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*Tender Document for Procurement of Pipeline and Manifold  
System Materials, Installation, and Related Services for Eight  
Hospitals*

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**Procurement Reference No:** CHAI/EMP/HT/001/24

**Project:** The Leona M. and Harry B. Helmsley Charitable Trust (HT)

**Country:** Ethiopia

**Issued on:** 7 July 2024

## ACRONYMS

CHAI	Clinton Health Access Initiative
DDP	Delivered Duty Paid Incoterms
ETB	Ethiopian Birr
MOH	Ministry of Health
HF	Health Facility
HT	The Leona M. and Harry B. Helmsley Charitable Trust
HTM	Health Technical Memorandum
IFB	Invitation for Bid
ISO	International Standard Organization
PMED	Pharmaceutical and Medical Equipment Directorate
PO	Purchase Order
PPM	Planned Preventive Maintenance
PSA	Pressure Swing Adsorption
Q&A	Question and Answers
RHB	Regional Health Bureau
SLA	Service Level Agreement
UN	United Nations
USD	United States Dollar
COVID-19	Corona Virus Disease 2019

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## SECTION -1-GENERAL INFORMATION

### BACKGROUND

Medical oxygen is one of the vital medicines for the management of hypoxemia due to COVID-19 and other respiratory distress-induced diseases which remain ever present not only in Ethiopia but also globally. A safe, reliable oxygen ecosystem is found to be one of the basic elements of health services, and necessary as the single, irreplaceable treatment for hypoxemia, and thus worthy of additional investment. The Ethiopian Ministry of Health (MOH) has been making deliberate efforts to build a resilient health system for a strong response to public health emergencies which include the COVID-19 pandemic and its catastrophic effects, part of which includes continued access to medicinal oxygen.

Clinton Health Access Initiative (CHAI) Ethiopia carries out a wide range of programs to support the Ministry of Health of Ethiopia in improving the health status of the country by ensuring access to quality health services. Apart from the current COVID-19 support to MOH, CHAI Ethiopia has Eight programs: Maternal Newborn and Child Health (MNCH), Access to Medicine, Laboratory Services, Vaccines, Cancer, Woreda Transformations, and Global Health Financing.

### PROCUREMENT CONTEXT

The MOH, in collaboration with its key stakeholders like CHAI Ethiopia and other implementing partners, has been working on the medical oxygen need assessment and analysis with all necessary actions including procurement of Pressure Swing Adsorption (PSA) oxygen generating plants, manifolds, pipeline systems and power generators to meet the additional oxygen need for COVID-19 pandemic management and beyond.

To improve access to medical oxygen in the country by narrowing the current huge demand-supply gaps at service delivery points, MOH would like to procure, install, and commission manifolds, Central or sub-central piping distribution systems (e.g. separate oxygen distribution manifold systems for critical care in the scattered building) at eight hospitals across the country (see list of hospital on table below) with funding from The Leona M. and Harry B. Helmsley Charitable Trust project

CHAI invites eligible bidders for the supply and installation and commission of manifolds and pipeline systems at eight prioritized health facilities.

1. Adigrat Hospital (Tigray)
2. Shenen-Gibe Hospital (Oromia)
3. Debark Hospital (Amhara)
4. Filtu Hospital (Somali)
5. Sawula Hospital (South Ethiopia)

6. Sabian Hospital (Dire Dawa)
7. Jagul Hospital (Harari)
8. Tepi Hospital (Southwest Ethiopia)

## PROCESS

The procurement process will be conducted with consideration for efficiency, cost-effectiveness, value for money, and long-term sustainability of the oxygen ecosystem. This procurement request was developed in direct partnership with the Ethiopian MOH.

## OBJECTIVE AND SCOPE

CHAI is seeking quotes that include the procurement/supply of materials, installation, training, commissioning, and after-sale service of:

1. Piped distribution for medical oxygen, including manifolds and pipeline systems materials, installation, training, commissioning, and after-sales service in eight hospitals, and ancillary devices (Accessories) such as flowmeters and humidifiers...
2. The warranty should cover any manufacturing defects and failure of the system or component and preventive and curative maintenance of manifold and pipeline system components in a two-year warranty period with the supply of full spare parts and accessories; the vendor shall be responsible for liaising with the component manufacturer to ensure the warranty is honored.

Detailed specifications for all the above items can be found in **Annex A** and requirements for after-sales service level agreement in **Annex B**. The contract shall include the quantity of the items above; all taxes, duties, and other levies payable shall be indicated separately.

Desired shipping, installation, and commissioning costs should be under DDP INCOTERMS 2023.

If you are interested in submitting a Bid in response to this Invitation for Bid (IFB), please collect the bid document from our office indicated below address or request the soft copies by using our email address [ethiopiaprocurement@clintonhealthaccess.org](mailto:ethiopiaprocurement@clintonhealthaccess.org) starting from 8 Jul 2024. Please prepare your Bid by the National Competitive Bidding (NCB) requirements and procedure as set out in this IFB.

Bidders should submit technical, operational, and financial proposals. Offers are to be submitted in two (2) separate envelopes and they must be clearly labeled:

- a. Technical and Operational proposal
- b. Price Schedule / Financial Proposal using the financial proposal template in the annex part.

It shall remain the bidder's responsibility to ensure that the quotation is submitted on or before 2 PM on the 9 August 2024 deadline as indicated by CHAI, to the following address:

**Address: Clinton Health Access Initiative,  
Bid Document for (IFB #: CHAI/EMP/HT/001/24), Meskel Flower Road  
Tel # 011 416 6993-98, Fax: 011 416 6988 and P.O. Box 3297, Code 1250,  
Addis Ababa, Ethiopia**

All bid documents submitted after the cut-off date set shall be rejected and returned unopened to bidders.

Bids shall be opened in the presence of the bidders and/or their representatives who choose to attend in person at the Clinton Health Access Initiative office at 2:15 PM on 9 Aug 2024. All bids must be accompanied by a 2% Bid Security of Bank “Casher Payment Order” in Ethiopian Birr, An unconditional Bank Guarantee, or an irrevocable Letter of Credit.

All interested bidders must have a renewed license and bidder’s registration certificate from the Government of Ethiopia - Ministry of Finance and Economic Development.

**Issued by:**

**Approved by:**

**Name:** Tesfaye Seifu

**Name:** Rahel Belete (PhD)

**Title:** Senior Program Manager for Essential Medicine

**Title:** Country Director, CHAI Ethiopia

**Date:** July 7, 2024

**Date:** July 7, 2024

#### **IFB Terms and Conditions**

Distribution of this document does not mean there is any commitment on the part of CHAI to engage an applicant. CHAI will not reimburse or otherwise bear any costs associated with this IFB regardless of whether the applicant is selected to implement the project. Please note that no fee is required in the submission of these quotes. All IFBs, along with any responses, are considered the property of CHAI and the proposals will not be returned to the originator.

Quotations submitted after the deadline will not be considered. The winning bidder is expected to have substantial capacity to carry out materials supply, installation, commissioning, and after-sales service work for hospitals simultaneously.

## SECTION 2. INSTRUCTION FOR BIDDERS

Table 1-Instruction for bidders

GENERAL PROVISION		
<b>Introduction</b>	1.1	Bidders shall adhere to all the requirements of this IFB, including any amendments made in writing by CHAI.
	1.2	Any bid submitted will be regarded as an offer by the Bidder and does not constitute or imply the acceptance of the bid by CHAI. CHAI is under no obligation to award a contract to any Bidder as a result of this IFB.
	1.3	CHAI reserves the right to cancel the procurement process at any stage without any liability of any kind for CHAI, upon notice to the bidders or publication of cancellation notice.
	1.4	As part of the bid, it is desired that the Bidder have a renewed license and bidder's registration certificate from Government of Ethiopia - Ministry of Finance and Economic Development.
<b>Fraud &amp; Corruption, Gifts and Hospitality</b>	1.5	CHAI does not tolerate corrupt, fraudulent, collusive, anti- competitive or coercive practices of any kind involving its resources, including grant funds.
	1.6	CHAI requires all bidders/vendors observe the highest standard of ethics during the procurement process and contract implementation.
	1.7	Bidders/vendors shall not solicit, offer, give or receive, or promise or represent to offer, give or receive, fees, gratuities, rebates, gifts, commissions, or other payments, except as disclosed in full to the - or the grant recipient, in connection with the procurement process or in contract execution.
	1.8	In this regard, CHAI: <ul style="list-style-type: none"> <li>a) Shall take strong, immediate action in all circumstances where it determines that there is substantive and credible evidence of corrupt, fraudulent, collusive, anti-competitive or coercive practices in connection with the procurement or performance of the contract in question.</li> <li>b) Reserves the rights to reject a bid if it determines that the selected bidder has engaged in any corrupt or fraudulent practices in competing for the contract in question.</li> <li>c) Shall declare a vendor ineligible, either indefinitely or for a stated period, to be awarded a contract if at any time it determines that the vendor has engaged in any corrupt or fraudulent practices in competing for, or in executing a contract</li> </ul>
<b>Eligibility</b>	1.9	A vendor should not be suspended, debarred, or otherwise identified as ineligible by any UN Organization or the World Bank Group or any other major international financing institution or organization. Vendors are therefore required to disclose to CHAI whether they are subject to any sanction or temporary suspension imposed by these organizations.
	1.10	It is the Bidder's responsibility to ensure that its employees, joint venture members, sub-contractors, service providers, suppliers and/or their employees meet the eligibility requirements as established by -.
<b>Conflict of Interests</b>	1.11	Bidders must strictly avoid conflicts with other assignments or their own interests, and act without consideration for future work. Bidders found to have a conflict of interest shall be disqualified.
	1.12	In the event of any uncertainty in the interpretation of a potential conflict of interest, Bidders must disclose to CHAI, and seek confirmation on whether or not such conflict exists.



	<p>1.13 Similarly, the Bidders must disclose in their Bid their knowledge of the following:</p> <ul style="list-style-type: none"> <li>a) If the owners, part-owners, officers, directors, controlling shareholders, of the bidding entity or key personnel who are family members of - staff involved in the procurement functions and/or the Government of the country or any Implementing Partner receiving goods and/or services under this IFB; and</li> <li>b) All other circumstances that could potentially lead to actual or perceived conflict of interest, collusion or unfair competition practices.</li> </ul> <p>1.14 Failure to disclose such an information may result in the rejection of the Bid or Bids affected by the non-disclosure.</p> <p>1.15 The eligibility of Bidders that are wholly or partly owned by the Government shall be subject to further evaluation and review of various factors such as being registered, operated and managed as an independent business entity, the extent of Government ownership/share, receipt of subsidies, mandate and access to information in relation to this IFB, among others. Conditions that may lead to undue advantage against other Bidders may result in the eventual rejection of the Bid.</p>
<b>PREPARATION OF BIDS</b>	
<b>General Considerations</b>	<p>1.16 In preparing the Bid, the Bidder is expected to examine the IFB in detail. Material deficiencies in providing the information requested in the IFB may result in rejection of the Bid.</p> <p>1.17 The Bidder will not be permitted to take advantage of any errors or omissions in the IFB. Should such errors or omissions be discovered, the Bidder must notify CHAI accordingly.</p>
<b>Cost of Preparation of Bid</b>	<p>1.18 The Bidder shall bear all costs related to the preparation and/or submission of the Bid, regardless of whether its Bid is selected or not. CHAI shall not be responsible or liable for those costs, regardless of the conduct or outcome of the procurement process.</p>
<b>Language</b>	<p>1.19 The Bid, as well as any and all related correspondence exchanged by the Bidder and CHAI, shall be written in English; the language(s) specified in the Bid Data Sheet (BDS).</p>
<b>Documents Comprising the Bid</b>	<p>1.20 The Bid shall comprise of the following documents and related forms which details are provided in the BDS:</p> <ul style="list-style-type: none"> <li>a) Documents Establishing the Eligibility and Qualifications of the Bidder;</li> <li>b) Technical Bid (including operational aspects);</li> <li>c) Price Schedule/Financial Proposal;</li> <li>d) Bid Security, if required by BDS;</li> <li>e) Any attachments and/or appendices to the Bid.</li> </ul>
<b>Documents Establishing the Eligibility and Qualifications of the Bidder</b>	<p>1.21 The Bidder shall furnish documentary evidence of its status as an eligible and qualified vendor, using the Forms provided under Section 6 and providing documents required in those forms. In order to award a contract to a Bidder, its qualifications must be documented to CHAI's satisfaction.</p>
<b>Price Schedule / Financial Proposal</b>	<p>1.22 Interested parties are asked to submit, under separate cover, a detailed price schedule/financial proposal for procurement and delivery.</p> <p>1.23 Value for money will be a key criterion in selection and the final budget will be agreed with the successful party.</p> <p>1.24 The Price Schedule/Financial Proposal shall be prepared using the Form provided in Section 6 of the IFB and taking into consideration the requirements in the IFB.</p> <p>1.25 The bidder should cost in Dollars (USD) for the following:</p>

	<p>a) Pipeline and Manifold system materials.</p> <ul style="list-style-type: none"> <li>• Pipeline and Manifold system materials and components.</li> <li>• Shipping and inland transportation to the facility and other costs as per DDP INCOTERMS 2020</li> <li>• Loading and unloading (crane and other related expenses)</li> <li>• Labor costs (including installation, commissioning, and training)</li> </ul> <p>b) After-sales SLA:<sup>1</sup></p> <ul style="list-style-type: none"> <li>• Spares, itemized, cost per unit, and total (as per costing template) after the warranty period.</li> <li>• Consumables for service, and labor costs associated with repair and maintenance within the warranty period.</li> </ul> <p><b>Note:</b> <i>Only when technical specifications have been met and terms of after-sales have been deemed acceptable, the financial proposal will be considered.</i></p>
<b>Bid Security</b>	<p>1.26 Unless otherwise specified in the bid document, the Bidder shall furnish as part of its bid, a bid security in original form and in the amount and currency specified in the bid document. All bids must be accompanied by a 2% Bid Security of Bank “Certified Payment Order” in Ethiopian Birr.</p> <p>1.27 The bid security shall be, at the Bidder’s option, in any of the following forms:</p> <ol style="list-style-type: none"> <li>An unconditional Bank Guarantee.</li> <li>An irrevocable Letter of Credit.</li> <li>Cash, check certified by a reputable bank or financial institution, or payable order.</li> </ol> <p>1.28 The Bid Security shall be valid for a minimum of ninety (90) days beyond the end of the validity period of the Bid. This shall also apply if the period for bid validity is extended.</p> <p>1.29 CHAI reserves the right to accept or reject any or all bids if:</p> <ol style="list-style-type: none"> <li>The Bid Security is not included along with the Bid or is not found in the Bid as indicated by the IFB.</li> <li>The Bid Security amount or its validity period is found to be less than what is required.</li> </ol> <p><b>Note:</b></p> <ol style="list-style-type: none"> <li>The bank guarantee from a banking institution recognized by the purchaser located in any eligible country shall be counter-guaranteed by any local Commercial Banks.</li> <li>Unconditional bank guarantee should be submitted in its original form; copies will not be accepted.</li> <li>Bid security shall be issued in the name of the Clinton Health Access Initiative (CHAI).</li> </ol> <p>1.30 The Bid Security may be forfeited, and the Bid rejected, in the event of any, or combination, of the following conditions:</p> <ol style="list-style-type: none"> <li>If the Bidder withdraws its offer during the period of the Bid Validity specified in the BDS, or;</li> <li>In the event the successful Bidder fails:</li> </ol>

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<sup>1</sup> Please complete the unit price and required spare parts (any necessary but missed from the list) to be supplied after warranty period.

