, heat exchanger, sheet metal works, tank insulation (For water cooler)

22.0. Manufacturing & Inspection Plan (MIP):

a. Sample format of manufacturing inspection plan(MIP) has been provided by IPR as per annexure- D
b. Vendor needs to prepare a detailed format of MIP based on the guidelines provided by IPR in annexure- D
c. For the various phases of test, manufacturing and inspection, MIP should be signed accordingly by both the parties (as applicable).
d. The draft MIP should be submitted to IPR with manufacturing drawing for approval to IPR.
e. The approved MIP may be kept updating manually accordingly during various phases of Project execution as per need or on the basis of accepted DR or NC. However each revision should be approved and dully signed by IPR representatives.
f. Original Copy of Final updated MIP after completion of project should be submitted to IPR dully signed and approved. Vendor shall retain one copy of the same.

23.0. Deviation Request and Non-Conformance:

Any deviation from approved manufacturing drawings/technical specification and approved P&ID shall be submitted to IPR for approval as per the format provided in annexure-E.

Annexure-A

P&ID Diagram:

Attached at the end of this document

Note:

1. Information given in P&ID diagram are the inputs for design basis.
2. Vendor shall take these inputs and do a detailed engineering review of water distribution system that basically includes sizing of water lines, instrumentation and control.
3. Details of instrumentation and control valves provided in above P&ID are suggestive only. Vendor shall suggest changes if any, required for efficient water distribution as per the flow requirement across each components.
4. Component descriptions is highlighted in dotted box is informative only. Flow requirement and pressure drop across each component are provided for proper pipe sizing. Pipe sizing shall be such the flow and pressure drop requirement are met accordingly.
5. Abbreviation & Information used in P&ID are listed as per below:
   BFV= Butterfly Valve
   BLV= Ball Valve
   GLV= Globe Valve
   Insl.= Insulation
   PSV= Pressure safety/Releif Valve
   PRV= Pressure reducing Valve
   P= Set/Operating pressure
   T= Temperature
   PS= Pressure Sensor
   TS= Temperature sensor
   Operating pressure for most of the component is between 5-6 bar.
   Maximum pressure drop across any component is limited to 2-3 bar
   Minimum pressure allowed in return line to IPR CWS plant= 1.5 bar

Annexure-B

Technical Date Sheet to be filled by Vendor and shall be submitted to Purchaser

1. Butterfly Valves:

Type / Class	
Make / Model	
Material of all body parts: (Enclose details)	
Body / Bonnet	
Flange specifications	
Seat / Disc	
Stem / Trim	
Bearing/ sleeve	
Operating lever.	
Fasteners:	
Operating range & limits: Pressure (Bar) / Temp. (°C).	
Cv value	
Max. Shut of pressure	
Test Pressure (Hydro – air) Shell / seat	
Leakage class	
Local indication	
Additional features if any:	

Description	Confirmation	Deviation
a. The valves should be of wafer type with total SS 304L/ SS 316 construction, disc & stem should be SS 316, pressure class 300 as per the details in SOQ.		

b. The valves shall have mounting flange as per ISO 5211, centering lugs, locking lever handle Preferably, the valves will be of two-piece body. c. The disc should provide bubble tight shut off in both flow directions with minimum torque and longer seat life. d. The valves should give higher Cv values. e. The valves should be with SS disc & stem replaceable Teflon / EPDM seat.		

2. <u>Ball Valves(manual):</u>

Type / Class	
Make / Model	
Material of all body parts: (Enclose details)	
Body / Bonnet	
End connection	
Seat / Ball	
Stem / Trim	
Stem seals/ Body seals	
Operating lever.	
Fasteners:	
Operating range & limits: Pressure (Bar)/ Temp (°C).	
Bore	
Cv value	
Max. Shut of pressure	
Test Pressure (Hydro – air) Shell / seat	
Leakage	
Local indication	
Additional features if any:	

Description	Confirmation	Deviation
a. The valves should be of flanged end (class 300 three piece construction, socket welded (or screwed type (class 400) three piece construction with total SS 304L/ SS 316 construction, as per the details in SOQ. b. The valves may have ISO 5211 mounting pad and double body sealing arrangement c. The valves shall be of full-bore design only. d. The seat will be of PTFE. e. The valve design shall be as per BS: 5351/ API: 6D		

3. Globe Valves(Manual):

Type / Class	
Make / Model	
Material of all body parts: (Enclose details)	
Body / Bonnet	
Flange specifications	
Seat / Disc	
Bearing/ sleeve	
Gland	
Operating lever	
Fasteners:	
Operating range & limits: Flow LPM / Pressure (Bar / Temp. (°C).	
Cv value	
Max. Shut of pressure	
Test Pressure (Hydro – air) Shell / seat	
Leakage class	

Local indication	
Additional features if any:	

Description	Confirmation	Deviation
a. Globe valves are used for manual flow control and should provide bubble tight throttling. b. The valves should be of SS 304L/ SS 316 construction, class 300 as per the details in SOQ. c. The bonnet / disc should be of SS. Preferably, the bonnet will be of removable type.		

4. <u>Non-Return Valves:</u>

Type / Class	
Make / Model	
Material of all body parts: (Enclose details)	
Body / Bonnet	
Flange specifications	
Seat / Disc	
O-ring / Seal	
Seal	
Fasteners	
Operating range & limits: Pressure (Bar) / Temp. (°C).	
Cv value	
Max. Shut of pressure	
Test Pressure (Hydro – air) Shell / seat	
Leakage	
Additional features if any:	

Description	Confirmation	Deviation
a. The body should be of SS 304L / 316 constructions, class 300 as per the details in SOQ. b. The valves shall be of 'lift type' for sizes 50 NB and below, 'flapper / swing / dual plate spring type' for sizes above 50 NB.		

c. The body / Bonnet / Stem / gland / hinge disc will of SS material and seat O-ring gasket shall be of 3 mm thick PTFE and / o EPDM. The spring and hinge/stop pin shal be SS and bearing PTFE material. d. The valves should be of flange ended.		

5. <u>Pressure Reducing Valve:</u>

Type / Class	
Make / Model	
Material of all body parts: (Enclose details)	
Body / Bonnet	
Flange specifications	
Seat / Diaphragm	
Stem / Trim	
Bearing/ sleeve	
Fasteners:	
Operating range & limits: Flow LPM / Pressure (Bar / Temp. (°C).	
Cv value	
Max. Shut of pressure	
Test Pressure (Hydro – air) Shell / seat	
Leakage	
Local indication	
Additional features if any:	

Description	Confirmation	Deviation

a. The controlled downstream pressure should remain constant irrespective of changes in the inlet pressure and / or flow rate. b. The valve should be of self-acting, pilo operated type. c. The body & trim should be of SS 304L/SS 316 construction respectively, class 300 as per the details in SOQ. The disc / diaphragm should be of neoprene / EPDM / teflon. equivalent d. The internal parts like valve disc, trim parts may be of easily replaceable type withou removing the whole body from the line. e. The valves should be delivered with 'built-in safety provision' against high-pressure build up in the inlet side, also '1/4 inch pressure gauge connection' with one set of pressure gauge (2" dial size) connected on downstream pressure measurement f. The valves should be of flange ended. g. The valves should provide class VI leak tightness. h. The set pressure should be easily adjustable by adjusting the spring setting.		

6. <u>Pressure Safety/Relief Valve(PSV):</u>

Type / Class	
Make / Model	
Material of all body parts: (Enclose details)	
Body / Bonnet	
Flange specifications	
Seat / Diaphragm	
Stem / Trim	
Bearing/ sleeve	
Fasteners:	
Operating range & limits: Flow LPM / Pressure (Bar / Temp. (°C).	
Cv value	

Max. Shut of pressure	
Test Pressure (Hydro – air) Shell / seat	
Leakage	
Local indication	
Additional features if any:	

7. Piping for DM water application:

Material:	
Make:	
Schedule:	

8. Insulation for DM water lines:

Type	
Make	
Density	
Thermal conductivity.	

9. Temperature sensor cum transmitter:

Type	
Make / Model / Size	
Material of construction of all parts	
Type of sensor & Transmitters.	
Measuring & Operating Range	
Accuracy	
Repeatability	
Response time	
Type of Indication – No. Of digits	
Working limits	

Type of enclosures	
Mounting detail	
Signal output (Preferably 4 -20 mA)	
Calibration requirement	
Connection type and size.	
Power supply required	
Accessories Included (like terminal box, flanges etc*)*	
Optional accessoires Etc.	
Dimension (mm)	
Weight (kg)	

10. <u>Pressure sensor cum transmitter:</u>

Type	
Make / Model / Size	
Material of construction of all parts	
Type of sensor & Transmitters.	
Measuring & Operating Range	
Accuracy	
Repeatability	
Response time	
Type of Indication – No. of digits	
Working limits	
Type of enclosures	
Mounting detail	
Signal output (Preferably 4 -20 mA)	
Calibration requirement	

Connection type and size.	
Power supply required	
Accessories Included (like terminal box, flanges etc)	
Optional accessoires Etc.	
Dimension (mm)	
Weight (kg)	

11. <u>Pressure Gauge:</u>

Type	
Make / Model / Size	
Material of construction of all parts	
Type of sensor & Transmitters.	
Measuring & Operating Range	
Accuracy	
Repeatability	
Response time	
Working limits	
Dial size	
Type of enclosures	
Mounting detail	
Calibration requirement	
Connection type and size.	
Accessories Included	
Optional accessoires Etc.	
Dimension (mm)	
Weight (kg)	

12. Temperature Gauge:

Type	
Make / Model / Size	
Material of construction of all parts	
Type of sensor & Transmitters.	
Measuring & Operating Range	
Accuracy	
Repeatability	
Response time	
Working limits	
Type of enclosures	
Dial size	
Mounting detail	
Calibration requirement	
Connection type and size.	
Accessories Included	
Optional accessoires Etc.	
Dimension (mm)	
Weight (kg)	

13. Flow meter cum transmitter:

Type	
Make / Model / Size	
Material of construction of all parts	
Material of construction of rotor/ turbine	

Type of sensor & Transmitters.	
Measuring & Operating Range	
Accuracy	
Repeatability	
Response time	
Type of Indication – No. of digits	
Working limits	
Type of enclosures	
Mounting detail	
Signal out put (Preferably 0 / 4 -20 mA)	
Calibration requirement	
Connection type and size.	
Power supply required	
Accessories Included (like terminal box, flanges etc)	
Optional accessories Etc.	
Dimension (mm)	
Weight (kg)	

14. <u>Conductivity Meter:</u>

Type	
Model/Make/Size	
Material of Construction	
Type of Sensor	
Measuring Operating Range	
Maximum Working pressure	
Accuracy	
Resolution	
Range(FSD)	
Type of Enclosure	
Mounting Details	
Signal Output	

Local Display	
Calibration Requirement	
Power Supply Requirement	

15. p H meter :

Type	
Model/Make/Size	
Material of Construction	
Type of Sensor	
Measuring Operating Range	
Maximum Working pressure	
Accuracy	
Resolution	
Range(FSD)	
Type of Enclosure	
Mounting Details	
Signal Output	
Local Display	
Calibration Requirement	
Power Supply Requirement	

16. Y-Strainer:

Type	
Make/Size/Model	
Maximum Operating Pressure	
Operating Temperature	
Strainer Type & Connection	
Material Of construction(All Parts)	
End Connection Type	
Mesh Size	
Pressure Drop	

Notes for Schedule of quantity (SOQ)

NOTES:

1. All the items are broadly specified in SOQ, however for detail specifications refer to tender Section.
2. Vendor needs to fill the SOQ in attached format with a pre-engineering analysis conforming to the requirements mentioned in the P&ID attached with this tender document.
3. Items to be mentioned in SOQ by vendor shall meet all the functional, operational and safety requirements of TWIN source cooing system as mentioned in P&ID and several parts of this tender document.

4. No alteration what so ever is to be made to the text or quantities of this schedule unless such alteration is authorized in writing by IPR. Any such alterations, notes or additions shall, unless authorized in writing, be disregarded when tender documents are considered.
5. All the system parts, equipment shall be offered strictly as per the approved make only, deviation may be liable for rejection. The Bidder may additionally submit quotations for any alternative equipment proposed by them, however, prices for each items listed in this schedule must be clearly and completely filled in.
6. In the event of error occurring in the amount column of the schedule, as a result or wrong extension of the unit rate and quantity, the unit rate quoted by the Bidder shall be regarded as firm and the extensions shall be amended on the basis of the same rates.
7. **The rate of each item of work included in the Schedule of quantities shall, unless expressly stated otherwise, includes cost of**

    - All materials, fixing materials, accessories, operation, appliances, tools, plant, equipments, transport, labour and incidentals required in preparation for and in the full and entire execution, testing balancing, commissioning and completion of the work called for in the item and as per specifications and drawings.
    - Wastage on materials and labour.
    - Loading, transporting, unloading, handling/double handling, hoisting to all levels, setting, fitting and fixing in position, protecting, disposal of debris and all other labour, necessary for the full and entire execution and to fully complete the job in accordance with contract documents, good practice and recognized principles.
    - Liabilities, obligations and risks arising out of conditions of contract.

8. The specifications and drawings wherever available, are to be read as complimentary to and part of the Schedule of quantities and any work called for in shall be taken as required.
9. In the event of conflict between Schedule of quantities and other documents including the specifications, the most stringent shall apply and the interpretation of the Engineer In charge shall be final and binding.
10. **All equipment, quantities and technical data indicated P&ID are based on the engineering by IPR. These quantities shall be adjusted / amended after detail engineering and in accordance with the actual requirement after the approval of drawings and specifications. Contractor shall be paid for the actual quantity of work executed at site by him in accordance with the approved drawings at the contract rates.**
11. **The systems are placed at various locations within the DNB LAB at IPR. The pipelines will need to follow complicated paths. The contractor has to prepare piping layout to suit the site conditions / system layout. The Bidder has to take into account the necessary bends, fittings like elbow, tees, reducers, welded hose nipples, etc while submitting price bid. The sizes of welded hose nipple and quantity will be as per system requirement. The SS welded hose nipples to be considered while quoting for pipes. The SS mountings like nipple / coupling for thermowell / pressure sensor and other instruments should also to be considered while quoting for instruments.**
10. The Bidder shall provide rates for all the items / sizes.