	<ul style="list-style-type: none"> <li>• to sign the Contract after being issued an award; or</li> <li>• to furnish the Performance Security, insurances, or other documents that may be required as a condition precedent to the effectivity of the contract that may be awarded to the Bidder.</li> </ul>
<b>Currencies</b>	<p>1.31 All prices shall be quoted in USD; the currency indicated in the BDS. Where Bids are quoted in different currencies, CHAI will not convert the currency quoted in the Bid into the preferred currency.</p> <p>1.32 If the Bidder wishes to be paid in a combination of amounts in different currencies like ETB and USD, the bidder should indicate the percentage with list of specific goods and services, but this should be noted that the amount to be paid will be based on the national bank of Ethiopia exchange rate of USD on the date.</p> <p>1.33 The payment currency for local agents for installation, after sales services and maintenance will be changed to local currency by referring to the current/updated - fixed rate.</p>
<b>Bid Validity Period</b>	<p>1.34 Bids shall remain valid for the period of 90 days (specified in the bid document) after the bid submission deadline prescribed by CHAI. A Bid valid for a shorter period may be rejected and rendered non-responsive.</p> <p>1.35 During the Bid validity period, the Bidder shall maintain its original Bid without any change, including the availability of the Key Personnel, the proposed rates and the total price.</p>
<b>Extension of Bid Validity Period</b>	<p>1.36 In exceptional circumstances, prior to expiry of the bid validity period, CHAI may request Bidders to extend the period of validity of their bids in two days' time. The request and the responses shall be made in writing via email.</p> <p>1.37 Bidders who are not willing to extend their bid validity period for whatever reason shall be disqualified from the bid without having forfeited their bid security.</p> <p>1.38 Bidders agreeing to the CHAI's request for extension of their bid validity period have to express in writing their agreement to such request and for how long they are willing to extend the period. Similarly, they have to amend the validity period of their bid security on the basis of the extension of the bid validity period they have agreed to or furnish new bid security to cover the extended period.</p> <p>1.39 A bidder not agreeing to extend the validity period of his/its bid security shall be treated as a bidder refusing the CHAI's request for extension of the bid validity period, and as such, shall be disqualified from further bid proceeding.</p>
<b>IFB-related Questions or Clarifications (from the Bidders)</b>	<p>1.40 Bidders may request clarifications on any of the IFB documents no later than the date indicated in the BDS. Any request for clarification must be sent in writing and directed to the email address <a href="mailto:EthiopiaProcurement@clintonhealthaccess.org">EthiopiaProcurement@clintonhealthaccess.org</a> by 22 July 2024. If inquiries are sent other than the specified channel and date, CHAI shall have no obligation to respond or confirm that the query was officially received.</p> <p>1.41 All questions will be collected into one document and all answers provided will be circulated to all parties who submitted for clarification, as well as be posted on any platform hosting the IFB.</p> <p>1.42 CHAI shall attempt to provide responses to clarifications in a speedy manner, but any delay in such response shall not cause an obligation on the part of CHAI to extend the submission date of the Bids, unless CHAI deems that such an extension is justified and necessary.</p>
<b>Amendment of Bids</b>	<p>1.43 At any time prior to the deadline of Bid submission, CHAI may for any reason, such as in response to a clarification requested by a Bidder, modify the IFB in the form</p>

	<p>of an amendment to the IFB. Amendments will be made available to all prospective bidders.</p> <p>1.44 If the amendment is substantial, CHAI may extend the Deadline for submission of Bid to give the Bidders reasonable time to incorporate the amendment into their Bids.</p>
<b>Alternative Bids</b>	<p>1.45 Unless otherwise specified in the BDS, alternative Bids shall not be considered. If submission of alternative Bid is allowed by BDS, a Bidder may submit an alternative Bid, but only if it also submits a Bid conforming to the IFB requirements. Where the conditions for its acceptance are met, or justifications are clearly established, CHAI reserves the right to award a contract based on an alternative Bid.</p> <p>1.46 If multiple/alternative bids are being submitted, they must be clearly marked as “Main Bid” and “Alternative Bid”</p>
<b>SUBMISSION AND OPENING OF BIDS</b>	
<b>Submission</b>	<p>1.47 As per the specifications indicated herein, interested, and eligible bidders can do hard copy (manual) or electronic copy submission by courier or hand delivery of documents to the address below at or before 9 Aug 2024, @ 2.15PM.</p> <p>1.48 The bidder should submit one original and one copy of the document, and they should be clearly marked “Original”, and copies marked “Copy” as appropriate.</p> <p>1.49 The original and all copies of the bid shall be typed or written in indelible ink and shall be signed by a person duly authorized to sign on behalf of the Bidder.</p> <p>1.50 This authorization shall consist of a written statement by a power of attorney (or notary statement, etc.) proving that the person, who signed the bid on behalf of the company/joint venture/consortium is duly authorized to do so and it shall be attached to the bid. The name and position held by each person signing the authorization must be typed or printed below the signature. All pages of the bid shall be signed or initialled by the person signing the bid.</p> <p>1.51 All copies shall be made from the signed original only. If there are discrepancies between the original and the copies, the original shall prevail.</p> <p>1.52 Bidders should submit Technical and Operational, as well as financial proposals. The Technical and Operational Bid as well as the Financial Proposal must be sealed and submitted in separate envelopes, which shall:</p> <ol style="list-style-type: none"> <li>Bear the name of the Bidder.</li> <li>Be addressed to CHAI; and</li> <li>Bear a warning not to open before the time and date for Bid opening.</li> </ol> <p>1.53 If the envelope with the Bid Documents is not sealed and marked as required, CHAI shall assume no responsibility for the misplacement, loss, or premature opening of the Bid.</p> <p>1.54 CHAI may, by permission of the FMOH employ electronic method to <a href="mailto:EthiopiaProcurement@clintonhealthaccess.org">EthiopiaProcurement@clintonhealthaccess.org</a> to send requests for quotation and receive quotations provided that the following conditions are satisfied. If the method employed by CHAI has a safety mechanism of ensuring that information sent and or received through that electronic communication method cannot be accessed by any person other than the person to whom/which the information is sent, before the time such information will be made public. Electronic submission through email, if allowed, shall be governed as follows:</p> <ol style="list-style-type: none"> <li>Electronic files that form part of the Bid must be in accordance with the format and requirements indicated in bid document.</li> </ol>

	<p>b) Documents which are required to be in original form (e.g. Bid Security, etc.) must be sent via courier or hand delivered as per the instructions by the bid submission deadline.</p> <p>1.55 Availability of stock and delivery time must be stated clearly.</p> <p>1.56 Late bids will be rejected and returned unopened to bidders.</p> <p>1.57 Bids must be delivered to the address below:  <b>Clinton Health Access Initiative,  Bid Document for (IFB # CHAI/ EM/CSP/001/22), Meskel Flower Road  Tel # 011 416 6993-98, Fax: 011 416 6988 and P.O. Box 3297, Code 1250,  Addis Ababa, Ethiopia</b></p> <p>1.58 Bidders must be aware that the mere act of submission of a Bid, in and of itself, implies that the Bidder fully accepts the <b>General Contract Terms and Conditions</b>.</p>
<b>Deadline for Submission of Bids and Late Bids</b>	<p>1.59 Complete Bids must be received by CHAI as per indicated in bid document and no later than 9Aug 2024, 2PM specified in the BDS. CHAI shall only recognise the actual date and time that the bid was received by CHAI.</p> <p>1.60 CHAI shall not consider any Bid that is received after the deadline for the submission of Bids.</p>
<b>Withdrawal, Substitution, and Modification of Bids</b>	<p>1.61 A Bidder may withdraw, substitute or modify its Bid after it has been submitted at any time prior to the deadline for submission.</p> <p>1.62 Manual and Email submissions: A bidder may withdraw, substitute or modify its Bid by sending a written notice to CHAI, duly signed by an authorized representative, and shall include a copy of the authorization. The corresponding substitution or modification of the Bid, if any, must accompany the respective written notice. All notices must be submitted in the same manner as specified for submission of Bids, by clearly marking them as “WITHDRAWAL” “SUBSTITUTION,” or “MODIFICATION”.</p> <p>1.63 Bids requested to be withdrawn shall be returned unopened to the Bidders (only for manual submissions), except if the bid is withdrawn after the bid has been opened.</p>
<b>Bid Opening</b>	<p>1.64 Bids will be opened in the presence of the bidders and/or their representatives who choose to attend in person at the Clinton Health Access Initiative office at 2:15 PM on 9 August 2024.</p> <p>1.65 The Bidders’ names, modifications, withdrawals, the condition of the envelope labels/seals, the number of folders/files and all other such other details as CHAI may consider appropriate, will be announced at the opening. No Bid shall be rejected at the opening stage, except for late submissions, in which case, the Bid shall be returned unopened to the Bidders.</p>
<b>PROCEDURES FOR BID EVALUATION</b>	
<b>Confidentiality</b>	<p>1.66 Information relating to the examination, evaluation, and comparison of Bids, and the recommendation of contract award, shall not be disclosed to Bidders or any other persons not officially concerned with such process, even after publication of the contract award.</p> <p>1.67 Any effort by a Bidder or anyone on behalf of the Bidder to influence CHAI in the examination, evaluation and comparison of the Bids or contract award decisions may, at CHAI’s decision, result in the rejection of its Bid and may subsequently be subject to the application of prevailing supplier’s sanctions procedures.</p>
<b>Bid Evaluation</b>	<p>1.68 Evaluation will be conducted solely based on the Bids received.</p> <p>1.69 Evaluation of Bids shall be undertaken in the following steps and weighting:</p>

	<ul style="list-style-type: none"> <li>a) Preliminary Examination including Eligibility.</li> <li>b) Qualification assessment (if pre-qualification was not done)</li> <li>c) Evaluation of Technical Bids (Technical Evaluation-60% including operational aspects and preliminary technical evaluation-10%) – <b>70%</b></li> <li>d) Evaluation of Price Schedule / Financial Proposal – <b>30%</b></li> </ul> <p>1.70 Financial offers will only be opened and evaluated if critical criteria of technical and operational offers have been met.</p> <p><b><i>Note: Only those vendors who provide complete documentation to satisfy the technical and operational aspects of the offer will be considered for financial evaluation.</i></b></p>
<b>Preliminary Examination</b>	<p>1.71 CHAI shall examine the Bids to determine whether they are complete with respect to minimum documentary requirements, whether the documents have been properly signed, and whether the Bids are generally in order, among other indicators that may be used at this stage. CHAI reserves the right to reject any Bid at this stage.</p>
<b>Evaluation of Eligibility and Qualification</b>	<p>1.72 Bidding will be conducted through the National Competitive Bidding (NCB) procedures and is open to all bidders.</p> <p>1.73 Eligibility and Qualification of the Bidder will be evaluated against the Minimum Eligibility/Qualification requirements specified in the Section 4 (Evaluation Criteria).</p> <p>1.74 In general terms, suppliers that meet the following criteria may be considered qualified:</p> <ul style="list-style-type: none"> <li>a) They have not directly or indirectly, including through an agent or other intermediary, breached the Supplier Code, including, but not limited to, corrupt, fraudulent, collusive, anti-competitive or coercive practices in competing for, or performing under, a --financed contract.</li> <li>b) They have not engaged in misconduct which results in the imposition of sanctions by any partner organization, any comparable institution or by a - grant recipient for conduct that would constitute a breach of the Supplier Code or any other unethical or unlawful behaviour.</li> <li>c) They have not engaged in misconduct which results in an investigation, proceedings or findings, either civil, criminal, or administrative, or the imposition of sanctions, by another national or international authority for conduct that would constitute a breach of the Supplier Code.</li> <li>d) They have not been involved in a significant and material breach of the contract between the - and the vendor or between a grant recipient and the vendor that in the opinion of the - places - resources at risk.</li> <li>e) They have a good financial standing and have access to adequate financial resources to perform the contract and all existing commercial commitments,</li> <li>f) They have the necessary similar experience, technical expertise, production capacity, quality certifications, quality assurance procedures and other resources applicable to the supply of goods and/or services required.</li> <li>g) They do not have a consistent history of court/arbitral award decisions against the Bidder; and</li> <li>h) They have a record of timely and satisfactory performance with their clients.</li> </ul>
<b>Evaluation of Technical Bid and Price</b>	<p>1.75 The evaluation team shall review and evaluate the Technical Bids on the basis of their responsiveness to the Schedule of Requirements as well as Technical &amp;</p>

<b>Schedule/Financial Proposal</b>	<p>Operational Specifications and other documentation provided, applying the procedure indicated in the BDS and other IFB documents.</p> <p>1.76 When deemed appropriate, CHAI will invite the short-listed competent suppliers with technically responsive bids for a presentation on their Technical Bids and Financial Proposals which could help for sound decision in the selection process of competent competitors. The conditions for the presentation shall be provided in the bid document where required.</p>
<b>Due diligence</b>	<p>1.77 CHAI reserves the right to undertake a due diligence exercise, aimed at determining to its satisfaction, the validity of the information provided by the Bidder. Such exercise shall be fully documented and may include, but need not be limited to, all or any combination of the following:</p> <ul style="list-style-type: none"> <li>a) Verification of accuracy, correctness and authenticity of information provided by the Bidder</li> <li>b) Validation of extent of compliance to the IFB requirements and evaluation criteria based on what has so far been found by the evaluation team.</li> <li>c) Inquiry and reference checking with Government entities with jurisdiction on the Bidder, or with previous clients, or any other entity that may have done business with the Bidder.</li> <li>d) Inquiry and reference checking with previous clients on the performance on on-going or completed contracts, including physical inspections of previous works, as deemed necessary.</li> <li>e) Physical inspection of the Bidder's offices, branches, or other places where business transpires, with or without notice to the Bidder.</li> <li>f) Other means that CHAI may deem appropriate, at any stage within the selection process, prior to awarding the contract.</li> </ul>
<b>Clarification of Bids</b>	<p>1.78 To assist in the examination, evaluation and comparison of Bids, CHAI may, at its discretion, request any Bidder for a clarification of its Bid.</p> <p>1.79 CHAI's request for clarification and the response shall be in writing and no change in the prices or substance of the Bid shall be sought, offered, or permitted, except to provide clarification, and confirm the correction of any arithmetic errors discovered by CHAI in the evaluation of the Bids, in accordance with the IFB.</p> <p>1.80 Any unsolicited clarification submitted by a Bidder in respect to its Bid, which is not a response to a request by CHAI, shall not be considered during the review and evaluation of the Bids.</p>
<b>Responsiveness of Bid</b>	<p>1.81 CHAI's determination of a Bid's responsiveness will be based on the contents of the bid itself. A substantially responsive Bid is one that conforms to all the terms, conditions, specifications, and other requirements of the IFB without material deviation, reservation, or omission.</p> <p>1.82 If a bid is not substantially responsive, it shall be rejected by CHAI and may not subsequently be made responsive by the Bidder by correction of the material deviation, reservation, or omission.</p>
<b>Nonconformities, Repairable Errors and Omissions</b>	<p>1.83 Provided that a Bid is substantially responsive, CHAI may waive any non-conformities or omissions in the Bid that, in the opinion of CHAI, do not constitute a material deviation.</p> <p>1.84 CHAI may request the Bidder to submit the necessary information or documentation, within a reasonable period, to rectify nonmaterial nonconformities or omissions in the Bid related to documentation requirements. Such omission shall</p>



	<p>not be related to any aspect of the price of the Bid. Failure of the Bidder to comply with the request may result in the rejection of its Bid.</p> <p>1.85 For the bids that have passed the preliminary examination and technical evaluation, CHAI shall check and correct arithmetical errors as follows:</p> <p>a) if there is a discrepancy between the unit price and the line-item total that is obtained by multiplying the unit price by the quantity, the unit price shall prevail and the line-item total shall be corrected, unless in the opinion of CHAI there is an obvious misplacement of the decimal point in the unit price; in which case, the line-item total as quoted shall govern and the unit price shall be corrected;</p> <p>b) if there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail, and the total shall be corrected; and</p> <p>c) if there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail.</p> <p>1.86 If the Bidder does not accept the correction of errors made by CHAI, its Bid shall be rejected.</p>
<b>AWARD OF CONTRACT</b>	
<b>Right to Accept, Reject, Any or All Bids</b>	<p>1.87 CHAI reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids at any time before contract award, without thereby incurring any liability to Bidders.</p>
<b>Award Criteria</b>	<p>1.88 Tenders submitted by vendors will be assessed as per details in Annex B. Vendors must have a legally established business and be of good conduct. Submitted quotes will be reviewed and evaluated by the review committee based on criteria outlined for Pipeline and manifold system materials. The offers shall meet:</p> <p>a) Technical and operational requirements:</p> <ul style="list-style-type: none"> <li>• Technical and performance criteria</li> <li>• Warranty</li> <li>• Service level agreement.</li> </ul> <p>b) Quality requirements (including regulatory and standards and proof thereof)</p> <p>1.89 Prior to expiration of the period of Bid validity, CHAI shall award the contract to the qualified and eligible Bidder that is found to be responsive to the requirements of the Schedule of Requirements and Technical Specification and has offered the lowest price.</p>
<b>Debriefing</b>	<p>1.90 In the event that a Bidder is unsuccessful, the Bidder may request for a debriefing from CHAI. The purpose of the debriefing is to discuss the strengths and weaknesses of the Bidder's submission, in order to assist the Bidder in improving its future Bids for CHAI procurement opportunities. The content of other Bids and how they compare to the Bidder's submission shall not be discussed.</p>
<b>Right to Vary Quantities at the Time of Award</b>	<p>1.91 At the time of award of Contract, CHAI reserves the right to increase or decrease the quantity of goods and/or scope of related services, by up to a maximum twenty percent (20%) of the total offer, without any change in the unit price or other terms and conditions.</p>
<b>Contract Signature</b>	<p>1.92 Promptly after notification of the proposed contract award, CHAI shall send the successful Bidder the Contract.</p> <p>1.93 Within fifteen (15) days of receipt of the notification of award, the successful Bidder shall sign, date, and return it to CHAI the Contract</p>



	1.94	Where the successful bidder cannot or is unwilling to sign a contract or submit the Performance Security, CHAI may either declare the bidder submitting the second lowest evaluated bid the successful bidder or invite such bidder to sign a contract or advertise the bid afresh by assessing the benefit of the two options.
	1.95	CHAI shall not sign a contract before seven (7) working days from the date bidders are notified of the result of their bid or of any complaint against the bid proceeding.
<b>Contract Type and General Terms and Conditions</b>	1.96	The purchase order is the expected contract agreements to be signed off.
<b>Performance Security</b>	1.97	Within fifteen (15) days from signing the contract, the successful Bidder shall furnish the performance security. Failure of the successful Bidder to submit Performance Security or sign the Contract shall constitute sufficient grounds for annulment of the award and forfeiture of the bid security.
	1.98	Where a performance security is deemed necessary, the receipt of the performance security by CHAI shall be a condition for rendering the contract effective.
<b>Bank Guarantee for Advanced Payment</b>	1.99	In case an advance payment is allowed as per the BDS, an equivalent of 30% of the total contract price will be permitted. The Bidder shall submit a Bank Guarantee of the equivalent amount to Advance Payment once the bid is awarded prior to any advance payment.
<b>Liquidated Damages</b>	1.100	CHAI shall apply Liquidated Damages for the damages and/or risks caused to CHAI resulting from the Contractor's delays or breach of its obligations as per Contract.
	1.101	CHAI may without prejudice to all its other remedies under the Contract, deduct from the Contract Price, as liquidated damages with a penalty of 0.5% of the value of undelivered item for each day of delay. However, the cumulative penalty to be paid by the supplier shall not be 15% of the contract price within a maximum tolerable time of 30 days.
	1.102	If the delay in performing the contract affects its activities, CHAI may terminate the contract by giving advance notice to the Supplier pursuant without any obligation to wait until the penalty reaches 15% of the value of the Contract.
<b>Bidders' Complaint Lodging Procedure</b>	1.103	CHAI follows an open-door policy for management of any compliant lodging procedure in which the aggrieved supplier/bidder can lodge his/her complaint directly to office of Country Director or Deputy Country Director. There are standby committees in which members from different programs along with the principal benefit of this project/MOH, are available to review the issues for timely solution.

## SECTION 3. BID DATA SHEET (BDS)

The following data for the goods and/or services to be procured shall complement, supplement, or amend the provisions in the Invitation to Bid In the case of a conflict between the Instructions to Bidders, the Bid Data Sheet, and other annexes or references attached to the Bid Data Sheet, the provisions in the Bid Data Sheet shall prevail **as summarized from section 2**

Table 2-Bid data sheet

BDS No.	Data	Specific Instructions / Requirements
1	Language of the Bid	English
2	Submitting Bids for Parts or sub-parts of the Schedule of Requirements (partial bids)	
3	Alternative Bids	Shall not be considered
5	Bid Validity Period	90 days after the bid submission deadline prescribed by CHAI.
6	Bid Security	<p>Required in the amount equal to 2% Bid Security of Bank “Cashiers Payment Order” in Ethiopian Birr. The bid security shall be, at the Bidder’s option, in any of the following forms:</p> <ol style="list-style-type: none"> <li>An unconditional Bank Guarantee.</li> <li>An irrevocable Letter of Credit.</li> <li>Cash, check certified by a reputable bank or financial institution, or payable order.</li> </ol> <p><b>NB:</b></p> <ol style="list-style-type: none"> <li>The bank guarantee from a banking institution recognized by the purchaser located in any eligible country shall be counter guaranteed by any local Commercial Banks.</li> <li>Unconditional bank guarantee should be submitted in its original form; copies will not be accepted.</li> <li>Bid security shall be issued in the name of Clinton Health Access Initiative</li> </ol>
7	Advanced Payment upon signing of contract	Allowed up to an equivalent of 30% of total contract value
8	Liquidated Damages	<p>Will be imposed as follows:</p> <ol style="list-style-type: none"> <li>A penalty of 0.5% of the value of undelivered item for each day of delay until actual delivery or performance; but the cumulative penalty to be paid by the supplier shall not exceed 15% of the contract price.</li> <li>Max. number of 30 days of delay, after which CHAI may terminate the contract.</li> <li>If the delay in performing the contract affects its activities, CHAI may terminate the contract by giving advance notice to the Supplier pursuant without any obligation to wait until the penalty reaches 15% of the value of the Contract or 30 days’ time.</li> </ol>

BDS No.	Data	Specific Instructions / Requirements
9	Currency of Bid	United States Dollar (USD)
11	IFB-related Questions or Clarifications (from the Bidders)	22 July 2024, Requests will be addressed within five days.
12	Contact Details for submitting IFB-related Questions or Clarifications (from the Bidders)	E-mail address: <a href="mailto:EthiopiaProcurement@clintonhealthaccess.org">EthiopiaProcurement@clintonhealthaccess.org</a>
13	Manner of Disseminating Supplemental Information to the IFB and responses/clarifications to queries	Direct communication to prospective bidders by email and Posting on any platform hosting the IFB
14	Deadline for Submission	9 August, at 2:00PM
14	Allowable Manner of Submitting Bids	Delivery of Hard Copies, in person
15	Bid Submission Address	<b>Clinton Health Access Initiative, Bid Document for (IFB # CHAI/ EM/CSP/001/22), Meskel Flower Road Tel # 011 416 6993-98, Fax: 011 416 6988 and P.O. Box 3297, Code 1250, Addis Ababa, Ethiopia</b>
16	Date, time, and venue for the opening of bid	<b>Date:</b> 9 Aug 2024 <b>Time:</b> 2:15 PM <b>Venue:</b> Clinton Health Access Initiative – Ethiopian Office
17	Evaluation Method for the Award of Contract	Lowest priced technically responsive, eligible, and qualified bid.
18	Expected date for commencement of Contract	Within 10 days after notification of the award
19	Maximum expected duration of contract	180 days after the signing of the contract
20	CHAI will award the contract to:	One or more Bidders, depending on the following factors: <ul style="list-style-type: none"> <li>▪ Lowest priced technically responsive, eligible and qualified bid</li> <li>▪ Delivery period</li> </ul>
21	Type of Contract	Purchase Order
22	Other Information Related to the IFB	<i>Please note that this invitation is for the procurement, delivery, installation, commissioning of piping and manifold system materials.</i>

## SECTION 4. EVALUATION CRITERIA

### PRELIMINARY EXAMINATION CRITERIA

Bids will be examined to determine whether they are complete with respect to minimum documentary requirements, whether the documents have been properly signed, and submitted in accordance with IFB requirements as per below criteria on a Yes/No basis:

- a) Renewed Business License and Registration Certificate from Government of Ethiopia -Ministry of Finance and Economic Development.
  - VAT registration certificate issued by the tax Authority
  - A valid tax clearance certificate issued by the tax authority (domestic Bidders only);
  - FDRE public Procurement & Property Administration Agency License Renewed
  - Renewed FDRE public Procurement & Property Administration Agency License
- b) Technical BID – use template in **Annex A** and **FORM E**
  - Comprising/meeting all Technical and performance criteria, operational criteria, and quality requirements.
  - Details provided on specific configurations offered.
- c) Product documentation (provision of user and service manuals)
  - Individual Equipment Operation & Maintenance Manuals,
- d) Proof of quality including Stringent Regulatory Authority (SRA) approval (e.g., CE certification under MDR) and all requisite standards.
- e) The unit price per terminal for - and - system materials and labor cost should be submitted using the financial template in **FORM F**
- f) Minimum Bid documents provided
- g) Warranty for device and warranty on labor, where applicable
- h) Proof of approval from local Regulatory Authorities in Ethiopia (EFDA), where available, and applicable and import permits.
- i) Standard Operating Procedure for product recall, where applicable
- j) Vendor/Bidder Details – use template in **FORM B**
- k) Price Schedule/Financial Proposal – use template in **FORM F**
- l) Bid Security submitted as per IFB requirements with compliant validity period

### Minimum Eligibility and Qualification Criteria

Eligibility and Qualification will be evaluated on a Pass/Fail basis.

If the Bid is submitted as a Joint Venture/Consortium/Association, each member should meet the minimum criteria, unless otherwise specified.

Table 3-Minimum eligibility criteria

SUBJECT	CRITERIA	DOCUMENT SUBMISSION REQUIREMENT
<b>ELIGIBILITY</b>		
<b>Legal Status</b>	Vendor is a legally registered entity.	Form B: Bidder Information Form
<b>Eligibility</b>	Vendor is not suspended, nor debarred, nor otherwise identified as ineligible by any UN Organization or the World Bank Group or any other international Organization, national or regional responsible office in accordance with IFB clause 3.	Form A: Bid Submission Form
<b>Conflict of Interest</b>	No conflicts of interest in accordance with IFB clause 4.	Form A: Bid Submission Form

SUBJECT	CRITERIA	DOCUMENT SUBMISSION REQUIREMENT
<b>Bankruptcy</b>	Has not declared bankruptcy, is not involved in bankruptcy or receivership proceedings, and there is no judgment or pending legal action against the vendor that could impair its operations in the foreseeable future.	Form A: Bid Submission Form
<b>Certificates and Licenses</b>	<ul style="list-style-type: none"> <li>▪ Duly authorized to act as Agent on behalf of the Manufacturer, or Power of Attorney, if bidder is not a manufacturer.</li> <li>▪ Official appointment as local representative, if Bidder is submitting a Bid on behalf of an entity located outside the country</li> <li>▪ Patent Registration Certificates, if any of technologies submitted in the Bid is patented by the Bidder <ul style="list-style-type: none"> <li>• Export/Import Licenses, if applicable</li> <li>• Renewed Ethiopian Ministry of Trade and license registration certificate in related field of work mainly in Medical supplies import</li> <li>• Renewed EFDA (Ethiopian Food and Drug Authority) registration &amp;</li> <li>• License certificate</li> <li>• FDRE public Procurement &amp; Property Administration Agency License</li> <li>• Tax registration and Clearance certificate</li> </ul> </li> </ul>	Form B: Vendor/Bidder Details Form
<b>Other details</b>	<ul style="list-style-type: none"> <li>▪ Conformity to the minimum quality standards indicated as part the IFB documents</li> </ul>	
<b>QUALIFICATION</b>		
<b>Previous Experience</b>	Minimum 3 years of relevant experience.	Form D: Qualification Form
	Minimum 3 contracts of similar value, nature and complexity implemented over the last 3 years. <i>(For JV/Consortium/Association, all Parties cumulatively should meet requirement).</i>	Form D: Qualification Form
<b>Financial Strength</b>	Minimum cumulative sales turnover of <b>USD (insert figure)</b> for the last 3 years. <i>(For JV/Consortium/Association, all Parties cumulatively should meet requirement).</i>	Form D: Qualification Form
	Bidder must demonstrate the current soundness of its financial standing and indicate its prospective long-term profitability. <i>(For JV/Consortium/Association, all Parties cumulatively should meet requirement).</i>	Form D: Qualification Form
<b>Technical Evaluation</b>	The technical bids shall be evaluated on a pass/fail basis for compliance or non-compliance with the technical specifications identified in the bid document.	Form E: Technical Bid Form
<b>Financial Evaluation</b>	Detailed analysis of the price schedule based on requirements listed in Section 5 and quoted for by the bidders in Form F. Price comparison shall be based on the shipping and inland transportation of the required items/consumables used for plant and other devices service in the warranty period to the facility and other costs as per DDP INCOTERMS 2020. The total cost of ownership (including spare parts,	Form F: Price Schedule/Financial Proposal Form

SUBJECT	CRITERIA	DOCUMENT SUBMISSION REQUIREMENT
	consumption, installation, commissioning, training, special packaging, etc., where applicable) will be incorporated in price comparison.	
<b>Additional requirements</b>	Current Ethiopian Standards Agency (ESA) certification, will be an added advantage	

## SECTION 5: SCHEDULE OF REQUIREMENTS AND BILL OF QUANTITIES

### SECTION 5A: SUPPLY, INSTALLATION, COMMISSIONING SCHEDULE OF REQUIREMENTS AND TECHNICAL SPECIFICATIONS/BILL OF QUANTITIES

The table below shows a summarized version of the Technical Specifications. The Detailed Technical Specifications are as shown in the attached Annexes. \*\*For the summarized version of the items to be procured by facility as well as a brief details of the location for each RFP, please see below **Table**

Table 4-Summary of Scope of work and list of health facilities

CAPACITY	TOTAL TENTATIVE QUANTITY	UNIT	DETAILED TECHNICAL SPECIFICATIONS
As per the design	<i>8 Hospitals</i>	Lap Sum	As per table 9
Selected Health facilities (Sites) for Piping and manifold system			
S. No	Selected Health facilities	Region	Remark
1	Adigrat Hospital	Tigray	
2	Shenen-Gibe Hospital	Oromia	
3	Debark Hospital	Amhara	
4	Filtu Hospital	Somali	
5	Sawula Hospital	South Ethiopia	
6	Tepi Hospital	South Weast	
7	Sabian Hospital	Dire Dawa	
8	Jagul Hospital	Harari	
** The scope of work includes supplying, Installation, Commissioning, training, Verification and after-sale service. As per Design and BOQ.			

**Eligibility checklist for vendors as per supply and installation requirement**

Table 5 -Supply and installation requirement for Vendor:

Category	Requirement	Meet requirement? (Yes/No)	Type of supporting documents	Comments
<b>Design</b>	According to HTM-02-01 or NFPA99			
	According to BOQ aligns and DWGs			
	Claims of all flows to Tus			
	Claims of maximum pressure loss through system			
	Documentation of personnel training/qualifications, which may include: - CV of lead system design engineer - Certifications of personnel installing the system - Summary of training program supplier requires of the technical team involved in design & install			
<b>Training</b>	Certifications of personnel and CV of the Lead System Design Engineer			
	Documentation summarizing the training program that the supplier requires of all engineers involved in medical gas system installation and design			
<b>QMS</b>	Certificate of Quality Management System (ISO 9001)			



## ANNEX A: SPECIFICATIONS FOR PIPED DISTRIBUTION OF MEDICAL OXYGEN

### Annex 1:Manifold technical specifications

Table 7 -Manifold technical specifications

SN	Technical spec for manifold	Model	Country of Origin	Meets Requirements
1	<b>Automatic Oxygen manifold system</b>			
Description	The fully Automatic manifold control system shall comply to ISO 7396-1 – medical graded gas pipeline systems, and NHS Health Technical Memorandum HTM 02-01. The entire system shall be ‘duplexed’ such that any single functional component failure will not affect the integrity of the medical oxygen supply. The manifold shall be supplied fully assembled and factory tested.			
Technical	<p>Configuration: The Manifold system includes the following materials to operate 10/5 cylinders in left and 10/5 cylinders in the right.</p> <ol style="list-style-type: none"> <li>1. It should be compatible with a wide range of medical gas cylinders.</li> <li>2. High-pressure collecting pipe</li> <li>3. Automatic changeover panel with alarm &amp; status monitoring,</li> <li>4. Supply isolation valve</li> <li>5. Relief valve assembly</li> <li>6. Two group manifold headers, two group cylinder racks</li> <li>7. Cylinder Holders (brackets and chains, zinc plated)</li> <li>8. Stainless steel high pressure Flexible gas hoses</li> <li>9. Pressure switch,</li> <li>10. Non-return valves</li> <li>11. Inner and outer connection adapters for cylinders with high pressure hoses</li> <li>12. Isolation valves</li> <li>13. Test point (medical gas terminal unit) and a pre-piped exhaust is recommended</li> <li>14. Any other materials/accessories not mentioned but enable functionality.</li> </ol> <p>Electrical:</p> <ul style="list-style-type: none"> <li>• All electrical components shall be located in a separate enclosure to limit dust, water penetration, and simplify electrical connection with alarms.</li> <li>• PCBs shall be linked with plug and socket connectors for easy removal. For added safety the voltage inside the panel shall not exceed 24V D.C.</li> </ul> <p>Automatic Manifold control shall include the following operational features: -</p> <ul style="list-style-type: none"> <li>• Have a Closed metal box, restrict easy access for unauthorized persons to manipulate.</li> <li>• Adjustable Manual and automatic working system</li> <li>• Digital pressure indication in both headers and line</li> <li>• Average gas consumption (as a standard feature)</li> <li>• Adjustable high- and low-pressure alarm status</li> <li>• Alarms to be duplicated on a display and embedded membrane panel with LEDs.</li> <li>• Status of oxygen pressure can be monitored by the LEDs on control panel.</li> <li>• The control panel incorporates six colored LED’s, 3 for the left, and 3 for the right bank. Green: “bank in use”, amber/yellow: “bank ready”, red: “bank empty”.</li> </ul>			

SN	Technical spec for manifold	Model	Country of Origin	Meets Requirements
	<ul style="list-style-type: none"> <li>New robust solenoid valve</li> <li>Backup cylinder and delivery pressure indicators</li> <li>Electronic warning signal to inform the user to perform regular maintenance.</li> <li>Service Mode to manually override (deactivate) alarms during commissioning and service, as well as allowing manual operation selection of a duty bank.</li> </ul>			
	Display features <ul style="list-style-type: none"> <li>Minimum 7" touch-screen display, colorful graphical display for easy reading and audio-visual status and system failure display.</li> <li>The system should incorporate a graphical display to indicate pressure in each bank of cylinders and line pressure.</li> <li>Pressure displayed in both units: bar or psi</li> <li>The control system should have a colored active-matrix liquid crystal display (LCD), a driving circuit and a back light system.</li> <li>The system should have a "screen saver" function to extend the lifetime of the display to more than 20,000 hours.</li> <li>The screen shall come to full brightness if any alarm conditions are active and reverts back to ½ brightness 5 minutes after the panel returns to normal.</li> <li>Visualization of remaining gas volume in cylinders</li> <li>Display estimated average gas consumption</li> <li>Digital display should be backed up by mechanical gauge in case of power failure.</li> <li>The system to have a restricted 'Setup Mode' to allow adjusting alarm / warning levels for line pressure, to select measurement units (bar and psi), to select the type of alarm output (i.e. on-line or 3<sup>rd</sup> party alarm system).</li> </ul>			
Testing:	<ul style="list-style-type: none"> <li>The manifold should be suitable to withstand a pressure of 145 Kg/cm<sup>2</sup> ( 10 Bar).</li> <li>Two stage regulators that can allow pressure drop lower than 10% on a flow up to 1,750 l/min at 4 bar</li> <li>The manifold should be tested (hydraulically) to 400 bar pressure and to be supplied along with necessary test certificate.</li> </ul>			
Regulation and standards	<ul style="list-style-type: none"> <li>Bears CE marking under MDR</li> <li>Compliance with ISO 10524-2, Pressure regulators for use with medical grade gases</li> </ul>			
Warranty	2 years, maintenance service and spare part. Deliver a two-year list of spare part at the time of delivery.			
Environmental	Capable of being stored in ambient temperature of at least 5–50 °C, relative humidity of at least 15–95% non-condensing.			
	Suitable for continuous operation in ambient temperature of at least 5–50 °C, relative humidity of at least 15–90% non-condensing.			
	Specific requirements for altitude may be required, depending on the installation site.			
Packaging	Name and/or trademark and address of the manufacturer.			
	Product name.			
	Product reference.			
	Type of product and main characteristics.			
	Performance testing information against the mentioned standards.			