Annexure-C

PRICE BID FORMAT

SCHEDULE OF QUANTITIES (QUOTATION FORMAT)

(To be filled in completely by bidder and returned to IPR)

Item Description	Size	Unit	Qty
Item Description	Size	Unit	Qty
PIPE *Providing and fixing in position the following SS 316L pipes cut to required lengths and installed with all* ***welded joints, necessary fittings, like elbows, tees, bends (Long/short radius), reducers, flanges, vent valve, drain valve, SS hose nipple, fasteners, PTFE / eq. gaskets*** *(Sch-40 @ 3 mm) ,* ***MS Support structures*** *etc. Vent and drain point shall be provided at all top and bottom points respectively with isolation valves in piping system. Vent and drain line size should be of 25 NB. Hose nipples should be welded with mating flange of required sizes for interconnection to the systems as per required by the subsystem connections. The cost of all drains / vent valves/ hose nipples,* ***MS Support structure will be included in piping works****. This also includes some minor re-routing of existing piping of different sizes as per requirement. Cost of Piping work will be on the basis of actual physical measurement and unit rate would be applicable in all such cases. Quantity (Length) displayed here are tentative and may increase or decrease in actual.*	80NB-SS316L-Sch10	Meter	25
	65NB-SS316L-Sch10	Meter	15
	50NB-SS316L-Sch40	Meter	10
	40NB-SS316L-Sch40	Meter	25
	25NB-SS316L-Sch40	Meter	30
	20 NB-SS316L-Sch40	Meter	10
	15NB-SS316L-Sch40	Meter	20
INSULATION with Aluminium Protective casing *Supply and fixing of following sizes flexible and lightweight close cell elastomeric nitrile foam material of water pipes, fittings like valves, flanges, unions etc. required to be applied on existing and new pipes & accessories. Wherever required, first remove the existing insulation from pipes and then apply new insulation by manufacture's recommended adhesive.* Post insulation with nitrile foam, all lines must be covered with aluminium cladding/protective shield/casing.	80 NB	Meter	25
	65 NB	Meter	15
	50 NB	Meter	10
	40 NB	Meter	25
	25 NB	Meter	30
	20 NB	Meter	10
	15 NB	Meter	20
NON-CONDUCTIVE HOSES *Supply of Non-Conductive High Pressure Hoses with one end having crimped Flange connection and other end (component end) having TWIN-Ferrule based mechanical fittings to be connected straight on sub-systems.* ***(Extra Ferrule as spares must be supplied along with hoses)***	1 Inch Nominal Hose Size – 5m Long	Nos.	12
	1 Inch Nominal Hose Size – 3m Long	Nos.	4
	1.5 Inch Nominal Hose Size – 5m Long	Nos.	4
	1.5 Inch Nominal Hose Size – 2m Long	Nos.	4
	3/4 Inch Nominal Hose Size – 3m Long	Nos.	4
	1/2 Inch Nominal Hose Size – 5m Long	Nos.	8
	¼ Inch Nominal Hose Size – 3m Long	Nos.	4

BALL VALVES(Manual) *Providing and fixing in position Ball valves of stainless steel construction with required mounting accessories including matching flanges, fasteners and PTFE gaskets.*	40NB	Nos.	16
	25NB	Nos.	25
	20 NB	Nos.	5
	15 NB	Nos.	20
BUTTERFLY VALVES *Providing and fixing in position of following wafer type Butterfly valves with total SS 304L construction including body of class 300 with bubble tight shut off, replaceable Teflon / EPDM seat including matching flanges and fasteners. The MOC of disc & stem should be SS 304L.*	80NB	Nos.	04
	65NB	Nos.	04
	50NB	Nos.	02
NON RETURN VALVES *. Providing and fixing in position of wafer type Non Return Valves (Check valve) with total SS 304L, Class 300 construction including body with bubble tight shut off, replaceable EPDM O-Ring/ seat. This also includes matching flanges, fasteners and PTFE gaskets.*	80NB	Nos.	01
GLOVE VALVE *Providing and fixing in position of Globe valves with total SS 304L, Class 300 construction including matching flanges and fasteners.*	65 NB	Nos.	01
	50 NB	Nos.	01
	40 NB	Nos.	01
PRESSURE REDUCING VALVE(PRV) *Providing and fixing in position of following Self-acting Pressure reducing valves to control downstream pressure with total SS 304L, Class 300 construction, (6-15) bar. The PRV should comprise ¼" pressure gauge connection with one set of 2" dial type pressure gauge connected for downstream pressure measurement. Valve should be with bubble tight shut off, replaceable EPDM O-Ring/ seat. This also includes matching flanges, fasteners and PTFE gaskets.*	80 NB	Nos.	01
	50 NB	Nos.	01
	40 NB	Nos.	01
PRESSURE GAUGE *Providing and fixing in position of glycerin filled water pressure gauges with all SS accessories like shutoff needle valve, siphon pipe, etc. with 1% accuracy. Range: 0-20Bar. Dial size: 100 mm*	½" NPT	Nos.	08
TEMPERATURE GAUGE *Providing and fixing in position of water temperature gauges with all SS accessories like thermo well etc. with 1% accuracy. Range: 0-100 °C. Dial size: 100 mm*	½" NPT	Nos.	02
RTD TEMPERATURE TRANSMITTER *Providing and fixing in position the PT-100 RTD sensor with aluminum head mounted temperature transmitter giving output of 4 – 20 mA to panel mounted display with retransmission facility to DACS with all SS mounting accessories. Range 0 - 100□C. Accuracy □ 0.5%.* ***Note: The digital LCD display unit for above temperature sensors to be mounted on custom built single panel board at one place, as per IPR requirement***	½" NPT	Nos.	13

PRESSURE SENSOR CUM TRANSMITTERS *Providing and fixing in position, water pressure senso cum transmitters (with LCD, backlit type) with all S mounting accessories, needle isolation valve and 4 – 2 mA / suitable output to panel mounted display wit retransmission facility to DACS. Range 0-10 bar Accuracy □ 0.5%.* ***The digital LCD display unit for above pressure sensor to be mounted on custom built single panel board at on place, as per IPR requirement.***	½" NPT	Nos.	01
FLOW METER *Providing, fixing in position the flange ended turbine typ water flow meter with □ 0.5% accuracy, SS 31 construction, max. working pressure / temp. is 10 bar / 8 □C, with 4 digit LCD display, backlit type and suitable fo 4 – 20 mA current output to Data Acquisition and Contro System (DACS) for following sizes & flow range. Cabl length up to 10 m/ required length from flow meter senso to junction box shall be included in the cost of eac instrument / sensor.* ***The MOC of turbine rotor will be S (Stainless Steel).*** **Note: The digital LCD display unit for above flow meter to be mounted on custom built single panel board at one place, as per IPR requirement.**	80 NB	Nos.	01
	65 NB	Nos.	01
	50 NB	Nos.	01
	40 NB	Nos.	01
CONDUCTIVITY METER *Providing and fixing in position, water Conductivity mete cum transmitters (with LCD, backlit type) with all S mounting accessories, needle isolation valve, ½ inch NP connection and 4 – 20 mA / suitable output to pane mounted display with retransmission facility to DACS Range 0-20 bar. Accuracy □ 0.5%.* ***The digital LCD display unit for above conductivity sensors to be mounted on custom built single panel board at one place, as per IPR requirement.***	For 80 NB line-1/2 inch NPT Connection of Electrode	Nos.	02
p H METER *Providing and fixing in position, water p H meter cu transmitters (with LCD, backlit type) with all SS mountin accessories, needle isolation valve, ½ inch NP connection and 4 – 20 mA / suitable output to pane mounted display with retransmission facility to DACS Range 0-20 bar. Accuracy □ 0.5%.* ***The digital LCD display unit for above p H sensors to be mounted on custom built single panel board at one place, as per IPR requirement***	For 80 NB line-1/2 inch NPT Connection of Electrode	Nos.	01
PRESSURE SAFETY/RELEIF VALVE(PSV) *Providing and fixing in position of pilot operated Self-acting Pressure RELIEF valves with pressure class 300 with total SS 304L, Class 300 construction, set pressure 4.5-5 bar. Valve should be pilot operated. Valve should be with bubble tight shut off, replaceable EPDM O-Ring/ seat. This also includes matching flanges, fasteners and PTFE gaskets.*	50 NB	Nos.	01
	40 NB	Nos.	01
Y-STRAINER *Providing and Fixing of Y-Strainer with Material of construction of Y-strainer should be stainless steel. It should have flanged end connection of pressure class 300. It should contain perforated stainless steel screen of bolted type with mesh size 100.*	80 NB	Nos.	01

INSTRUMENTATION CABLE & CONTROL CABLE *Supply, laying, termination, testing and commissioning of signal cables and control cables for instruments like Flow meter, Pressure transmitter, Temperature transmitter, pH meter, conductivity meter* and *pneumatic valves:*	5-10m(for each signal line) As applicable	250 Mtrs. (Approx.)