SN	Technical spec for manifold	Model	Country of Origin	Meets Requirements
	Lot number prefixed by the word “LOT” (or equivalent harmonized symbol).			
	Information for particular storage conditions (temperature, pressure, light, humidity, etc.), as appropriate (or equivalent harmonized symbol), if applicable.			
	Information for handling, if applicable (or equivalent harmonized symbol).			
	If the packaging is not transparent, it must bear a diagram (preferably actual size) showing the essential parts of the product and indicating the position of the product in the packaging.			
	Gross Weight.			
	Cubic Measurement.			
	All are indicated at least in English.			

## Annex -2: Flowmeter specification

Table 8- Flowmeter specification

Spec category	Specification	Model	Country of Origin	Meet spec?
Technical	Device suitable for use with medical oxygen			
	Thorpe tube flowmeter type, contains inlet and outlet port, a flow regulator, a valve and a clear measuring tube			
	Flowmeters to measure and regulate flow from an already pressure-reduced and regulated oxygen source to the patient or other medical device			
	Pressure compensated flowmeters, calibrated at 345–380 kPa (3.4–3.8 bar, 50–55 psi) inlet gauge pressure.			
	Max gauge inlet pressure 690 kPa (6.9 bar, 100 psi).			
	Flow adjustment knobs to have rough surface to prevent slipping.			
	Flowmeters calibrated to the following flow range,			
	0-15 L/min, accuracy 10%, <i>dual taper graduations 0.5 L/min (0–5 L/min range) and 1 L/min (5 L/min – maximum range) for adults</i>			
	0-5 L/min, accuracy 10%, dual taper graduations 0.5 L/min for Pediatrics			
	0-3.5 L/min, accuracy 10%, dual taper graduations 0.5 L/min for Neonatology,			
	All minimum flowrates to be zero when fully closed			
	All graduations to be clearly visible for 270 degrees (most breadth for provider vantage points)			
	<b>Inlet and outlet ports to be clearly specified</b> and will in part be determined by use case (suitable for connection to centralized system, cylinders, concentrators, or compressors):			
	<b>Piped source inlet:</b> Connection to a terminal unit / bedside unit from a piped oxygen network to be BS (3/8-inch BSP female, “British Standard”)			
	<b>Outlets:</b> DISS (9/16 inch-18) male with “Christmas tree” barbed tubing adaptor			
	Flowmeter material:			
	Column to be transparent, clear, shatter-resistant, medical-grade polymer (polypropylene, polycarbonate)			
	Hardware/valves: Brass/steel/aluminum			
	All materials in contact with oxygen certified for medical use.			
	Internal parts (e.g. valve, inlet filter if present), replaceable by user.			
	Environmental			
	Capable of being stored in ambient temperature of at least 5–50 °C, relative humidity of at least 15–95% non-condensing.			
	Suitable for continuous operation in ambient temperature of at least 5–45 °C, relative humidity of at least 15–90% non-condensing.			
	Specific requirements for altitude may be required, depending on the installation site.			

Spec category	Specification	Model	Country of Origin	Meet spec?
	Disinfect able with hospital grade detergents.			
<b>Warranty</b>	Minimum of 2 years			
<b>QMS and Product performance standards</b>	ISO 13485 (medical device QMS)			
	ISO 14971 (application of risk management)			
	ISO 5359 Low-pressure hose assemblies for use with medical gases.			
	ISO 15001 Anesthetic and respiratory equipment – Compatibility with oxygen.			
	ISO 15002 Flow-metering devices for connection to terminal units of medical gas pipeline systems.			
	ISO 18562 Biocompatibility evaluation of breathing gas pathways in healthcare applications.			
<b>Regulatory (Mandatory)</b>	CE mark conforming to Medical Device Directive 93/42/EEC or FDA			
<b>Packaging</b>	Name and/or trademark and address of the manufacturer.			
	Product name.			
	Product reference.			
	Type of product and main characteristics.			
	Performance testing information against the mentioned standards.			
	Lot number prefixed by the word “LOT” (or equivalent harmonized symbol).			
	Information for particular storage conditions (temperature, pressure, light, humidity, etc.), as appropriate (or equivalent harmonized symbol), if applicable.			
	Information for handling, if applicable (or equivalent harmonized symbol).			
	If the packaging is not transparent, it must bear a diagram (preferably actual size) showing the essential parts of the product and indicating the position of the product in the packaging.			
	Gross Weight.			
	Cubic Measurement.			
	All are indicated at least in English.			

### Annex-3: Humidifier specification

Table 9 -Flowmeter specification

Spec category	Specification	Meet spec?
<b>Technical</b>	Reusable humidifier for oxygen therapy and ventilation/anesthesia inspiratory lines.	
	Non-heated humidifier - ambient temperature functionality.	
	Bubble-through humidification system.	
	Unbreakable or shatter resistant.	
	Transparent humidification bottle	
	Graduated, graduation shall show minimum and maximum water level.	
	Humidification chamber working volume at least 150 mL, not greater than 500 mL.	
	Detachable metal or rigid durable polymer cap with gas connectors.	
	Pressure relief safety valve, $\geq 14$ kPa (0.1 bar, 2 psi) pressure rating.	
	DISS connectors for inlet.	
	6 mm barbed connector for outlet.	
	Flow rate capacity up to 15 L/min.	
	Must be capable of disinfection.	
	Materials, all to be certified for medical use:	
	Cap and connectors made of brass/steel/other biocompatible metal or polymer	
	Bottle and tubes made of polypropylene, polycarbonate or equivalent biocompatible plastic/polymer	
	Pressure valve made of brass chromium plated or equivalent metal	
	Supplier must define decontamination procedure.	
<b>Warranty</b>	Min. 2 years	
<b>QMS and Product performance standards</b>	ISO 13485 (medical device QMS)	
	ISO 15001 Anesthetic and respiratory equipment – Compatibility with oxygen.	
	ISO 18562 Biocompatibility evaluation of breathing gas pathways in healthcare applications.	
<b>Regulatory</b>	CE mark conforming to Medical Device Directive 93/42/EEC or FDA	
<b>Packaging</b>	Name and/or trademark and address of the manufacturer.	
	Product name.	
	Product reference.	
	Type of product and main characteristics.	
	Performance testing information against the mentioned standards.	
	Lot number prefixed by the word "LOT" (or equivalent harmonized symbol).	
	Expiry date by year and month, prefixed by the word "EXP" (or equivalent harmonized symbol).	
	Information for particular storage conditions (temperature, pressure, light, humidity, etc.), as appropriate (or equivalent harmonized symbol), if applicable.	

Spec category	Specification	Meet spec?
	Information for handling, if applicable (or equivalent harmonized symbol).	
	If the packaging is not transparent, it must bear a diagram (preferably actual size) showing the essential parts of the product and indicating the position of the product in the packaging.	
	Gross Weight.	
	Cubic Measurement.	
	All indicated in English.	

## Annex 4A: Specifications pipeline items

Table 6-Specifications of pipeline system (Gas terminal Unit, Area Alarm Unit, Zone Service Unit, Medical Copper Pipe, Line Valve, Support structure, Copper fittings and accessories, Pipe trunking, Copper pipe Insulation)

S.NO	ITEM DESCRIPTION	Unit	Model	Country of Origin	Comply/Not comply	Remark
1.1.	MEDICAL OXYGEN GAS TERMINAL UNITS					
	Supply, Installation, testing and commissioning of medical gas terminal unit.					
	The unit is supplied as a complete package, fully tested prior to shipping. The unit includes maintenance valve safety nut, check valve, flush box with base block sealing, O-ring, plug -in coupling, internal and external gas identification, release bushing and cover plate.					
	Must fulfill HTM 02 01 requirements.					
	oxygen terminals (wall mounted) shall be (BS type), Oxygen terminal unit shall meet ISO 9170-1:2017 Terminal units for medical gas pipeline systems — Part 1					
1.2.	AREA ALARM UNIT					
	Supply, Installation, testing and commissioning of medical gas area alarm module.					
	The unit is supplied as a complete package, fully tested prior to shipping. shall be used for all medical gases specified on the drawing.					
	The module must fulfill HTM 02 01 requirements.					
	1 GASES AREA ALARM UNITS	NO				
1.3.	ZONE SERVICE UNITS					
	Supply, Installation, testing and commissioning of medical gas Zone service Valve unit with valves, pressure gauges and NIST connect fully comply to BS ES ISO 7396-1:2007+A2 2010					
	The unit is supplied as a complete package, fully tested prior to shipping. The unit is equipped with stamped gas identification shut-off valve (100% leakage free.) The unit shall be used for all medical gases specified on the drawing.					
	Note service valve unit can also be integrated with area alarm in one control panel as per HTM 01 02					
	The module must fulfill HTM 02 01 requirements.					
	1 GASES AREA valve box	No.				
1.4.	Medical copper pipe					
	Supply, installation, testing and commissioning of copper pipes for medical gases including fittings, valves, expansion, bellows, hangers, brackets, supports and all accessories, as per BS EN 13348:2008 Standard					
	should conform to ASTM B-280/B-819 specifications, is specially cleaned, de-burred, purged, and pressurized with nitrogen gas, and features easy-to-remove, installer friendly, rubber plugs. requires the use of a Type K or L copper tube (see ASTM B 819). (Mandatory)					
	Dia. 12mm	Meter				
	Dia. 15mm	Meter				
	Dia. 22mm	Meter				
	Dia. 28mm	Meter				



S.NO	ITEM DESCRIPTION	Unit	Model	Country of Origin	Comply/Not comply	Remark
	Dia. 32 mm	Meter				
1.5.	Line Valves Size of the valves					
	Size of the valves					
	1/2" Ball Valve Set, with Coupling to copper pipe - 15mm	No.				
	3/4" Ball Valve Set, with Coupling to copper pipe - 22mm	No.				
	1" Ball Valve Set, with Coupling to copper pipe - 28mm	No.				
	1" Ball Valve Set, with Coupling to copper pipe - 35mm	No.				
1.6.	Support structure					
	Supply and install all the necessary support structure for the medical gas system pile line and Equipment's as per the drawing and HTM standard	Lps				
1.7.	Copper fittings and accessories					
	Supply and install all the necessary accessories and fittings for proper installation of the medical pipeline in accordance to HTM standard please check the attached fitting and accessories for reference but not limited to.	Lps				
	copper fitting from size 9mm to 35mm Elbow, Tee, Tee-reducer, socket, reducer					
	Elbow Size (mm) outside diameter					
	12	No.				
	15	No.				
	22	No.				
	28	No.				
	35	No.				
	Tee Size (mm) outside diameter					
	12	No.				
	15	No.				
	22	No.				
	28	No.				
	35	No.				
	Tee with reducer Size (mm) outside diameter					
	15x12x15	No.				
	22x15x22	No.				
	22x12x22	No.				
	28x22x28	No.				
	35x28x35	No.				
	Reducer Size (mm) outside diameter					
	12x9	No.				
	15x12	No.				

S.NO	ITEM DESCRIPTION	Unit	Model	Country of Origin	Comply/Not comply	Remark
	22x15	No.				
	28x22	No.				
	35x28x35	No.				
	Socket Size (mm) outside diameter					
	12	No.				
	15	No.				
1.8.	Pipe trunking					
	Supply and install all the necessary Trunking for the medical gas system pile line and Equipment's as per the drawing and HTM standard. width 100 mmx50mm	MI				
1.9.	Copper pipe Insulation Supply and install Flexible Closed Cell Elastomeric Pipe Insulation. 20mm insulation , vapor barrier with aluminum foil cladding, insulation should be as per ASTM C 518.	MI				
	<i>pipe size (mm)</i>					
	<b><i>Diameter in mm</i></b>					
	Dia. 22mm	ml				
	Dia. 28mm	ml				
	Dia. 35mm	ml				

## ANNEX B: SERVICE LEVEL AGREEMENT REQUIREMENTS

*Fill table, as appropriate*

Table 10-Service level agreement

1	Committed response/resolution time for major problems (e.g. system faults, and errors)	
2	Committed response/resolution time for minor problems (e.g. system warnings)	
3	After sale services provided – commitment to <b>Annex B1</b>	
4	Contact information	
5	Capacity for after care services (hours, size of workforce; if multiple, please list separately for each office and function)	Hours: Size of workforce:
6	Location of after sale service teams	

Any chances or deviations to the above should be described in detail, in the bid response. Note that the SLA can also be used for repairs outside the maintenance schedule.

## Annex B1: Service Agreement that should be met by supplier

Table 11 -Service Agreement that should be met by supplier

1	Pre-installation requirements	<p><b>The Bidder must indicate explicitly the following aspects to match infrastructure capabilities within the health facility:</b></p> <ul style="list-style-type: none"> <li>• acceptable mains capacity (220 +/- 15% volts /50 Hz (1 Phase));</li> <li>• appropriate connections/adaptors.</li> <li>• compatibility with housing ceiling for the piping installation.</li> </ul> <p>Infrastructure requirements for operation e.g. roofing, ventilation, air conditioning, room requirements without oil, grease and petroleum-based or other flammable products;</p>
2	Requirements for commissioning	<ul style="list-style-type: none"> <li>• DDP 2020 Incoterms.</li> <li>• Note and report any signs of external or internal damage upon plant delivery.</li> <li>• Verify oxygen concentration, flow and pressure level meets specifications when device is operational.</li> <li>• Verify operation of oxygen analyzer and all alarms, including power failure alarms.</li> <li>• Additionally, any other standard manufacturer commissioning protocols</li> <li>• Verify automatic switch to secondary supply when failure, if applicable</li> <li>• Conformity of installation shall be verified by manufacturer's authorized local agent.</li> </ul>
3	User and Maintenance training	<p><b>The Bidder must indicate explicitly the following maintenance routines to match the dedicated staff capabilities within the health facility:</b></p> <ul style="list-style-type: none"> <li>• Cleaning routines of the piping system considering the medical oxygen safety precautions.</li> <li>• Cleaning routines for the filters, if applicable (i.e. reusable).</li> <li>• Testing of alarms.</li> <li>• Testing of operating pressures.</li> <li>• Testing of oxygen concentration.</li> <li>• Frequency of the recommended maintenance routines (e.g., minor service after 150 operating hours, major service after 500 operating hours).</li> <li>• Safety precautions on the management of oxygen.</li> <li>• Advanced maintenance tasks required to be carried out by the manufacturer's authorized local agent.</li> </ul>
4	Maintenance agreement during the warranty period	<ul style="list-style-type: none"> <li>• Preventative maintenance parts and kits during the warranty period must be included. This includes all necessary spare parts and accessories which should be fully supplied by suppliers without any cost to hospitals. The bidder must define or establish the costs for preventative and corrective maintenance and spare parts accessories for a period of a least 5 years from the date of installation.</li> </ul> <p><b>Bidder must propose the maintenance routines and the predetermined system for procuring standard spare parts and accessories that are brand/model related.</b></p>
5	Life span – Guarantee of obsolescence	<ul style="list-style-type: none"> <li>• Life span designed for a minimum of 10 years; guaranteed by a letter from the manufacturer (not only from the authorized distributor).</li> <li>• This guarantee ensures that the equipment and spare parts will not be discontinued during the 10 years after procurement.</li> </ul>

## SECTION 5B: OTHER RELATED REQUIREMENTS

Further to the Schedule of Requirements in the preceding Table, Bidders are requested to take note of the following additional requirements, conditions, and related services pertaining to the fulfillment of the requirements: *[check the condition that applies to this IFB, delete the entire row if condition is not applicable to the goods being procured]*

Table 12 -OTHER RELATED REQUIREMENTS

<b>Delivery Term [INCOTERMS 2020] <sup>2</sup></b>	DDP
<b>Exact Address of Delivery/Installation Location</b>	
<b>Mode of Transport Preferred</b>	Choose an item.
<b>Preferred Freight Forwarder, if any<sup>3</sup></b>	
<b>Customs, if required, clearing shall be done by:</b>	
<b>Payment Terms</b>	
<b>Conditions for Release of Payment</b>	<input type="checkbox"/> Inspection upon arrival at destination  <input type="checkbox"/> Written Acceptance of Goods based on full compliance with IFB requirements
<b>All documentations, including catalogues, instructions and operating manuals, shall be in this language</b>	English

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<sup>2</sup> Bidders should Provide a Packing List with items, weights and dimensions per pallet (as applicable) as well as a Detailed Packing List with aggregate quantities per item, weights and dimensions as well as shipping conditions applicable to the items (i.e. temperature control, special instructions around loading, or hazardous goods declarations) and all batch numbers and quantities. Supplier is required to comply with packaging and shipping instructions related to the INCOTERM.

<sup>3</sup> A factor of the Incoterms stipulated in the IFB. The use of CHAI preferred freight forwarder may be considered for purposes of ensuring forwarder's familiarity with procedures and processing of documentary requirements applicable when clearing with customs authority of the country of destination.

## SECTION 6: RETURNABLE BIDDING FORMS / CHECKLIST

This form serves as a checklist for preparation of your Bid. Please complete the Returnable Bidding Forms in accordance with the instructions in the forms and return them as part of your Bid submission. No alteration to format of forms shall be permitted and no substitution shall be accepted.

Before submitting your Bid, please ensure compliance with the Bid Submission instructions of the BDS.

### Technical Bid

Table 13 -RETURNABLE BIDDING FORMS / CHECKLIST

<b>Have you duly completed all the Returnable Bidding Forms?</b>	
▪ Form A: Bid Submission Form	<input type="checkbox"/>
▪ Form B: Vendor/Bidder Details Form	<input type="checkbox"/>
▪ Form C: Joint Venture/Consortium/ Association Information Form	<input type="checkbox"/>
▪ Form D: Qualification Form	<input type="checkbox"/>
▪ Form E: Format of Technical Bid/Bill of Quantities	<input type="checkbox"/>
▪ From G: Form of Bid Security	
▪ [Add other forms as necessary]	<input type="checkbox"/>
<b>Have you provided the required documents to establish compliance with the evaluation criteria in Section 4?</b>	<input type="checkbox"/>

### Price Schedule/Financial Proposal

▪ Form F: Price Schedule/Financial Proposal Form	<input type="checkbox"/>
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## FORM A: BID SUBMISSION FORM

Table 14- BID SUBMISSION FORM

<b>Name of Bidder:</b>	[Insert Name of Bidder]	<b>Date:</b>	Select date
<b>IFB reference:</b>	[Insert IFB Reference Number]		

We, the undersigned, offer to supply the goods and related services required for [Insert Title of goods and services] in accordance with your Invitation to Bid No. [Insert IFB Reference Number] and our Bid. We hereby submit our Bid, which includes this Technical Bid and Price Schedule.

Our attached Price Schedule is for the sum of [Insert amount in words and figures and indicate currency].

We hereby declare that our firm, its affiliates or subsidiaries or employees, including any JV/Consortium /Association members or subcontractors or suppliers for any part of the contract:

- a) is not under procurement prohibition by the United Nations, including but not limited to prohibitions derived from the Compendium of United Nations Security Council Sanctions Lists.
- b) have not been suspended, debarred, sanctioned or otherwise identified as ineligible by any UN Organization or the World Bank Group or any other international Organization.
- c) have no conflict of interest in accordance with Instruction to Bidders Clause 4;
- d) do not employ, or anticipate employing, any person(s) who is, or has been a UN staff member within the last year, if said UN staff member has or had prior professional dealings with our firm in his/her capacity as UN staff member within the last three years of service with the UN (in accordance with UN post-employment restrictions published in ST/SGB/2006/15);
- e) have not declared bankruptcy, are not involved in bankruptcy or receivership proceedings, and there is no judgment or pending legal action against them that could impair their operations in the foreseeable future;
- f) undertake not to engage in proscribed practices, including but not limited to corruption, fraud, coercion, collusion, obstruction, or any other unethical practice, with the UN or any other party, and to conduct business in a manner that averts any financial, operational, reputational or other undue risk to the UN and we embrace the principles of the United Nations Supplier Code of Conduct and adhere to the principles of the United Nations Global Compact.

We declare that all the information and statements made in this Bid are true and we accept that any misinterpretation or misrepresentation contained in this Bid may lead to our disqualification and/or sanctioning by the CHAI.

We offer to supply the goods and related services in conformity with the Bidding documents, including the CHAI's General Conditions of Contract and in accordance with the Schedule of Requirements and Technical Specifications.

Our Bid shall be valid and remain binding upon us for the period specified in the Bid Data Sheet.

We understand and recognize that you are not bound to accept any Bid you receive.

I, the undersigned, certify that I am duly authorized by [Insert Name of Bidder] to sign this Bid and bind it should CHAI accept this Bid.

Name: \_\_\_\_\_

Title: \_\_\_\_\_

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

Signature: \_\_\_\_\_ [Stamp with official stamp of the Bidder]

## FORM B: VENDOR/BIDDER DETAILS FORM

Table 15- BID SUBMISSION FORM

<b>Registered Company Name</b>	[Complete]
<b>Company Registration Number</b>	[insert vendor number]
<b>Year of registration</b>	[Complete]
<b>Area of Business</b> ( <i>Mark “x” your area of business engagement in the box</i> )	<input type="checkbox"/> Manufacturer <input type="checkbox"/> Distributor <input type="checkbox"/> Other: [insert Area of business]
<b>Local address (HQ)</b>	[Complete]
<b>Phone</b>	Telephone number: [Complete]
<b>Contact person that CHAI may contact for requests for clarifications during Bid evaluation</b>	Name and Position: [Complete] Telephone numbers: [Complete] Email: [Complete]
<b>Bidder’s Authorized Representative Information</b>	Name and Title: [Complete] Telephone numbers: [Complete] Email: [Complete]
<b>Years in Business</b>	[Complete]
<b>Quality Assurance Certification (e.g., ISO 9000 or Equivalent)</b> ( <i>If yes, provide a Copy of the valid Certificate</i> ):	[Complete]
<b>Does your Company hold any accreditation such as ISO 14001 or ISO 14064 or equivalent related to the environment?</b> ( <i>If yes, provide a Copy of the valid Certificate</i> ):	[Complete]
<b>Countries of Operation:</b> <i>Previous export experience to target countries (please describe and list any relevant registrations, qualifications, licenses, attaching copies of each to IFB)</i>	[Complete]
<b>No. of trained and certified employees for plant installation</b> ( <i>Plant installation is to be completed by trained and certified employee/contractors</i> )	[Complete]
<b>Client Portfolio</b>	[complete]

<b>Tax Identification Number</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No    If yes, [insert tax identification number]
<b>Local Agent formally Registered in Ethiopia</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No  If yes, Name and Position: [Complete] Telephone numbers: [Complete] Email: [Complete]
<b>Bid Security 2%, in Ethiopian Birr<sup>4</sup></b>	[complete]
<b>Please attach the following documents:</b>	<ul style="list-style-type: none"> <li>▪ Company Profile, which should <u>not</u> exceed fifteen (15) pages, including printed brochures and product catalogs relevant to the goods and/or services being procured</li> <li>▪ Business Registration</li> <li>▪ Tax Registration evidencing that the Bidder is updated with its tax payment obligations</li> <li>▪ Trade name registration papers, if applicable</li> <li>▪ Quality Certificate (e.g., ISO, etc.) and/or other similar certificates, accreditations, awards, and citations received by the Bidder, if any</li> <li>▪ Patent Registration Certificates, if any of technologies submitted in the Bid is patented by the Bidder</li> <li>▪ Certification or authorization to act as Agent on behalf of the Manufacturer, or Power of Attorney.</li> <li>▪ CVs of the technical staff</li> <li>▪ Years of Experience and witnesses from of the client on piping works</li> <li>▪ Renewed Ethiopian Ministry of Trade and license registration certificate in related field of work mainly in medical device import license</li> <li>▪ Renewed EFDA (Ethiopian Food and Drug Authority) registration &amp; License certificate</li> <li>▪ FDRE public Procurement &amp; Property Administration Agency License</li> <li>▪ Tax registration and Clearance certificate Official Letter of Appointment as local representative, if Bidder is submitting a Bid on behalf of an entity located outside the country</li> </ul>

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<sup>4</sup> Birr is accepted only for CPO



**FORM C: JOINT VENTURE/CONSORTIUM/ASSOCIATION INFORMATION FORM**

*If the SLA is to be managed or provided by 3<sup>rd</sup> party, describe nature of partnership, and provide details for all partners involved*

Table 16-JOINT VENTURE/CONSORTIUM/ASSOCIATION INFORMATION FORM

<b>Name of Bidder:</b>	[Insert Registered Company Name of Bidder]	<b>Date:</b>	Select date
<b>IFB reference:</b>	[Insert IFB Reference Number]		

To be completed and returned with your Bid if the Bid is submitted as a Joint Venture/Consortium/Association.

No	Name of Partner and contact information (address, telephone numbers, fax numbers, e-mail address)	Proposed proportion of responsibilities (in %) and type of goods and/or services to be performed
1	Name of Partner: [Complete] Address: [Complete] Telephone numbers: [Complete] Fax numbers: [Complete] Email: [Complete]	[Complete]
2	Name of Partner: [Complete] Address: [Complete] Telephone numbers: [Complete] Fax numbers: [Complete] Email: [Complete]	[Complete]
3	Name of Partner: [Complete] Address: [Complete] Telephone numbers: [Complete] Fax numbers: [Complete] Email: [Complete]	[Complete]

<b>Name of Leading Partner</b>  (with authority to bind the JV, Consortium, Association during the IFB process and, in the event a Contract is awarded, during contract execution)	[Complete]
<b>Nature of Partnership</b>	[Complete]
<b>Company Registration Number</b>	[Complete Company Registration Number]
<b>Contact Person</b>	Name and Position: [Complete] Telephone numbers: [Complete] Email: [Complete]
<b>Years in Business</b>	[Complete]
<b>Quality Assurance Certification (e.g., ISO 9000 or Equivalent)</b> <i>(If yes, provide a Copy of the valid Certificate):</i>	[Complete]
<b>Does your Company hold any accreditation such as ISO 14001 or ISO 14064 or equivalent related to the environment?</b> <i>(If yes, provide a Copy of the valid Certificate):</i>	[Complete]
<b>Countries of Operation:</b> <i>Previous export experience to target countries (please describe and list any relevant registrations, qualifications, licenses, attaching copies of each to IFB)</i>	[Complete]
<b>No. of trained and certified employees for plant installation</b> <i>(Plant installation is to be completed by trained and certified employee/contractors)</i>	[Complete]
<b>Client Portfolio</b>	[complete]

We have attached a copy of the below referenced document signed by every partner, which details the likely legal structure of and the confirmation of joint and severable liability of the members of the said joint venture:

☐ Letter of intent to form a joint venture    **OR**    ☐ JV/Consortium/Association agreement

We hereby confirm that if the contract is awarded, all parties of the Joint Venture/Consortium/Association shall be jointly and severally liable for the fulfillment of the provisions of the Contract.

Name of partner: \_\_\_\_\_

Name of partner: \_\_\_\_\_

Signature: \_\_\_\_\_

Signature: \_\_\_\_\_

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

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

**FORM D: ELIGIBILITY AND QUALIFICATION FORM**

Table 17- ELIGIBILITY AND QUALIFICATION FORM

<b>Name of Bidder:</b>	[Insert Name of Bidder]	<b>Date:</b>	Select date
<b>IFB reference:</b>	[Insert IFB Reference Number]		

If JV/Consortium/Association, to be completed by each partner.

**History of Non- Performing Contracts**

<input type="checkbox"/> Non-performing contracts did not occur during the last 3 years			
<input type="checkbox"/> Contract(s) not performed in the last 3 years			
Year	Non- performed portion of contract	Contract Identification	Total Contract Amount (current value in US\$)
		Name of Client: Address of Client: Reason(s) for non-performance:	

**Litigation History** (including pending litigation)

<input type="checkbox"/> No litigation history for the last 3 years			
<input type="checkbox"/> Litigation History as indicated below			
Year of dispute	Amount in dispute (in US\$)	Contract Identification	Total Contract Amount (current value in US\$)
		Name of Client: Address of Client: Matter in dispute: Party who initiated the dispute: Status of dispute: Party awarded if resolved:	

## Previous Relevant Experience

*Please list only previous similar assignments successfully completed in the last 3 years.*

List only those assignments for which the Bidder was legally contracted or sub-contracted by the Client as a company or was one of the Consortium/JV partners. Assignments completed by the Bidder's individual experts working privately or through other firms cannot be claimed as the relevant experience of the Bidder, or that of the Bidder's partners or sub-consultants, but can be claimed by the Experts themselves in their CVs. The Bidder should be prepared to substantiate the claimed experience by presenting copies of relevant documents and references if so requested by CHAI.

Table 18 -Previous Relevant Experience

Project name & Country of Assignment	Client & Reference Contact Details	Contract Value	Period of activity and status	Types of activities undertaken

*Bidders may also attach their own Project Data Sheets with more details for assignments above.*

☐ Attached are the Statements of Satisfactory Performance from the Top 3 (three) Clients or more.

## Financial Standing

Table 19 -Financial Standing

<b>Annual Turnover for the last 3 years</b>	Year 2020 USD Year 2021 USD Year 2022 (to date) USD
<b>Latest Credit Rating (if any), indicate the source</b>	

Financial information (in US\$ equivalent)	Historic information for the last 3 years		
	Year 1 (2020)	Year 2 (2021)	Year 3 (2022 to date)
	<i>Information from Balance Sheet</i>		
Total Assets (TA)			
Total Liabilities (TL)			
Current Assets (CA)			

<b>Financial information</b> (in US\$ equivalent)	<b>Historic information for the last 3 years</b>		
Current Liabilities (CL)			
	<i>Information from Income Statement</i>		
Total / Gross Revenue (TR)			
Profits Before Taxes (PBT)			
Net Profit			
Current Ratio			

☐ Attached are copies of the audited financial statements (balance sheets, including all related notes, and income statements) for the years required above complying with the following condition:

- a) Must reflect the financial situation of the Bidder or party to a JV, and not sister or parent companies;
- b) Historic financial statements must be audited by a certified public accountant;
- c) Historic financial statements must correspond to accounting periods already completed and audited. No statements for partial periods shall be accepted.

## **FORM E: FORMAT OF TECHNICAL BID**

Table 20 -FORMAT OF TECHNICAL BID

<b>Name of Bidder:</b>	[Insert Name of Bidder]	<b>Date:</b>	Select date
<b>IFB reference:</b>	[Insert IFB Reference Number]		

The Bidder's Bid should be organized to follow this format of the Technical Bid. Where the bidder is presented with a requirement or asked to use a specific approach, the bidder must not only state its acceptance, but also describe how it intends to comply with the requirements. Where a descriptive response is requested, failure to provide the same will be viewed as non-responsive.

### **SECTION 1: Bidder's qualification, capacity and expertise**

- 1.1 General organizational capability which is likely to affect implementation: management structure, financial stability and project financing capacity, project management controls, extent to which any work would be subcontracted (if so, provide details).
- 1.2 Relevance of specialized knowledge and experience on similar engagements done in the region/country.
- 1.3 Quality assurance procedures and risk mitigation measures.
- 1.4 Organization's commitment to sustainability.

### **SECTION 2: Scope of Supply, Technical Specifications, and Operational-Related Services**

This section should demonstrate the Bidder's responsiveness to the specification by identifying the specific components proposed, addressing the requirements, as specified, point by point; providing a detailed description of the essential performance characteristics proposed; and demonstrating how the proposed bid meets or exceeds the requirements/specifications. All important aspects should be addressed in sufficient detail.

- 2.1 A detailed description of how the Bidder will deliver the required goods and services, keeping in mind the appropriateness to local conditions and project environment. Details how the different service elements shall be organized, controlled and delivered.
- 2.2 Explain whether any work would be subcontracted, to whom, how much percentage of the requirements, the rationale for such, and the roles of the proposed sub-contractors and how everyone will function as a team.
- 2.3 The bid shall also include details of the Bidder's internal technical and quality assurance review mechanisms.
- 2.4 Implementation plan including a Gantt Chart or Project Schedule indicating the detailed sequence of activities that will be undertaken and their corresponding timing.
- 2.5 Demonstrate how you plan to integrate sustainability measures in the execution of the contract.

Table 21-Bidder declaration for goods and services to be suppliers.

Goods and services to be Supplied	Technical Specifications	Bidder's Response				
		Compliance with technical specifications		Delivery Date	Quality Certificate/Export Licenses, etc.	Comments
		Yes, we comply	No, we cannot comply <i>(indicate discrepancies)</i>	<i>(confirm that you comply or indicate your delivery date)</i>	<i>(indicate all that apply and attach)</i>	
Specifications for Piped Distribution of Medical Oxygen	See Annexes -1A, 1B,					

Table 22-Bidders declaration for related services and requirement

Other Related services and requirements <i>(based on the information provided in Section 5b)</i>	Compliance with requirements		Details or comments on the related requirements
	Yes, we comply	No, we cannot comply <i>(indicate discrepancies)</i>	
Delivery Terms			
Warranty			

Service Level Agreement Requirements			
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### SECTION 3: Management Structure and Key Personnel

- 3.1 Describe the overall management approach toward planning and implementing the project. Include an organization chart for the management of the project describing the relationship of key positions and designations. Provide a spreadsheet to show the activities of each personnel and the time allocated for his/her involvement.
- 3.2 Provide CVs for key personnel that will be provided to support the implementation of this project using the format below. CVs should demonstrate qualifications in areas relevant to the scope of goods and/or services.