Important Note:

1. IPR reserves the right to add / delete any or all of the items mentioned in SOQ/P&ID.
2. **The bidder should sign all pages in token of acceptance of the terms and condition and return the same to us.**
3. **Deviations if any shall be clearly specified on separate sheet with all details.**

MANUFACTURING AND INSPECTION PLAN-TWIN SOURCE WATER DISTRIBUTION SYESTEM			
Document Number:		Revision Number:	
IPR PO Number:		Title of Item:	
Name of Customer:		Supplier:	
Prepared by supplier:		IPR Acceptance:	Code*
Name & signature: Position: Date:		Name & signature Position: Date:	**HP: Hold Point** **ATPP: Authorization to Proceed Point** **NP: Notification Point** **W: Witness of Operation** **S1: 100% Inspection, S2: Random Inspection** **R: Review Report**

Annexure-D

Components[1] (Like Drawing, manufacturing, inspection tests etc)/List of Operations	Type of Check — Applicable procedures, codes, acceptance, instructions, etc.				Inspection Point (Inspection Body)				Records (report, non-conformance number, etc)	Observation(s)/Remarks
	Type of Check[2]	Ref Codes[3]/Stds/documents	Acceptance Norms[4]	Verifying Documents[5]	Supplier		IPR			
					Code(*)	Name& Signature	Code(*)	Name& Signature		

FOR Vendor : Prepared BY:			FOR Vendor: Verified By:				FOR Vendor: Approved By:		FOR IPR: Approved By:	

1: Components may include Design/drawing approval, raw materials, and welding procedures, weld test coupons, in process inspection, weld quality, leak testing, final inspection etc.

2: Type of Check may include Design verification, visual inspections, dimension checks, review of test certificates, WPS/PQR/WPQR, deflection, leak rate etc.

3: Ref codes/standards/documents may include ASME/ISO/ASTM/approved drawings/documents etc.

4: Acceptance norms may include ASME Sec VIII, DIV-1,2 / ASME Sec-IX, ASTM SA240/SA578, AWS etc.

5: Verifying Documents may include approved drawings, approved QAP, Test certificates, WPS/PQR/WPQR, leak test reports, inspection and test reports etc.

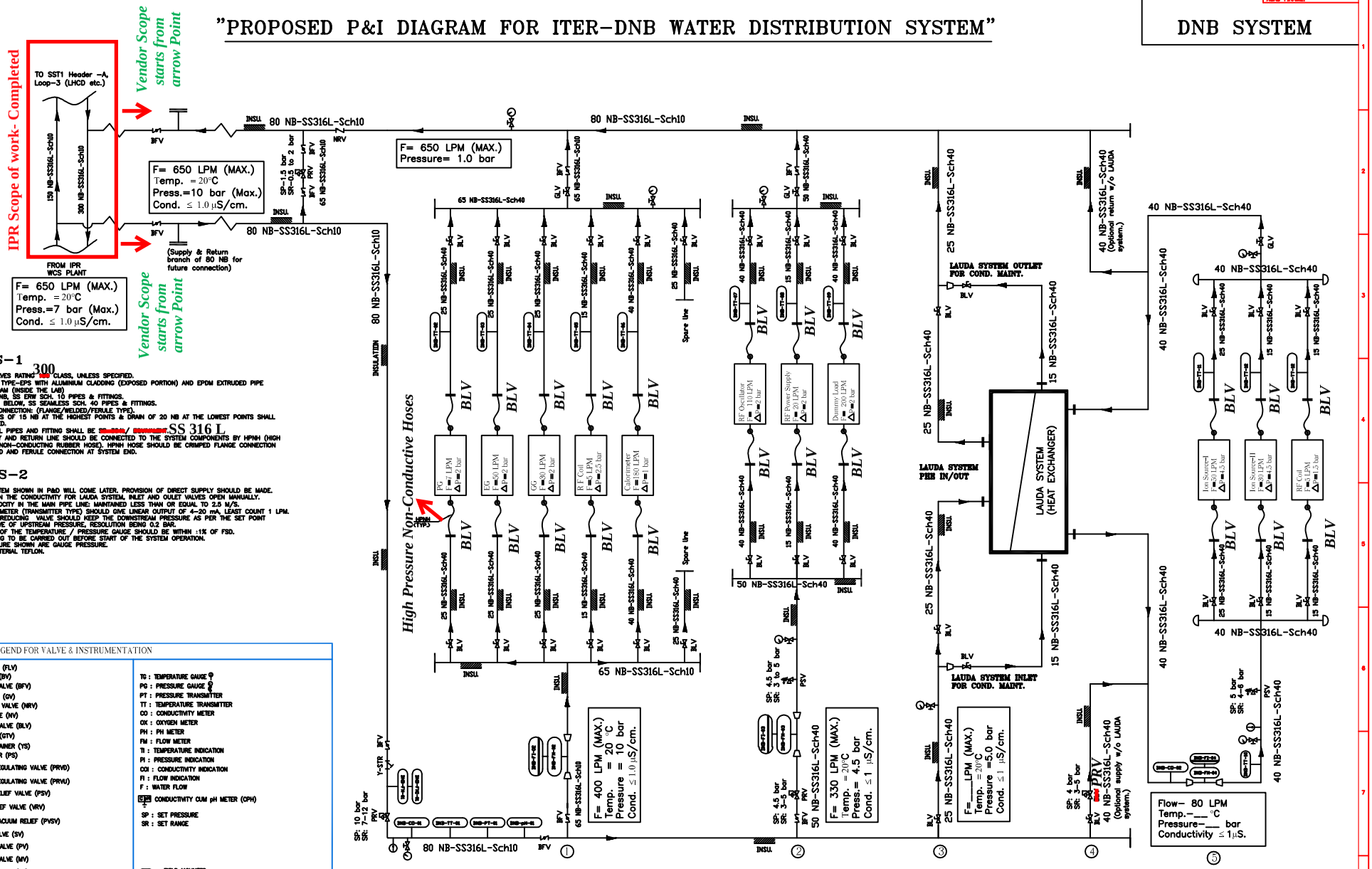
Annexure-E

Deviation request (DR) Format

IPR	**Deviation Request**	File No.
Title		
Section-1 (To be Completed by Vendor)		
Contract title: 2 - Supplier: 3 - Item Number(s): 4 - Item identification: 5 - Original requirement: 6 - Alternative proposal: 7 - Justification: 8 - List of attachments:		
Section-2 (To be Completed by Vendor and submitted to IPR)		
Supplier Responsible officer	Name & Signature with Date	
Supplier Quality Officer	Name & Signature with Date	
Section-3 (To be Completed by IPR)		
IPR Responsible Officer	Name & Signature with Date	
Project Head	Name & Signature with Date	
IPR Purchase Officer(Forwarding Through)	Name & Signature with Date	