### Format for CV of Proposed Key Personnel

Table 23 -Format for CV of Proposed Key Personnel

<b>Name of Personnel</b>	[Insert]
<b>Position for this assignment</b>	[Insert]
<b>Nationality</b>	[Insert]
<b>Language proficiency</b>	[Insert]
<b>Education/ Qualifications</b>	<i>[Summarize college/university and other specialized education of personnel member, giving names of schools, dates attended, and degrees/qualifications obtained.]</i>
	[Insert]
<b>Professional certifications</b>	<i>[Provide details of professional certifications relevant to the scope of goods and/or services]</i>
	<ul style="list-style-type: none"> <li>▪ Name of institution: [Insert]</li> <li>▪ Date of certification: [Insert]</li> </ul>
<b>Employment Record/ Experience</b>	<i>[List all positions held by personnel (starting with present position, list in reverse order), giving dates, names of employing organization, title of position held and location of employment. For experience in last five years, detail the type of activities performed, degree of responsibilities, location of assignments and any other information or professional experience considered pertinent for this assignment.]</i>
	[Insert]
<b>References</b>	<i>[Provide names, addresses, phone and email contact information for two (2) references]</i>
	Reference 1: [Insert] Reference 2: [Insert]

I, the undersigned, certify that to the best of my knowledge and belief, the data provided above correctly describes my qualifications, my experiences, and other relevant information about myself.

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Signature of Personnel

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Date (Day/Month/Year)



**FORM F: PRICE SCHEDULE / FINANCIAL PROPOSAL FORM**

Table 24- PRICE Schedule / FINANCIAL PROPOSAL FORM

<b>Name of Bidder:</b>	[Insert Name of Bidder]	<b>Date:</b>	Select date
<b>IFB reference:</b>	[Insert IFB Reference Number]		

The Bidder is required to prepare the Price Schedule following the below format. The Price Schedule/Financial Proposal must include a detailed cost breakdown of all goods and related services to be provided. Separate figures must be provided for each functional grouping or category, if any.

Any estimates for cost-reimbursable items, such as travel of experts and out-of-pocket expenses, should be listed separately.

**Currency of the Bid:** [Insert Currency]

A. Summary of Price Schedule/Financial Proposal

Table 25A- Summary of Financial proposal

Financial requirements	
Import/pre-import Grantee	

**Facility Name:**

No.	Item/Spares list	Manufacturer	Brand	Model	Quantity	Unit Price	Amount (USD) <sup>5</sup>
1	Cost of Manifold and piped distribution Materials used for medical oxygen <sup>6</sup>						
<b>Sub-total</b>							
1	Cost of delivery to facility (shipping, inland transportation and other till final destination)						
2	Cost of installation, testing, and commissioning at facility						
3	Training						
4	Warranty						
5	After Sales Services						
<b>Sub total</b>							
<b>Total amount before Vat/TOT</b>							
<b>Grand total amount including Vat/TOT</b>							

<sup>5</sup> All quotes for cost drivers should be given in USD/\$. The price given in other currency will not be considered for evaluation.

<sup>6</sup> The unit cost per terminal/point includes for materials, training, installation. Thee vendor should complete the unit cost column of the table 28 for the manifold and pipeline materials.

Table 25B List of pipeline and manifold materials required for hospitals

## 1. Adigrat Hospital

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
1	<b>MEDICAL GAS SYSTEMS FOR OR, NICU, PEDIATRIC WARD, ICU</b>						
1.1	<b>Automatic oxygen manifold system</b>			Set	1		
	Supply, installation, testing and commissioning of Automatic oxygen cylinder manifolds.						
	The unit is supplied as a complete factory tested package.						
	The plant includes exhaust, relief valve, pressure switch, supply isolation valve, on-return valve and all accessories to make the system functional.						
	control type- fully automatic						
	CYLINDER CAPACITY- 2x10						
	The cylinder manifold should be as per as BS EN ISO 7396-1:2007+A2:2010 standard. EN ISO 7386 and EN ISO 7396-1, ISO 10083, European Pharmacopeia HTM 02-01						
1.2	<b>MEDICAL GAS TERMINAL UNITS</b>			No.	221		
	Supply, Installation, testing and commissioning of medical gas terminal unit.						
	The unit is supplied as a complete package, fully tested prior to shipping. The unit includes maintenance valve safety nut, check valve, flush box with base block sealing, O-ring, plug -in coupling, internal and external gas identification, release bushing and cover plate.						
	The plant must fulfill HTM 02 01 requirements.						
	oxygen terminals (wall mounted) (BS type)						
1.3	<b>AREA ALARM UNIT</b>			No.	3		
	Supply, Installation, testing and commissioning of medical gas area alarm module.						
	The unit is supplied as a complete package, fully tested prior to shipping. shall be used for all medical gases specified on the drawing.						
	The module must fulfill HTM 02 01 requirements.						
	1 GASES AREA ALARM UNITS						
1.4	<b>ZONE SERVICE UNITS</b>			No.	3		
	Supply, Installation, testing and commissioning of medical gas Zone service Valve unit with valves, pressure gauges and NIST connect fully comply to BS ES ISO 7396-1:2007+A2 2010						

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	The unit is supplied as a complete package, fully tested prior to shipping. The unit equipped with stamped gas identification shut-off valve (100% leakage free) The unit shall be used for all medical gases specified on the drawing.						
	Note service valve unit can also be integrated with area alarm in one control panel as per HTM 01 02						
	The module must fulfill HTM 02 01 requirements.						
	1 GASES AREA valve box						
1.5	<b>OXYGEN FLOW METER W/HUMIDIFIER</b>			No.	13		
	Supply of medical oxygen gas flow meter with humidifier compatible with BS type wall terminal units						
	As per specification in the attachment, including regulatory & standards: bears CE marking under MDR, ISO 13485						
	0-3.5 L/min, accuracy 10%, single taper graduations 0.25 L/min						
	The module must fulfill HTM 02 01 requirements.						
1.6	<b>OXYGEN FLOW METER W/HUMIDIFIER</b>			No.	52		
	Supply of medical oxygen gas flow meter with humidifier compatible with BS type wall terminal units						
	As per specification in the attachment, including regulatory & standards: bears CE marking under MDR, ISO 13485						
	0-5 L/min, accuracy 10%, single taper graduations 0.5 L/min						
	The module must fulfill HTM 02 01 requirements.						
1.7	<b>OXYGEN FLOW METER W/HUMIDIFIER</b>			No.	156		
	Supply of medical oxygen gas flow meter with humidifier compatible with BS type wall terminal units						
	As per specification in the attachment, including regulatory & standards: bears CE marking under MDR, ISO 13485						
	0-15 L/min, accuracy 10%, dual taper graduations 0.5 L/min (0-5 L/min range) and 1 L/min (5 L/min – maximum range)						
	The module must fulfill HTM 2022 requirements.						
1.8	<b>Medical copper pipe</b>						
	Supply, installation, testing and commissioning of copper pipes for medical gases including fittings, valves, expansion, bellows, hangers, brackets, supports and all accessories, as per BS EN 13348:2008 Standard						

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	should conform to ASTM B-280/B-819 specifications, is specially cleaned, de-burred, purged and pressurized with nitrogen gas, and features easy to remove, installer friendly, rubber plugs.						
	requires the use of Type K or L copper tube (see ASTM B 819).						
	Dia. 12mm			ml	325		
	Dia. 15mm			ml	148		
	Dia. 22mm			ml	165		
	Dia. 28mm			ml	60		
1.9	<b>LINE VALVES</b>						
	Supply, installation, testing and commissioning of copper pipes Ball valves as per the drawing						
	Ball Valve Set, with Coupling to copper pipe - 15mm			No.	2		
	Ball Valve Set, with Coupling to copper pipe - 22mm			No.	6		
	Ball Valve Set, with Coupling to copper pipe - 28mm			No.	2		
1.1	<b>Support structure</b>			lps	1		
	Supply and install all the necessary support structure for the medical gas system pile line and Equipment's as per the drawing and HTM standard The center distance of supports shall not exceed the following up to and including: - Up to 10mm outside diameter pipe - 1,00m - 12 to 15mm outside diameter pipe - 1,25m - 22mm outside diameter pipe - 1,80m - 28mm outside diameter pipe - 2,5m - 35 to 76mm - see project design drawings Note: Consideration should be given to additional supports near LVAs, elbows etc where the potential effects of inadvertently applied torque can result in severe pipeline distortion or fracture.						
1.11	<b>Copper fittings and accessories</b>			lps	1		
	Supply and install all the necessary accessories and fittings for proper installation of the medical pipeline in accordance with HTM standard please check the attached fitting and accessories for reference but not limited to.						
1.12	<b>Pipe trunking</b>			ml	530		
	Supply and install all the necessary Trunking for the medical gas system pile line and Equipment's as per the drawing and HTM standard						
	width 100mmx50mm						

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
2	<b>MEDICAL GAS SYSTEM FOR MEDICAL WARD</b>						
2.1	<b>Automatic oxygen manifold system</b>			Set	1		
	Supply, installation, testing and commission of Automatic oxygen cylinder manifolds.						
	The unit is supplied as a complete factory tested package.						
	The plant includes exhaust, relief valve, pressure switch, supply isolation valve, on-return valve and all accessories to make the system functional.						
	control type- fully automatic						
	CYLINDER CAPACITY- 2x5						
	The cylinder manifold should be as per as BS EN ISO 7396-1:2007+A2:2010 standard. EN ISO 7386 and EN ISO 7396-1, ISO 10083, European Pharmacopeia HTM 02-01						
2.2	<b>MEDICAL GAS TERMINAL UNITS</b>			No.	76		
	Supply, Installation, testing and commissioning of medical gas terminal unit.						
	The unit is supplied as a complete package, fully tested prior to shipping. The unit includes maintenance valve safety nut, check valve, flush box with base block sealing, O-ring, plug -in coupling, internal and external gas identification, release bushing and cover plate.						
	The plant must fulfill HTM 02 01 requirements.						
	oxygen terminals (wall mounted) (BS type)						
2.3	<b>AREA ALARM UNIT</b>			No.	2		
	Supply, Installation, testing and commissioning of medical gas area alarm module.						
	The unit is supplied as a complete package, fully tested prior to shipping. shall be used for all medical gases specified on the drawing.						
	The module must fulfill HTM 02 01 requirements.						
	1 GASES AREA ALARM UNITS						
2.4	<b>ZONE SERVICE UNITS</b>			No.	2		
	Supply, Installation, testing and commissioning of medical gas Zone service Valve unit with valves, pressure gauges and NIST connect fully comply to BS ES ISO 7396-1:2007+A2 2010						
	The unit is supplied as a complete package, fully tested prior to shipping. The unit equipped with stamped gas identification shut-off valve (100% leakage free) The unit shall be used for all medical gases specified on the drawing.						
	Note service valve unit can also be integrated with area alarm in one control panel as per HTM 01 02						

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	The module must fulfill HTM 02 01 requirements.						
	1 GASES AREA valve box						
2.5	<b>OXYGEN FLOW METER W/HUMIDIFIER</b>			No.	76		
	Supply of medical oxygen gas flow meter with humidifier compatible with BS type wall terminal units						
	As per specification in the attachment, including regulatory & standards: bears CE marking under MDR, ISO 13485						
	0-15 L/min, accuracy 10%, dual taper graduations 0.5 L/min (0-5 L/min range) and 1 L/min (5 L/min – maximum range)						
	The module must fulfill HTM 2022 requirements.						
	FLOW METER						
2.6	<b>Medical copper pipe</b>						
	Supply, installation, testing and commissioning of copper pipes for medical gases including fittings, valves, expansion, bellows, hangers, brackets, supports and all accessories, as per BS EN 13348:2008 Standard						
	should conform to ASTM B-280/B-819 specifications, is specially cleaned, de-burred, purged and pressurized with nitrogen gas, and features easy to remove, installer friendly, rubber plugs.						
	requires the use of Type K or L copper tube (see ASTM B 819).						
	Dia. 12mm			ml	264		
	Dia. 15mm			ml	112		
	Dia. 22mm			ml	72		
2.7	<b>LINE VALVES</b>			No.	4		
	Supply, installation, testing and commissioning of copper pipes Ball valves as per the drawing						
	Ball Valve Set, with Coupling to copper pipe - 22mm						
2.8	<b>Support structure</b>			lps	1		
	Supply and install all the necessary support structure for the medical gas system pile line and Equipment's as per the drawing and HTM standard The center distance of supports shall not exceed the following up to and including: -						
	Up to 10mm outside diameter pipe - 1,00m						
	12 to 15mm outside diameter pipe - 1,25m						
	22mm outside diameter pipe - 1,80m						
	28mm outside diameter pipe - 2,5m						
	35 to 76mm - see project design drawings						

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	Note: Consideration should be given to additional supports near LVAs, elbows etc where the potential effects of inadvertently applied torque can result in severe pipeline distortion or fracture.						
2.9	<b>Copper fittings and accessories</b>			lps	1		
	Supply and install all the necessary accessories and fittings for proper installation of the medical pipeline in accordance with HTM standard please check the attached fitting and accessories for reference but not limited to.						
2.1	<b>Pipe trunking</b>			ml	210		
	Supply and install all the necessary Trunking for the medical gas system pile line and Equipment's as per the drawing and HTM standard						
	width 100mmx50mm						
3	<b>MEDICAL GAS SYSTEM FOR EMERGENCY BLOCK BUILDINGS</b>						
3.1	<b>Automatic oxygen manifold system</b>			Set	1		
	Supply, installation, testing and commission of Automatic oxygen cylinder manifolds.						
	The unit is supplied as a complete factory tested package.						
	The plant includes exhaust, relief valve, pressure switch, supply isolation valve, on-return valve and all accessories to make the system functional.						
	control type- fully automatic						
	CYLINDER CAPACITY- 2x5						
	The cylinder manifold should be as per as BS EN ISO 7396-1:2007+A2:2010 standard. EN ISO 7386 and EN ISO 7396-1, ISO 10083, European Pharmacopeia HTM 02-01						
3.2	<b>MEDICAL GAS TERMINAL UNITS</b>			No.	60		
	Supply, Installation, testing and commissioning of medical gas terminal unit.						
	The unit is supplied as a complete package, fully tested prior to shipping. The unit includes maintenance valve safety nut, check valve, flush box with base block sealing, O-ring, plug -in coupling, internal and external gas identification, release bushing and cover plate.						
	The plant must fulfill HTM 02 01 requirements.						
	oxygen terminals (wall mounted) (BS type)						
3.3	<b>AREA ALARM UNIT</b>			No.	3		
	Supply, Installation, testing and commissioning of medical gas area alarm module.						

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	The unit is supplied as a complete package, fully tested prior to shipping. shall be used for all medical gases specified on the drawing.						
	The module must fulfill HTM 02 01 requirements.						
	1 GASES AREA ALARM UNITS						
3.4	<b>ZONE SERVICE UNITS</b>			No.	3		
	Supply, Installation, testing and commissioning of medical gas Zone service Valve unit with valves, pressure gauges and NIST connect fully comply to BS ES ISO 7396-1:2007+A2 2010						
	The unit is supplied as a complete package, fully tested prior to shipping. The unit equipped with stamped gas identification shut-off valve (100% leakage free.) The unit shall be used for all medical gases specified on the drawing.						
	Note service valve unit can also be integrated with area alarm in one control panel as per HTM 01 02						
	The module must fulfill HTM 02 01 requirements.						
	1 GASES AREA valve box						
3.5	<b>OXYGEN FLOW METER W/HUMIDIFIER</b>			No.	4		
	Supply of medical oxygen gas flow meter with humidifier compatible with BS type wall terminal units						
	As per specification in the attachment, including regulatory & standards: bears CE marking under MDR, ISO 13485						
	0-5 L/min, accuracy 10%, single taper graduations 0.5 L/min						
	The module must fulfill HTM 02 01 requirements.						
	FLOW METER						
3.6	<b>OXYGEN FLOW METER W/HUMIDIFIER</b>			No.	56		
	Supply of medical oxygen gas flow meter with humidifier compatible with BS type wall terminal units						
	As per specification in the attachment, including regulatory & standards: bears CE marking under MDR, ISO 13485						
	0-15 L/min, accuracy 10%, dual taper graduations 0.5 L/min (0-5 L/min range) and 1 L/min (5 L/min – maximum range)						
	The module must fulfill HTM 2022 requirements.						
	FLOW METER						
3.7	<b>Medical copper pipe</b>						
	Supply, installation, testing and commissioning of copper pipes for medical gases including fittings, valves, expansion, bellows, hangers, brackets,						



S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	supports and all accessories, as per BS EN 13348:2008 Standard						
	should conform to ASTM B-280/B-819 specifications, is specially cleaned, de-burred, purged and pressurized with nitrogen gas, and features easy to remove, installer friendly, rubber plugs.						
	requires the use of Type K or L copper tube (see ASTM B 819).						
	Dia. 12mm			ml	238		
	Dia. 15mm			ml	124		
	Dia. 22mm			ml	86		
3.7	<b>LINE VALVES</b>			No.	6		
	Supply, installation, testing and commissioning of copper pipes Ball valves as per the drawing						
	Ball Valve Set, with Coupling to copper pipe - 22mm						
3.8	<b>Support structure</b>			lps	1		
	Supply and install all the necessary support structure for the medical gas system pile line and Equipment's as per the drawing and HTM standard The center distance of supports shall not exceed the following up to and including: - Up to 10mm outside diameter pipe - 1,00m 12 to 15mm outside diameter pipe - 1,25m 22mm outside diameter pipe - 1,80m 28mm outside diameter pipe - 2,5m 35 to 76mm - see project design drawings Note: Consideration should be given to additional supports near LVAs, elbows etc where the potential effects of inadvertently applied torque can result in severe pipeline distortion or fracture.						
3.9	<b>Copper fittings and accessories</b>			lps	1		
	Supply and install all the necessary accessories and fittings for proper installation of the medical pipe line in accordance to HTM standard please check the attached fitting and accessories for reference but not limited to.						
3.1	<b>Pipe trunking</b>			ml	286		
	Supply and install all the necessary Trunking for the medical gas system pile line and Equipment's as per the drawing and HTM standard						
	width 100mmx50mm						
	<b>FITTING AND ACCESSORIES LIST</b>						

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
I	<b>Installation accessories</b>						
	Brazing rod			Kg	15		
	Adapter to hose Outlets probes /Adaptors as per BS EN ISO9170-1:2008 standard.			No	12		
	spare gauge for manifold			No	6		
	spare Gauge for alarm units,			No	6		
	Spare manifold hose 3/4 3/4			No.	15		
	Spare manifold hose 1/2 1/2			No.	15		
	flux powder			kg	0.5		
II	<b>copper fitting</b>						
	copper fitting from size 9mm to 28mm Elbow, Tee, Tee-reducer, socket, reducer						
	<b>Elbow Size (mm) outside diameter</b>						
	12						
	15			No.	98		
	22			No.	94		
	28			No.	12		
	Tee						
	<b>Tee Size (mm) outside diameter</b>						
	12			No.	109		
	15			No.	41		
	22			No.	26		
	28			No.	13		
	<b>Tee with reducer</b>						
	Size (mm) outside diameter						
	15x12x15			No.	54		
	22x15x22			No.	34		
	22x12x22			No.	20		
	<b>Reducer</b>						
	Size (mm) outside diameter						
	12x9			No.	74		
	15x12			No.	26		
	22x15			No.	20		
	28x22			No.	7		
	<b>Socket</b>						
	Size (mm) outside diameter						
	12			No.	307		
	15			No.	129		

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	22			No.	84		
	28			No.	80		
	35			No.	30		
	Copper to bronze adapter						
	15			No.	4		
	22			No.	6		
	28			No.	4		
III	<b>External copper insulation</b>						
	<i>Supply and install Flexible Closed Cell Elastomeric Pipe Insulation. 20mm insulation, vapor barrier with aluminum foil cladding. insulation should be as per ASTM C 518.</i>						
	<i>pipe size (mm)</i>						
	<b>Diameter in mm</b>						
	Dia. 22mm			ml	74		
	Dia. 28mm			ml	38		

1.

## 2. Shenan-Gibe Hospital

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
1	<b>MEDICAL GAS SYSTEMS FOR OR, NICU, ICU, AND SURGICAL WARD BUILDINGS</b>						
1.1	<b>Automatic oxygen manifold system</b>			Set	1		
	Supply, installation, testing and commissioning of Automatic oxygen cylinder manifolds.						
	The unit is supplied as a complete factory tested package.						
	The plant includes exhaust, relief valve, pressure switch, supply isolation valve, on-return valve and all accessories to make the system functional.						
	control type- fully automatic						
	CYLINDER CAPACITY- 2x10						
	The cylinder manifold should be as per as BS EN ISO 7396-1:2007+A2:2010 standard. EN ISO 7386 and EN ISO 7396-1, ISO 10083, European Pharmacopeia HTM 02-01						
1.2	<b>MEDICAL GAS TERMINAL UNITS</b>			No.	108		
	Supply, Installation, testing and commissioning of medical gas terminal unit.						
	The unit is supplied as a complete package, fully tested prior to shipping. The unit includes maintenance valve safety nut, check valve, flush box with base block sealing, O-ring, plug -in coupling, internal and external gas identification, release bushing and cover plate.						
	The plant must fulfill HTM 02 01 requirements.						
	oxygen terminals (wall mounted) (BS type)						
1.3	<b>AREA ALARM UNIT</b>			No	4		
	Supply, Installation, testing and commissioning of medical gas area alarm module.						
	The unit is supplied as a complete package, fully tested prior to shipping. shall be used for all medical gases specified on the drawing.						
	The module must fulfill HTM 02 01 requirements.						
	1 GASES AREA ALARM UNITS						
1.4	<b>ZONE SERVICE UNITS</b>			No.	4		
	Supply, Installation, testing and commissioning of medical gas Zone service Valve unit with valves, pressure gauges and NIST connect fully comply to BS ES ISO 7396-1:2007+A2 2010						
	The unit is supplied as a complete package, fully tested prior to shipping. The unit equipped with stamped gas identification shut-off valve (100% leakage free.) The unit shall be used for all medical gases specified on the drawing.						

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	Note service valve unit can also be integrated with area alarm in one control panel as per HTM 01 02						
	The module must fulfill HTM 02 01 requirements.						
	1 GASES AREA valve box						
1.5	<b>OXYGEN FLOW METER W/HUMIDIFIER</b>			No.	12		
	Supply of medical oxygen gas flow meter with humidifier compatible with BS type wall terminal units						
	As per specification in the attachment, including regulatory & standards: bears CE marking under MDR, ISO 13485						
	0-3.5 L/min, accuracy 10%, single taper graduations 0.25 L/min						
	The module must fulfill HTM 02 01 requirements.						
3.5	<b>OXYGEN FLOW METER W/HUMIDIFIER</b>			No.	22		
	Supply of medical oxygen gas flow meter with humidifier compatible with BS type wall terminal units						
	As per specification in the attachment, including regulatory & standards: bears CE marking under MDR, ISO 13485						
	0-5 L/min, accuracy 10%, single taper graduations 0.5 L/min						
	The module must fulfill HTM 02 01 requirements.						
1.6	<b>OXYGEN FLOW METER W/HUMIDIFIER</b>			No.	74		
	Supply of medical oxygen gas flow meter with humidifier compatible with BS type wall terminal units						
	As per specification in the attachment, including regulatory & standards: bears CE marking under MDR, ISO 13485						
	0-15 L/min, accuracy 10%, dual taper graduations 0.5 L/min (0-5 L/min range) and 1 L/min (5 L/min – maximum range)						
	The module must fulfill HTM 2022 requirements.						
1.7	<b>Medical copper pipe</b>						
	Supply, installation, testing and commissioning of copper pipes for medical gases including fittings, valves, expansion, bellows, hangers, brackets, supports and all accessories, as per BS EN 13348:2008 Standard						
	should conform to ASTM B-280/B-819 specifications, is specially cleaned, de-burred, purged and pressurized with nitrogen gas, and features easy to remove, installer friendly, rubber plugs.						
	requires the use of Type K or L copper tube (see ASTM B 819).						
	Dia. 12mm			ml	210		
	Dia. 15mm			ml	102		
	Dia. 22mm			ml	72		

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	Dia. 28mm			ml	24		
1.8	<b>LINE VALVES</b>						
	Supply, installation, testing and commissioning of copper pipes Ball valves as per the drawing						
	Ball Valve Set, with Coupling to copper pipe - 15mm			No.	3		
	Ball Valve Set, with Coupling to copper pipe - 22mm			No.	2		
	Ball Valve Set, with Coupling to copper pipe - 28mm			No.	2		
1.9	<b>Support structure</b>			lps	1		
	Supply and install all the necessary support structure for the medical gas system pile line and Equipment's as per the drawing and HTM standard The center distance of supports shall not exceed the following up to and including: - Up to 10mm outside diameter pipe - 1,00m 12 to 15mm outside diameter pipe - 1,25m 22mm outside diameter pipe - 1,80m 28mm outside diameter pipe - 2,5m 35 to 76mm - see project design drawings Note: Consideration should be given to additional supports near LVAs, elbows etc where the potential effects of inadvertently applied torque can result in severe pipeline distortion or fracture.						
1.10	<b>Copper fittings and accessories</b>			lps	1		
	Supply and install all the necessary accessories and fittings for proper installation of the medical pipeline in accordance to HTM standard please check the attached fitting and accessories for reference but not limited to.						
1.11	<b>Pipe trunking</b>			ml	340		
	Supply and install all the necessary Trunking for the medical gas system pile line and Equipment's as per the drawing and HTM standard						
	width 100mmx50mm						
2	<b>MEDICAL GAS SYSTEM FOR EMERGENCY BUILDING</b>						
2.1	<b>Automatic oxygen manifold system</b>			Set	1		
	Supply, installation, testing, and commissioning of Automatic oxygen cylinder manifolds.						
	The unit is supplied as a complete factory tested package.						
	The plant includes exhaust, relief valve, pressure switch, supply isolation valve, on-return valve and all accessories to make the system functional.						
	control type- fully automatic						
	CYLINDER CAPACITY- 2x5						

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	The cylinder manifold should be as per as BS EN ISO 7396-1:2007+A2:2010 standard, ENISO 7386 and ENISO 7396-1, ISO 10083, European Pharmacopeia HTM 02-01						
2.2	<b>MEDICAL GAS TERMINAL UNITS</b>			No.	12		
	Supply, installation, testing and commissioning of medical gas terminal unit.						
	The unit is supplied as a complete package, fully tested prior to shipping. The unit includes maintenance valve safety nut, check valve, flush box with base block sealing, O-ring, plug -in coupling, internal and external gas identification, release bushing and cover plate.						
	The plant must fulfill HTM 02 01 requirements.						
	oxygen terminals (wall mounted) (BS type)						
2.3	<b>AREA ALARM UNIT</b>			No.	1		
	Supply, Installation, testing and commissioning of medical gas area alarm module.						
	The unit is supplied as a complete package, fully tested prior to shipping. shall be used for all medical gases specified on the drawing.						
	The module must fulfill HTM 02 01 requirements.						
	1 GASES AREA ALARM UNITS						
2.4	<b>ZONE SERVICE UNITS</b>			No.	1		
	Supply, Installation, testing and commissioning of medical gas Zone service Valve unit with valves, pressure gauges and NIST connect fully comply to BS ES ISO 7396-1:2007+A2 2010						
	The unit is supplied as a complete package, fully tested prior to shipping. The unit equipped with stamped gas identification shut-off valve (100% leakage free.) The unit shall be used for all medical gases specified on the drawing.						
	Note service valve unit can also be integrated with area alarm in one control panel as per HTM 01 02						
	The module must fulfill HTM 02 01 requirements.						
	1 GASES AREA valve box						
2.5	<b>OXYGEN FLOW METER W/HUMIDIFIER</b>			No.	12		
	Supply of medical oxygen gas flow meter with humidifier compatible with BS type wall terminal units						
	As per specification in the attachment, including regulatory & standards: bears CE marking under MDR, ISO 13485						
	0-15 L/min, accuracy 10%, dual taper graduations 0.5 L/min (0-5 L/min range) and 1 L/min (5 L/min – maximum range)						
	The module must fulfill HTM 2022 requirements.						
	FLOW METER						

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
2.6	<b>Medical copper pipe</b>						
	Supply, installation, testing and commissioning of copper pipes for medical gases including fittings, valves, expansion, bellows, hangers, brackets, supports and all accessories, as per BS EN 13348:2008 Standard						
	should conform to ASTM B-280/B-819 specifications, is specially cleaned, de-burred, purged and pressurized with nitrogen gas, and features easy to remove, installer friendly, rubber plugs.						
	requires the use of Type K or L copper tube (see ASTM B 819).						
	Dia. 12mm			ml	72		
	Dia. 15mm			ml	12		
	Dia. 22mm			ml	18		
2.7	<b>Support structure</b>			lps	1		
	Supply and install all the necessary support structure for the medical gas system pile line and Equipment's as per the drawing and HTM standard. The center distance of supports shall not exceed the following up to and including: - Up to 10mm outside diameter pipe - 1,00m 12 to 15mm outside diameter pipe - 1,25m 22mm outside diameter pipe - 1,80m 28mm outside diameter pipe - 2,5m 35 to 76mm - see project design drawings Note: Consideration should be given to additional supports near LVAs, elbows etc where the potential effects of inadvertently applied torque can result in severe pipeline distortion or fracture.						
2.8	<b>Copper fittings and accessories</b>			lps	1		
	Supply and install all the necessary accessories and fittings for proper installation of the medical pipeline in accordance with HTM standard please check the attached fitting and accessories for reference but not limited to.						
2.9	<b>Pipe trunking</b>			ml	85		
	Supply and install all the necessary Trunking for the medical gas system pile line and Equipment's as per the drawing and HTM standard width 100mmx50mm						
3	<b>MEDICAL GAS SYSTEMS FOR MEDICAL WARD, AND PEDIATRIC BUILDINGS</b>						
3.1	<b>Automatic oxygen manifold system</b>			Set	1		
	Supply, installation, testing and commissioning of Automatic oxygen cylinder manifolds.						
	The unit is supplied as a complete factory tested package.						



S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	The plant includes exhaust, relief valve, pressure switch, supply isolation valve, on-return valve and all accessories to make the system functional.						
	control type- fully automatic						
	CYLINDER CAPACITY- 2x5						
	The cylinder manifold should be as per as BS EN ISO 7396-1:2007+A2:2010 standard, EN ISO 7386 and EN ISO 7396-1, ISO 10083, European Pharmacopeia HTM 02-01						
3.2	<b>MEDICAL GAS TERMINAL UNITS</b>			No.	44		
	Supply, Installation, testing and commissioning of medical gas terminal unit.						
	The unit is supplied as a complete package, fully tested prior to shipping. The unit includes maintenance valve safety nut, check valve, flush box with base block sealing, O-ring, plug -in coupling, internal and external gas identification, release bushing and cover plate.						
	The plant must fulfill HTM 02 01 requirements.						
	oxygen terminals (wall mounted) (BS type)						
3.3	<b>AREA ALARM UNIT</b>			No.	1		
	Supply, Installation, testing and commissioning of medical gas area alarm module.						
	The unit is supplied as a complete package, fully tested prior to shipping. shall be used for all medical gases specified on the drawing.						
	The module must fulfill HTM 02 01 requirements.						
	1 GASES AREA ALARM UNITS						
3.4	<b>ZONE SERVICE UNITS</b>			No.	1		
	Supply, Installation, testing and commissioning of medical gas Zone service Valve unit with valves, pressure gauges and NIST connect fully comply to BS ES ISO 7396-1:2007+A2 2010						
	The unit is supplied as a complete package, fully tested prior to shipping. The unit equipped with stamped gas identification shut-off valve (100% leakage free.) The unit shall be used for all medical gases specified on the drawing.						
	Note service valve unit can also be integrated with area alarm in one control panel as per HTM 01 02						
	The module must fulfill HTM 02 01 requirements.						
	1 GASES AREA valve box						
3.5	<b>OXYGEN FLOW METER W/HUMIDIFIER</b>			No.	22		
	Supply of medical oxygen gas flow meter with humidifier compatible with BS type wall terminal units						
	As per specification in the attachment, including regulatory & standards: bears CE marking under MDR, ISO 13485						

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	0-5 L/min, accuracy 10%, single taper graduations 0.5 L/min						
	The module must fulfill HTM 02 01 requirements.						
	FLOW METER						
3.6	<b>OXYGEN FLOW METER W/HUMIDIFIER</b>			No.	22		
	Supply of medical oxygen gas flow meter with humidifier compatible with BS type wall terminal units						
	As per specification in the attachment, including regulatory & standards: bears CE marking under MDR, ISO 13485						
	0-15 L/min, accuracy 10%, dual taper graduations 0.5 L/min (0-5 L/min range) and 1 L/min (5 L/min – maximum range)						
	The module must fulfill HTM 2022 requirements.						
	FLOW METER						
3.7	<b>Medical copper pipe</b>						
	Supply, installation, testing, and commissioning of copper pipes for medical gases including fittings, valves, expansion, bellows, hangers, brackets, supports and all accessories, as per BS EN 13348:2008 Standard						
	should conform to ASTM B-280/B-819 specifications, is specially cleaned, de-burred, purged and pressurized with nitrogen gas, and features easy to remove, installer friendly, rubber plugs.						
	requires the use of Type K or L copper tube (see ASTM B 819).						
	Dia. 12mm			ml	265		
	Dia. 22mm			ml	55		
3.8	<b>Support structure</b>			lps	1		
	Supply and install all the necessary support structure for the medical gas system pile line and Equipment's as per the drawing and HTM standard						
	The centre distance of supports shall not exceed the following up to and including:						
	Up to 10mm outside diameter pipe - 1,00m						
	12 to 15mm outside diameter pipe - 1,25m						
	22mm outside diameter pipe - 1,80m						
	28mm outside diameter pipe - 2,5m						
	35 to 76mm - see project design drawings						
	Note: Consideration should be given to additional supports near LVAs, elbows etc where the potential effects of inadvertently applied torque can result in severe pipeline distortion or fracture.						
3.9	<b>Copper fittings and accessories</b>			lps	1		
	Supply and install all the necessary accessories and fittings for proper installation of the medical pipeline in						