"PROPOSED P&I DIAGRAM FOR ITER-DNB WATER DISTRIBUTION SYSTEM"

DNB SYSTEM



NOTES-1

1. ALL SS VALVES RATING 300 CLASS, UNLESS SPECIFIED.
2. INSULATION TYPE-EPS WITH ALUMINIUM CLADDING (EXPOSED PORTION) AND EPDM EXTRUDED PIPE SECTION FOAM (INSIDE THE LAB)
3. ABOVE 50 NB, SS ERW SCH. 10 PIPES & FITTINGS.
4. 50 NB AND BELOW, SS SEAMLESS SCH. 40 PIPES & FITTINGS.
5. TYPE OF CONNECTION: (FLANGE/WELDED/FERULE TYPE).
10. VENT VALVES OF 15 NB AT THE HIGHEST POINTS & DRAIN OF 20 NB AT THE LOWEST POINTS SHALL BE PROVIDED.
11. MOC OF ALL PIPES AND FITTING SHALL BE SS-304L/ SS316LN/SS 316 L
12. ALL SUPPLY AND RETURN LINE SHOULD BE CONNECTED TO THE SYSTEM COMPONENTS BY HPNH (HIGH PRESSURE NON-CONDUCTING RUBBER HOSE). HPNH HOSE SHOULD BE CRIMPED FLANGE CONNECTION AT ONE END AND FERULE CONNECTION AT SYSTEM END.

NOTES-2

1. LAUDA SYSTEM SHOWN IN P&ID WILL COME LATER. PROVISION OF DIRECT SUPPLY SHOULD BE MADE.
2. TO MAINTAIN THE CONDUCTIVITY FOR LAUDA SYSTEM, INLET AND OULET VALVES OPEN MANUALLY.
3. WATER VELOCITY IN THE MAIN PIPE LINE: MAINTAINED LESS THAN OR EQUAL TO 2.5 M/S.
4. THE FLOW METER (TRANSMITTER TYPE) SHOULD GIVE LINEAR OUTPUT OF 4-20 mA, LEAST COUNT 1 LPM.
5. PRESSURE REDUCING VALVE SHOULD KEEP THE DOWNSTREAM PRESSURE AS PER THE SET POINT IRRESPECTIVE OF UPSTREAM PRESSURE, RESOLUTION BEING 0.2 BAR.
6. ACCURACY OF THE TEMPERATURE / PRESSURE GAUGE SHOULD BE WITHIN ±1% OF FSD.
7. AIR PURGING TO BE CARRIED OUT BEFORE START OF THE SYSTEM OPERATION.
8. ALL PRESSURE SHOWN ARE GAUGE PRESSURE.
9. GASKET MATERIAL TEFLON.

LEGEND FOR VALVE & INSTRUMENTATION

- FLOAT VALVE (FLV)
- BALL VALVE (BV)
- BUTTERFLY VALVE (BFV)
- GLOBE VALVE (GV)
- NON RETURN VALVE (NRV)
- NEEDLE VALVE (NV)
- BALANCING VALVE (BLV)
- GATE VALVE (GTV)
- 'Y' TYPE STRAINER (YS)
- POT STRAINER (PS)
- PRESSURE REGULATING VALVE (PRVD)
- PRESSURE REGULATING VALVE (PRVU)
- PRESSURE RELIEF VALVE (PSV)
- VACUUM RELIEF VALVE (VRV)
- PRESSURE/VACUUM RELIEF (PVSV)
- SOLENOID VALVE (SV)
- PNEUMATIC VALVE (PV)
- MOTORIZED VALVE (MV)
- EXPANSION VALVE (EV)
- 3-WAY VALVE (TMV)
- EXPANDER/ REDUCER

TG : TEMPERATURE GAUGE
PG : PRESSURE GAUGE
PT : PRESSURE TRANSMITTER
TT : TEMPERATURE TRANSMITTER
CO : CONDUCTIVITY METER
OX : OXYGEN METER
PH : PH METER
FM : FLOW METER
TI : TEMPERATURE INDICATION
PI : PRESSURE INDICATION
COI : CONDUCTIVITY INDICATION
FI : FLOW INDICATION
F : WATER FLOW
CPH: CONDUCTIVITY CUM pH METER (CPH)
SP : SET PRESSURE
SR : SET RANGE

FIELD MOUNTED
DAC'S MOUNTED
INTER LOCK

Note:

LINE NUMBERING A-B-C-D (LINE SIZE, PIPE MOC, THICKNESS, SERIAL NO.)
INSTRUMENT/EQUIPMENT NUMBERING PROCEDURE X-Y-Z (SYSTEM, INSTRUMENT TYPE, SERIAL NO.)
SCOPE OF SUPPLY - 1 (VENDOR, IPR)
SCOPE OF SUPPLY - 2 (VENDORS SCOPE, IPR SCOPE, VENDORS SCOPE)

DRG.NO	▽ 6.25	▽▽ 1.6~6	▽▽▽ 0.025~1.6	▽▽▽▽ < 0.025
CO-ORDINATED BY				

MACHINING DEVIATIONS FOR NON-TOLERANCED DIMENSIONS

LENGTH IN mm OF SHORTER SIDE OF ANGLES				LENGTH OR DIA	UPTO 6	6~30	30~120	120~315
UPTO 10	10~50	50~120	OVER 120~400		±0.1	±0.2	±0.3	±0.5
±1°	±0°-30'	±0°-20'	±0°-10'					

REVISION COLUMN					
REV	ZONE	DESCRIPTION	DATE	REMARKS	APPROVED BY

ASSY GROUP:
ALL DIMENSIONS ARE IN "mm" UNLESS OTHERWISE STATED

INSTITUTE FOR PLASMA RESEARCH
BHAT, GANDHINAGAR-382 428.

SCALE	N.T.S.	DATE
DRAWN	S.K.S.	04/08/08
CHECKED		
APPROVED		

TITLE: P&I DIAGRAM FOR ITER-DNB WATER COOLING SYSTEM

REF DRG NO: SST 1/WDS/DNB/01/R0 REV

DRG.NO SHEET 01 OF 01

Institute for Plasma Research
(An Autonomous Institute of Dept. of Atomic Energy)
Bhat, Gandhinagar

TERMS & CONDITIONS

ITEM DESCRIPTION	**Design, Fabrication, supply, installation and commissioning of Water Distributing System as per the specifications mentioned in the tender documents**	
Sl. No.	**PARTICULARS**	**REMARKS**
I	**Name of the Supplier**	
II	**IPR Enquity NO & Date**	IPR/TPT/TN/PUR/ET/19-20/22 DATED 1-8-2019
III	**Vendor Offer No & Date**	
IV	Postal address	
V	Contact with STD code	
VI	Fax with STD code	
VII	Name of Contact person	
VIII	Mobile No.	
IX	e-mail ID	
X	**Currency of offer/quotation**	
	SCANNED COPY OF THE BELOW MENTIONED DOCUMENTS NEED TO UPLOAD AT www.tenderwizard.com/DAE AT THE TIME OF PARTICIPATION OF TENDER WITHIN THE PERIOD OF SUBMISSION.	**"YES" OR "NO"**
1	**Certificates:**	
	i) Registration Certificate if Any, with DGS&D/NSIC/MSME	
	ii) PAN (Permanent Account Number) Registration	
	iii) Certificates of Registration for Sales Tax/ VAT/ WCT or Service Tax	
	iv) Authorization certificate/ Agency Agreement from Manufacturer (if not manufacturer)	
	Commericial Terms for Quoted items (Please Provide Commercial terms and conditions in the below form)	
2	Price Shall be firm and fixed through out the currency of contract, in the event of placement of purchase order.	
3	Please select the CURRENCY OF OFFER / QUOTATION first	
4	Have you offered Packing and forwarding charges in the price bid (if applicable)?	
5	Goods and Services Tax: Have you specified HSN / SAC Code for Goods and Services Tax in Price Bid?	
6	Have you offered Freight charges in the price bid?	
7	Have you offered Insurance charges in the price bid?	
8	**Delivery period (as per Sr. No.31 of Section-A of Form No. IPR_LP_ET_02.V5 (Terms and Conditions) attached with the tender/enquiry). (Also refer document named "Deferred_terms_IPR_LP_ET_02.V5" for amended delivery terms)**	
9	Have you offered Installation and commissioning charges?	
10	Liquidated Damages:- as per Sr. No. 22 of Section B of Form No IPR-LP-ET-02.V5 (Terms and Conditions) attached with the tender/enquiry	
11	Terms of Payment:- as per Sr. No.35 of Section B of Form No. IPR_LP_ET_02.V5 (Terms and Conditions) attached with the tender/enquiry. (Also refer document named "Deferred_terms_IPR_LP_ET_02.V5" for amended payment terms)	
12	Guaranty / Warranty:-as per Sr. No. 34 of Section B of Form No. IPR_LP_ET_02.V5 (Terms and Conditions) attached with the tender/enquiry	
13	**Validity of offer/quotation**:- 120 days from the date of opening of tender	
	QUESTIONNAIRE TO BE FILLED BY BIDDER IN AND SENT ALONG WITH OFFER DULY SIGNED	
14	In the event of a purchase order/contract vendor has to provide Security Deposit in the form of Bank Guarantee for 10% of contract/ order value from SBI/nationalized banks or any one of the scheduled banks mentioned in the bracket (Axis Bank, HDFC Bank, ICICI Bank and IDBI Bank) valid till final acceptance of the supplied goods at IPR, wherever applicable shall be submitted .	
15	In the event of a purchase order/contract Performance Bank Gurantee for 10% of the contract/order value from SBI/nationalized banks or any one of the scheduled banks mentioned in the bracket (Axis Bank, HDFC Bank, ICICI Bank and IDBI Bank) valid throughout the guarantee period, wherever applicable shall be submitted.	

16	I/We hereby offer to supply the stores detailed in the schedule hereto at the price given in the said schedule and agree to hold this offer open till expiry of quotation. I/We shall be bound to supply the stores hereby offered upon issue of purchase order communicating the acceptance thereof on or before the expiry of the last mentioned date. You will be at liberty to accept any one or more of the items of stores tendered for or portion of any or more of the items of such stores and I/We notwithstanding that the offer in the tender has not been accepted in whole shall be bound to supply to you- such item or items and such portion or portions of one or more of the items as may be specified in the said Purchase Order communicating the acceptance.	
17	I/we have understood the General Conditions of all Contracts and special conditions of contract governing supplies of plant and machinery in the Form No.IPR_LP_ET_ 02.V5, included in the General Conditions of all Contracts and special conditions of contract governing of plant and machinery applicable to contracts placed by the Institute for Plasma Research and the instructions to Tenderer annexed to the invitation to tender Form and have thoroughly examined the specification / drawing and / or pattern quoted or referred to in the Schedule hereto and am/are fully aware of the nature of the stores required any my/our offer is to supply stores strictly in accordance with subject tender to the terms and conditions stipulated in your above Form No. IPR_LP_ET_ 02.V5 and also contained in the Purchase Order Communicating acceptance of this Tender.	
18	Whether All Documents Related to tender Viewed?	
19	Vendor should upload the complete technical details (Tehnical specifications with product data sheet	
20	In case of two part tender whether unpriced quotation has been uploaded (Failing which offer will not be considered for technical evaluation)	
21	**Free Issue Material:** Successful tenderer will have to arrange insurance showing beneficiary as “Institute for Plasma Research” at their risk and cost towards adequate security for the materials/property provided/issued by the Purchaser as Free Issue Material for the due execution of the contract, wherever applicable.	

Institute for Plasma Research
(An Autonomous Institute of Dept. of Atomic Energy)
Bhat, Gandhinagar

Eligibility Criteria (Annexure-A)

ITEM DESCRIPTION	**Design, Fabrication, supply, installation and commissioning of Water Distributing System as per the specifications mentioned in the tender documents**

Sl. No.	PARTICULARS	REMARKS
I	**Name of the Vendor**	
II	**IPR Enquity NO & Date**	IPR/TN/PUR/TPT/ET/19-20/22 DATED 1-8-2019
III	**Vendor Offer No & Date**	

Sr. No.	Criteria	Documents required to upload	Status of Documents (Uploaded/ Not-Uploaded in e-Tender Portal)
1	Bidder must have executed at least one contract related to Fabrication, supply, installation & commissioning, inspection and testing of high pressure stainless steel piping work	Bidder should submit copy of Purchase Orders along with technical details and completion/installation/acceptnace certificate. (Required scope of work under essential eligibility may be covered under single or multiple purchase order) End user contact details including person's name, address, phone/mobile number, email address must also be provided.	
2	The average annual turnover for the last 3 years (i.e. 2015-16 to 2017-18) should be INR 1,00,00,000=00 (INR One Crore)	Bidder should submit Audited balance sheet and Profit & Loss Account for the past 3 financial years (i.e. 2015-16 to 2017-18) as a proof	

Note:

The response to tender without submission of proof of above points will summarily be rejected without further communication
The bidder shall not be under a declaration of ineligibility for corrupt or fradulent practices or blacklisted with any of the Government agencies
Original documents shall be produced for verifications, if required.

Institute for Plasma Research
(An Aided Institute under Dept. of Atomic Energy)
Bhat, Gandhinagar

PRICE SCHEDULE (SECTION-D)

IPR Enquiry NO & Date : **IPR/TN/PUR/TPT/ET/19-20/22 DATED 1-8-2019**

From

NAME OF THE CONTRACTOR :

Offer no & date:

Sl.No	Item Description	Tendered Quantity	Unit of Measurement (UOM)	Rate in INR For Supply				Rate in INR For Installation, testing & Commissioning				Packing and Forwarding Charges Per Unit (In percentage)		Freight Charges Per Unit (In percentage)		Insurance per unit (In percentage)		Remarks
				HSN Code (*1)	Basic Unit Rate	Discount (in amount)	Basic Unit rate after discount	SAC Code (*1)	Basic Unit Rate	Discount (in amount)	Basic Unit rate after discount	(in %) Only	Amount	(in %) Only	Amount	(in %) Only	Amount	
1	**PIPE** Providing and fixing in position the following SS 316L pipes cut to required lengths and installed with all welded joints, necessary fittings, like elbows, tees, bends (Long/short radius), reducers, flanges, vent valve, drain valve, SS hose nipple, fasteners, PTFE / eq. gaskets (Sch-40 @ 3 mm) , MS Support structures etc. Vent and drain point shall be provided at all top and bottom points respectively with isolation valves in piping system. Vent and drain line size should be of 25 NB. Hose nipples should be welded with mating flange of required sizes for interconnection to the systems as per required by the subsystem connections. The cost of all drains / vent valves/ hose nipples, MS Support structure will be included in piping works. This also includes some minor re-routing of existing piping of different sizes as per requirement. Cost of Piping work will be on the basis of actual physical measurement and unit rate would be applicable in all such cases. Quantity (Length) displayed here are tentative and may increase or decrease in actual.																	
1.1	Size: 80NB-SS316L-Sch10	25	Mtrs.				**0.00**				**0.00**		0.00		0.00		0.00	
1.2	Size: 65NB-SS316L-Sch10	15	Mtrs.				**0.00**				**0.00**		0.00		0.00		0.00	
1.3	Size: 50NB-SS316L-Sch40	10	Mtrs.				**0.00**				**0.00**		0.00		0.00		0.00	
1.4	Size: 40NB-SS316L-Sch40	25	Mtrs.				**0.00**				**0.00**		0.00		0.00		0.00	
1.5	Size: 25NB-SS316L-Sch40	30	Mtrs.				**0.00**				**0.00**		0.00		0.00		0.00	
1.6	Size: 20 NB-SS316L-Sch40	10	Mtrs.				**0.00**				**0.00**		0.00		0.00		0.00	
1.7	Size: 15NB-SS316L-Sch40	20	Mtrs.				**0.00**				**0.00**		0.00		0.00		0.00	
2	**INSULATION with Aluminium Protective casing** Supply and fixing of following sizes flexible and lightweight close cell elastomeric nitrile foam material on water pipes, fittings like valves, flanges, unions etc. It required to be applied on existing and new pipes & accessories. Wherever required, first remove the existing insulation from pipes and then apply new insulation by manufacture's recommended adhesive. *Post insulation with nitrile foam, all lines must be covered with aluminium cladding/protective shield/casing.*																	
2.1	80 NB	25	Mtrs.				**0.00**				**0.00**		0.00		0.00		0.00	
2.2	65 NB	15	Mtrs.				**0.00**				**0.00**		0.00		0.00		0.00	
2.3	50 NB	10	Mtrs.				**0.00**				**0.00**		0.00		0.00		0.00	
2.4	40 NB	25	Mtrs.				**0.00**				**0.00**		0.00		0.00		0.00	
2.5	25 NB	30	Mtrs.				**0.00**				**0.00**		0.00		0.00		0.00	
2.6	20 NB	10	Mtrs.				**0.00**				**0.00**		0.00		0.00		0.00	
2.7	15 NB	20	Mtrs.				**0.00**				**0.00**		0.00		0.00		0.00	
3	**NON-CONDUCTIVE HOSES** Supply of Non-Conductive High Pressure Hoses with one end having crimped Flange connection and other end (component end) having TWIN-Ferrule based mechanical fittings to be connected straight on sub-systems. *(Extra Ferrule as spares must be supplied along with hoses)*																	
3.1	1 Inch Nominal Hose Size – 5m Long	12	Nos.				**0.00**				**0.00**		0.00		0.00		0.00	

3.2	1 Inch Nominal Hose Size – 3m Long	4	Nos.				**0.00**				**0.00**		0.00		0.00		0.00	
3.3	1.5 Inch Nominal Hose Size – 5m Long	4	Nos.				**0.00**				**0.00**		0.00		0.00		0.00	
3.4	1.5 Inch Nominal Hose Size – 2m Long	4	Nos.				**0.00**				**0.00**		0.00		0.00		0.00	
3.5	3/4 Inch Nominal Hose Size – 3m Long	4	Nos.				**0.00**				**0.00**		0.00		0.00		0.00	
3.6	1/2 Inch Nominal Hose Size – 5m Long	8	Nos.				**0.00**				**0.00**		0.00		0.00		0.00	
3.7	1/4 Inch Nominal Hose Size – 3m Long	4	Nos.				**0.00**				**0.00**		0.00		0.00		0.00	
4	**BALL VALVES(Manual)** Providing and fixing in position Ball valves of stainless steel construction with required mounting accessories including matching flanges, fasteners and PTFE gaskets.																	
4.1	40 NB	16	Nos.				**0.00**				**0.00**		0.00		0.00		0.00	
4.2	25 NB	25	Nos.				**0.00**				**0.00**		0.00		0.00		0.00	
4.3	20 NB	5	Nos.				**0.00**				**0.00**		0.00		0.00		0.00	
4.4	15 NB	20	Nos.				**0.00**				**0.00**		0.00		0.00		0.00	
5	**BUTTERFLY VALVES** Providing and fixing in position of following wafer type Butterfly valves with total SS 304L construction including body of class 300 with bubble tight shut off, replaceable Teflon / EPDM seat including matching flanges and fasteners. The MOC of disc & stem should be SS 304L																	
5.1	80 NB	4	Nos.				**0.00**				**0.00**		0.00		0.00		0.00	
5.2	65 NB	4	Nos.				**0.00**				**0.00**		0.00		0.00		0.00	
5.3	50 NB	2	Nos.				**0.00**				**0.00**		0.00		0.00		0.00	
6	NON RETURN VALVES . Providing and fixing in position of wafer type Non Return Valves (Check valve) with total SS 304L, Class 300 construction including body with bubble tight shut off, replaceable EPDM O-Ring/ seat. This also includes matching flanges, fasteners and PTFE gaskets 80 NB	1	Nos.				**0.00**				**0.00**		0.00		0.00		0.00	
7	**GLOVE VALVE** Providing and fixing in position of Globe valves with total SS 304L, Class 300 construction including matching flanges and fasteners.																	
7.1	65 NB	1	Nos.				**0.00**				**0.00**		0.00		0.00		0.00	
7.2	50 NB	1	Nos.				**0.00**				**0.00**		0.00		0.00		0.00	
7.3	40 NB	1	Nos.				**0.00**				**0.00**		0.00		0.00		0.00	
8	**PRESSURE REDUCING VALVE(PRV)** Providing and fixing in position of following Self-acting Pressure reducing valves to control downstream pressure with total SS 304L, Class 300 construction, (6-15) bar. The PRV should comprise ¼" pressure gauge connection, with one set of 2" dial type pressure gauge connected for downstream pressure measurement. Valve should be with bubble tight shut off, replaceable EPDM O-Ring/ seat. This also includes matching flanges, fasteners and PTFE gaskets.																	
8.1	80 NB	1	Nos.				**0.00**				**0.00**		0.00		0.00		0.00	
8.2	50 NB	1	Nos.				**0.00**				**0.00**		0.00		0.00		0.00	
8.3	40 NB	1	Nos.				**0.00**				**0.00**		0.00		0.00		0.00	
9	**PRESSURE GAUGE** Providing and fixing in position of glycerin filled water pressure gauges with all SS accessories like shutoff needle valve, siphon pipe, etc. with 1% accuracy. Range: 0-20Bar. Dial size: 100 mm 1/2" NPT	8	Nos.				**0.00**				**0.00**		0.00		0.00		0.00	
10	TEMPERATURE GAUGE Providing and fixing in position of water temperature gauges with all SS accessories like thermo well etc. with 1% accuracy. Range: 0-100 °C. Dial size: 100 mm 1/2" NPT	2	Nos.				**0.00**				**0.00**		0.00		0.00		0.00	

11	RTD TEMPERATURE TRANSMITTER Providing and fixing in position the PT-100 RTD sensor with aluminum head mounted temperature transmitter giving output of 4 – 20 mA to panel mounted display with retransmission facility to DACS with all SS mounting accessories. Range 0 - 100□C. Accuracy □ 0.5%. ***Note: The digital LCD display unit for above temperature sensors to be mounted on custom built single panel board at one place, as per IPR requirement*** 1/2" NPT	13	Nos.				**0.00**				**0.00**		0.00		0.00		0.00	
12	**PRESSURE SENSOR CUM TRANSMITTERS** Providing and fixing in position, water pressure sensor cum transmitters (with LCD, backlit type) with all SS mounting accessories, needle isolation valve and 4 – 20 mA / suitable output to panel mounted display with retransmission facility to DACS. Range 0-10 bar. Accuracy □ 0.5%. ***The digital LCD display unit for above pressure sensors to be mounted on custom built single panel board at one place, as per IPR requirement.*** 1/2" NPT	1	Nos.				**0.00**				**0.00**		0.00		0.00		0.00	
13	**FLOW METER** Providing, fixing in position the flange ended turbine type water flow meter with □ 0.5% accuracy, SS 316 construction, max. working pressure / temp. is 10 bar / 80 □C, with 4 digit LCD display, backlit type and suitable for 4 – 20 mA current output to Data Acquisition and Control System (DACS) for following sizes & flow range. Cable length up to 10 m/ required length from flow meter sensor to junction box shall be included in the cost of each instrument / sensor. The MOC of turbine rotor will be SS (Stainless Steel). ***Note: The digital LCD display unit for above flow meter to be mounted on custom built single panel board at one place, as per IPR requirement.***																
13.1	80 NB	1	Nos.				**0.00**				**0.00**		0.00		0.00		0.00	
13.2	65 NB	1	Nos.				**0.00**				**0.00**		0.00		0.00		0.00	
13.3	50 NB	1	Nos.				**0.00**				**0.00**		0.00		0.00		0.00	
13.4	40 NB	1	Nos.				**0.00**				**0.00**		0.00		0.00		0.00	
14	**CONDUCTIVITY METER** Providing and fixing in position, water Conductivity meter cum transmitters (with LCD, backlit type) with all SS mounting accessories, needle isolation valve, ½ inch NPR connection and 4 – 20 mA / suitable output to panel mounted display with retransmission facility to DACS. Range 0-20 bar. Accuracy □ 0.5%. ***The digital LCD display unit for above conductivity sensors to be mounted on custom built single panel board at one place, as per IPR requirement.***																
14.1	For 80 NB line-1/2 inch NPT Connection of Electrode	2	Nos.				**0.00**				**0.00**		0.00		0.00		0.00	
15	**p H METER** Providing and fixing in position, water p H meter cum transmitters (with LCD, backlit type) with all SS mounting accessories, needle isolation valve, ½ inch NPR connection and 4 – 20 mA / suitable output to panel mounted display with retransmission facility to DACS. Range 0-20 bar. Accuracy 0.5%. ***The digital LCD display unit for above p H sensors to be mounted on custom built single panel board at one place, as per IPR requirement***																
15.1	For 80 NB line-1/2 inch NPT Connection of Electrode	1	Nos.				**0.00**				**0.00**		0.00		0.00		0.00	

16	**PRESSURE SAFETY/RELEIF VALVE(PSV)** Providing and fixing in position of pilot operated Self-acting Pressure RELIEF valves with pressure class 300 with total SS 304L, Class 300 construction, set pressure 4.5-5 bar. Valve should be pilot operated. Valve should be with bubble tight shut off, replaceable EPDM O-Ring/ seat. This also includes matching flanges, fasteners and PTFE gaskets.																
16.1	50 NB	1	Nos.				**0.00**				**0.00**		0.00		0.00		0.00	
16.2	40 NB	1	Nos.				**0.00**				**0.00**		0.00		0.00		0.00	
17	**Y-STRAINER** Providing and Fixing of Y-Strainer with Material of construction of Y-strainer should be stainless steel. It should have flanged end connection of pressure class 300. It should contain perforated stainless steel screen of bolted type with mesh size 100. Size: 80 NB	1	Nos.				**0.00**				**0.00**		0.00		0.00		0.00	
18	**INSTRUMENTATION CABLE & CONTROL CABLE** Supply, laying, termination, testing and commissioning of signal cables and control cables for instruments like Flow meter, Pressure transmitter, Temperature transmitter, pH meter, conductivity meter and pneumatic valves. **Quanity: 5-10m (for each signal line) as applicable (Appox. 250 Mtrs.)**	250	Mtrs.				**0.00**				**0.00**		0.00		0.00		0.00	
19	**Other items (if any)**																	
a	Optional Item/ Accessories						**0.00**				**0.00**		0.00		0.00		0.00	
b	Optional Item/ Accessories						**0.00**				**0.00**		0.00		0.00		0.00	
c	Optional Item/ Accessories						**0.00**				**0.00**		0.00		0.00		0.00	
d	Optional Item/ Accessories						**0.00**				**0.00**		0.00		0.00		0.00	
e	Optional Item/ Accessories						**0.00**				**0.00**		0.00		0.00		0.00	

Place of delivery **IPR Gandhinagar**

NOTES:

(a) If freight is not shown seperately it will be treated as "FREE DELIVERY" (applicable for INR Quote)
(b) Detailed specifications and scope of work are as per Attached Annexure
(c) If the rate cells are left blank, it will be treates as "0" (ZERO)
(e) Kindly enable the Macros if you receive the "Security Warning" message. (Click on options in "Security Warning" and select "Enable this content"
(f) MS STRUCTURE WORKS (Rate Shall be included in Piping work only. NO SEPARATE PAYMENT WILL BE MADE FOR MS WORKS)

IMPORTANT NOTES:

1) Custom Duty Exemption certificate will not be issued to any bidder under any circumstances.
2) Prices in this bid format alone are acceptable
3) GST (IGST, CGST, SGST or any form) should not be included in the basic cost (Unit Rate Column) for either goods or services
4) Evaluated total cost on the basis of bid prices will be calculated by Purchaser after bid opening
(*1) HSN/SAC Code: For indigenous goods/services, to be filled by the bidder

(This need to be printed in Tenderer's letter head)

To
The Purchase Officer
Institute for Plasma Research
Near Indira Bridge
Bhat
Gandhinagar-382428 (INDIA)

Ref: Tender Notice No.IPR/TN/PUR/TPT/ET/19-20/22 dated 1-8-2019

Dear Sir,

I/We have gone through the tendering conditions pertaining to the Two Part Tender and General Conditions of Contracts and Special Conditions of Contracts contained in Section "B" of Form No: IPR-LP-ET-02.V5. I/We hereby agree to supply the stores conforming to the tender specifications and also agree to abide by your General Conditions of all Contracts and Special Conditions of Contract contained in Section "B" of the Tender document.

- You will be at liberty to accept any one or more of the items of stores offered by us and I/We shall be bound to supply you the stores as may be specified in the Purchase Order/Contract.

- I/We hereby agree to keep the price valid for your acceptance for a period of 120 days from the date of opening of Tender (Part-I) of the tender.

- Deviations to technical specifications of the tender documents are detailed in Annexure-A of the tender form while deviations proposed to the General/Special Conditions of Contract are detailed in Annexure "B" to this tender.

- I/We are also uploaded all the leaflets/catalogue, etc. pertaining to the stores offered.

Yours faithfully
Stamp and Signature of the Tenderer