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	accordance with HTM standard please check the attached fitting and accessories for reference but not limited to.						
3.10	<b>Pipe trunking</b>			ml	280		
	Supply and install all the necessary Trunking for the medical gas system pile line and Equipment's as per the drawing and HTM standard width 100mmx50mm						
	<b>FITTING AND ACCESSORIES LIST</b>						
I	Installation accessories						
	Brithing rod			Kg	15		
	Adapter to hose Outlets probes /Adapters as per BS EN ISO9170-1:2008 standard.			No	16		
	spare gauge for manifold			No	6		
	spare gauge for alarm units,			No	6		
	Spare manifold hose 3/4 3/4			No.	20		
	Spare manifold hose 1/2 1/2			No.	20		
	flux powder			kg	0.5		
II	Copper fitting						
	copper fitting from size 9mm to 35mm Elbow, Tee, Tee-reducer, socket, reducer						
	Elbow Size (mm) outside diameter						
	12			No.	60		
	15			No.	15		
	22			No.	20		
	28			No.	5		
	Tee						
	tee Size (mm) outside diameter						
	12			No.	70		
	15			No.	5		
	22			No.	5		
	28			No.	5		
	Tee with reducer						
	Size (mm) outside diameter						
	15x12x15			No.	20		
	22x15x22			No.	5		
	22x12x22			No.	15		
	reducer						
	Size (mm) outside diameter						
	12x9			No.	108		
	15x12			No.	25		

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	22x15			No.	15		
	28x22			No.	5		
	socket						
	Size (mm) outside diameter						
	12			No.	250		
	15			No.	55		
	22			No.	70		
	28			No.	25		
	Copper to bronze adapter						
	15			No.	6		
	22			No.	4		
	28			No.	4		
III	<b>External copper insulation</b>						
	<i>Supply and install Flexible Closed Cell Elastomeric Pipe Insulation. 20mm insulation, vapor barrier with aluminum foil cladding Insulation should be as per ASTM C 518.</i>						
	<i>pipe size (mm)</i>						
	<b>Diameter in mm</b>						
	Dia. 22mm			ml	40		
	Dia. 28mm			ml	20		

### 3. Debark Hospital

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
1	<b>MEDICAL GAS SYSTEMS FOR OR, NICU, MCH</b>						
1.1	<b>Automatic oxygen manifold system</b>			Set	1		
	Supply, installation, testing and commissioning of Automatic oxygen cylinder manifolds.						
	The unit is supplied as a complete factory tested package.						
	The plant includes exhaust, relief valve, pressure switch, supply isolation valve, on-return valve and all accessories to make the system functional.						
	control type- fully automatic						
	CYLINDER CAPACITY- 2x10						
	The cylinder manifold should be as per as BS EN ISO 7396-1:2007+A2:2010 standard ISO 7386 and EN ISO 7396-1, ISO 10083, European Pharmacopeia HTM 02-01						
1.2	<b>MEDICAL GAS TERMINAL UNITS</b>			No.	114		
	Supply, Installation, testing and commissioning of medical gas terminal unit.						
	The unit is supplied as a complete package, fully tested prior to shipping. The unit includes maintenance valve safety nut, check valve, flush box with base block sealing, O-ring, plug -in coupling, internal and external gas identification, release bushing and cover plate.						
	The plant must fulfill HTM 02 01 requirements.						
	oxygen terminals (wall mounted) (BS type)						
1.3	<b>AREA ALARM UNIT</b>			No.	3		
	Supply, Installation, testing and commissioning of medical gas area alarm module.						
	The unit is supplied as a complete package, fully tested prior to shipping. shall be used for all medical gases specified on the drawing.						
	The module must fulfill HTM 02 01 requirements.						
	1 GASES AREA ALARM UNITS						
1.4	<b>ZONE SERVICE UNITS</b>			No.	3		
	Supply, Installation, testing and commissioning of medical gas Zone service Valve unit with valves, pressure gauges and NIST connect fully comply to BS ES ISO 7396-1:2007+A2 2010						
	The unit is supplied as a complete package, fully tested prior to shipping. The unit equipped with stamped gas identification shut-off valve (100% leakage free.) The unit shall be used for all medical gases specified on the drawing.						
	Note service valve unit can also be integrated with area alarm in one control panel as per HTM 01 02						

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	The module must fulfill HTM 02 01 requirements.						
	1 GASES AREA valve box						
1.5	<b>OXYGEN FLOW METER W/HUMIDIFIER</b>			No.	10		
	Supply of medical oxygen gas flow meter with humidifier compatible with BS type wall terminal units						
	As per specification in the attachment, including regulatory & standards: bears CE marking under MDR, ISO 13485						
	0-3.5 L/min, accuracy 10%, single taper graduations 0.25 L/min						
	The module must fulfill HTM 02 01 requirements.						
	FLOW METER						
1.6	<b>OXYGEN FLOW METER W/HUMIDIFIER</b>			No.	24		
	Supply of medical oxygen gas flow meter with humidifier compatible with BS type wall terminal units						
	As per specification in the attachment, including regulatory & standards: bears CE marking under MDR, ISO 13485						
	0-5 L/min, accuracy 10%, single taper graduations 0.5 L/min						
	The module must fulfill HTM 02 01 requirements.						
1.6	<b>OXYGEN FLOW METER W/HUMIDIFIER</b>			No.	80		
	Supply of medical oxygen gas flow meter with humidifier compatible with BS type wall terminal units						
	As per specification in the attachment, including regulatory & standards: bears CE marking under MDR, ISO 13485						
	0-15 L/min, accuracy 10%, dual taper graduations 0.5 L/min (0-5 L/min range) and 1 L/min (5 L/min – maximum range)						
	The module must fulfill HTM 2022 requirements.						
1.7	<b>Medical copper pipe</b>						
	Supply, installation, testing, and commissioning of copper pipes for medical gases including fittings, valves, expansion, bellows, hangers, brackets, supports and all accessories, as per BS EN 13348:2008 Standard						
	should conform to ASTM B-280/B-819 specifications, is specially cleaned, de-burred, purged and pressurized with nitrogen gas, and features easy to remove, installer friendly, rubber plugs.						
	requires the use of Type K or L copper tube (see ASTM B 819).						
	Dia. 12mm			ml	158		
	Dia. 15mm			ml	72		
	Dia. 22mm			ml	105		
	Dia. 28mm			ml	45		

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
1.9	<b>LINE VALVES</b>						
	Supply, installation, testing, and commissioning of copper pipes Ball valves as per the drawing						
	Ball Valve Set, with Coupling to copper pipe - 15mm			No.	2		
	Ball Valve Set, with Coupling to copper pipe - 22mm			No.	6		
	Ball Valve Set, with Coupling to copper pipe - 28mm			No.	2		
1.1	<b>Support structure</b>			lps	1		
	Supply and install all the necessary support structure for the medical gas system pile line and Equipment's as per the drawing and HTM standard The center distance of supports shall not exceed the following up to and including: Up to 10mm outside diameter pipe - 1,00m 12 to 15mm outside diameter pipe - 1,25m 22mm outside diameter pipe - 1,80m 28mm outside diameter pipe - 2,5m 35 to 76mm - see project design drawings Note: Consideration should be given to additional supports near LVAs, elbows etc where the potential effects of inadvertently applied torque can result in severe pipeline distortion or fracture.						
1.11	<b>Copper fittings and accessories</b>			lps	1		
	Supply and install all the necessary accessories and fittings for proper installation of the medical pipeline in accordance to HTM standard please check the attached fitting and accessories for reference but not limited to.						
1.12	<b>Pipe trunking</b>			ml	410		
	Supply and install all the necessary Trunking for the medical gas system pile line and Equipment's as per the drawing and HTM standard width 100mmx50mm						
2	<b>MEDICAL GAS SYSTEM FOR PEDIATRIC WARD, MEDICAL WARD AND ICU BUILDINGS</b>						
2.1	<b>Automatic oxygen manifold system</b>			Set	1		
	Supply, installation, testing and commission of Automatic oxygen cylinder manifolds.						
	The unit is supplied as a complete factory tested package.						
	The plant includes exhaust, relief valve, pressure switch, supply isolation valve, on-return valve and all accessories to make the system functional.						
	control type- fully automatic						
	CYLINDER CAPACITY- 2x5						
	The cylinder manifold should be as per as BS EN ISO 7396-1:2007+A2:2010 standard. ENISO 7386 and ENISO 7396-1, ISO 10083, European Pharmacopeia HTM 02-01						

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
2.2	<b>MEDICAL GAS TERMINAL UNITS</b>			No.	59		
	Supply, installation, testing, and commissioning of medical gas terminal unit.						
	The unit is supplied as a complete package, fully tested prior to shipping. The unit includes maintenance valve safety nut, check valve, flush box with base block sea;omg ring ,O-ring, plug -in coupling, internal and external gas identification, release bushing and cover plate.						
	The plant must fulfill HTM 02 01 requirements.						
	oxygen terminals (wall mounted) (BS type)						
2.3	<b>AREA ALARM UNIT</b>			No.	3		
	Supply, Installation, testing and commissioning of medical gas area alarm module.						
	The unit is supplied as a complete package, fully tested prior to shipping. shall be used for all medical gases specified on the drawing.						
	The module must fulfill HTM 02 01 requirements.						
	1 GASES AREA ALARM UNITS						
2.4	<b>ZONE SERVICE UNITS</b>			No.	3		
	Supply, Installation, testing and commissioning of medical gas Zone service Valve unit with valves, pressure gauges and NIST connect fully comply to BS ES ISO 7396-1:2007+A2 2010						
	The unit is supplied as a complete package, fully tested prior to shipping. The unit equipped with stamped gas identification shut-off valve (100% leakage free.) The unit shall be used for all medical gases specified on the drawing.						
	Note service valve unit can also be integrated with area alarm in one control panel as per HTM 01 02						
	The module must fulfill HTM 02 01 requirements.						
	1 GASES AREA valve box						
2.5	<b>OXYGEN FLOW METER W/HUMIDIFIER</b>						
	Supply of medical oxygen gas flow meter with humidifier compatible with BS type wall terminal units						
	As per specification in the attachment, including regulatory & standards: bears CE marking under MDR, ISO 13485						
	0-5 L/min, accuracy 10%, single taper graduations 0.5 L/min						
	The module must fulfill HTM 02 01 requirements.						
2.6	<b>OXYGEN FLOW METER W/HUMIDIFIER</b>			No.	35		
	Supply of medical oxygen gas flow meter with humidifier compatible with BS type wall terminal units						



S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	As per specification in the attachment, including regulatory & standards: bears CE marking under MDR, ISO 13485						
	0-15 L/min, accuracy 10%, dual taper graduations 0.5 L/min (0-5 L/min range) and 1 L/min (5 L/min – maximum range)						
	The module must fulfill HTM 2022 requirements.						
2.7	Medical copper pipe						
	Supply, installation, testing, and commissioning of copper pipes for medical gases including fittings, valves, expansion, bellows, hangers, brackets, supports and all accessories, as per BS EN 13348:2008 Standard						
	should conform to ASTM B-280/B-819 specifications, is specially cleaned, de-burred, purged and pressurized with nitrogen gas, and features easy to remove, installer friendly, rubber plugs.						
	requires the use of Type K or L copper tube (see ASTM B 819).						
	Dia. 12mm			ml	285		
	Dia. 15mm			ml	80		
	Dia. 22mm			ml	105		
	Dia. 28mm			ml	30		
2.8	LINE VALVES						
	Supply, installation, testing, and commissioning of copper pipes Ball valves as per the drawing						
	Ball Valve Set, with Coupling to copper pipe - 22mm			No.	6		
	Ball Valve Set, with Coupling to copper pipe - 28mm			No.	2		
2.9	Support structure			lps	1		
	Supply and install all the necessary support structure for the medical gas system pile line and Equipment's as per the drawing and HTM standard The center distance of supports shall not exceed the following up to and including: - Up to 10mm outside diameter pipe - 1,00m - 12 to 15mm outside diameter pipe - 1,25m - 22mm outside diameter pipe - 1,80m - 28mm outside diameter pipe - 2,5m - 35 to 76mm - see project design drawings Note: Consideration should be given to additional supports near LVAs, elbows etc where the potential effects of inadvertently applied torque can result in severe pipeline distortion or fracture.						
2.10	Copper fittings and accessories			lps	1		

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	Supply and install all the necessary accessories and fittings for proper installation of the medical pipeline in accordance to HTM standard please check the attached fitting and accessories for reference but not limited to.						
2.11	<b>Pipe trunking</b>			ml	485		
	Supply and install all the necessary Trunking for the medical gas system pile line and Equipment's as per the drawing and HTM standard						
	width 100mmx50mm						
3	<b>MEDICAL GAS SYSTEM FOR EMERGENCY BLOCK BUILDINGS</b>						
3.10	<b>Automatic oxygen manifold system</b>			Set	1		
	Supply, installation, testing and commission of Automatic oxygen cylinder manifolds.						
	The unit is supplied as a complete factory tested package.						
	The plant includes exhaust, relief valve, pressure switch, supply isolation valve, on-return valve and all accessories to make the system functional.						
	control type- fully automatic						
	CYLINDER CAPACITY- 2x5						
	The cylinder manifold should be as per as BS EN ISO 7396-1:2007+A2:2010 standard. EN ISO 7386 and EN ISO 7396-1, ISO 10083, European Pharmacopeia HTM 02-01						
3.20	<b>MEDICAL GAS TERMINAL UNITS</b>			No.	13		
	Supply, Installation, testing and commissioning of medical gas terminal unit.						
	The unit is supplied as a complete package, fully tested prior to shipping. The unit includes maintenance valve safety nut, check valve, flush box with base block sealing, O-ring, plug -in coupling, internal and external gas identification, release bushing and cover plate.						
	The plant must fulfill HTM 02 01 requirements.						
	oxygen terminals (wall mounted) (BS type)						
3.30	<b>AREA ALARM UNIT</b>			No.	1		
	Supply, Installation, testing and commissioning of medical gas area alarm module.						
	The unit is supplied as a complete package, fully tested prior to shipping. shall be used for all medical gases specified on the drawing.						
	The module must fulfill HTM 02 01 requirements.						
	1 GASES AREA ALARM UNITS						
3.40	<b>ZONE SERVICE UNITS</b>			No.	1		
	Supply, Installation, testing and commissioning of medical gas Zone service Valve unit with valves, pressure gauges and NIST connect fully comply to BS ES ISO 7396-1:2007+A2 2010						

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	The unit is supplied as a complete package, fully tested prior to shipping. The unit equipped with stamped gas identification shut-off valve (100% leakage free.) The unit shall be used for all medical gases specified on the drawing.						
	Note service valve unit can also be integrated with area alarm in one control panel as per HTM 01 02						
	The module must fulfill HTM 02 01 requirements.						
	1 GASES AREA valve box						
3.50	<b>OXYGEN FLOW METER W/HUMIDIFIER</b>			No.	13		
	Supply of medical oxygen gas flow meter with humidifier compatible with BS type wall terminal units						
	As per specification in the attachment, including regulatory & standards: bears CE marking under MDR, ISO 13485						
	0-15 L/min, accuracy 10%, dual taper graduations 0.5 L/min (0-5 L/min range) and 1 L/min (5 L/min – maximum range)						
	The module must fulfill HTM 2022 requirements.						
	FLOW METER						
3.60	<b>Medical copper pipe</b>						
	Supply, installation, testing, and commissioning of copper pipes for medical gases including fittings, valves, expansion, bellows, hangers, brackets, supports and all accessories, as per BS EN 13348:2008 Standard						
	should conform to ASTM B-280/B-819 specifications, is specially cleaned, de-burred, purged and pressurized with nitrogen gas, and features easy to remove, installer friendly, rubber plugs.						
	requires the use of Type K or L copper tube (see ASTM B 819).						
	Dia. 12mm			ml	135		
	Dia. 15mm			ml	95		
	Dia. 22mm			ml	80		
3.70	<b>LINE VALVES</b>			No.	2		
	Supply, installation, testing and commissioning of copper pipes Ball valves as per the drawing						
	Ball Valve Set, with Coupling to copper pipe - 22mm						
3.80	<b>Support structure</b>			lps	1		

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	Supply and install all the necessary support structure for the medical gas system pile line and Equipment's as per the drawing and HTM standard The center distance of supports shall not exceed the following up to and including: - Up to 10mm outside diameter pipe - 1,00m - 12 to 15mm outside diameter pipe - 1,25m - 22mm outside diameter pipe - 1,80m - 28mm outside diameter pipe - 2,5m - 35 to 76mm - see project design drawings Note: Consideration should be given to additional supports near LVAs, elbows etc where the potential effects of inadvertently applied torque can result in severe pipeline distortion or fracture.						
3.90	<b>Copper fittings and accessories</b>			lps	1		
	Supply and install all the necessary accessories and fittings for proper installation of the medical pipeline in accordance to HTM standard please check the attached fitting and accessories for reference but not limited to.						
3.10	<b>Pipe trunking</b>			ml	210		
	Supply and install all the necessary Trunking for the medical gas system pile line and Equipment's as per the drawing and HTM standard width 100mmx50mm						
	<b>FITTING AND ACCESSORIES LIST</b>						
I	<b>Installation accessories</b>						
	Brazing rod			Kg	15		
	Adapter to hose Outlets probes /Adaptors as per BS EN ISO9170-1:2008 standard.			No	12		
	spare gauge for manifold			No	6		
	spare Guage for alarm units,			No	6		
	Spare manifold hose 3/4 3/4			No.	15		
	Spare manifold hose 1/2 1/2			No.	15		
	flux powder			kg	0.5		
II	<b>copper fitting</b>						
	copper fitting from size 9mm to 35mm Elbow, Tee, Tee-reducer, socket, reducer						
	<b>Elbow Size (mm) outside diameter</b>						
	12			No.	210		
	15			No.	80		
	22			No.	52		

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	28			No.	10		
	Tee						
	<b>Tee Size (mm) outside diameter</b>						
	12			No.	90		
	15			No.	34		
	22			No.	22		
	28			No.	11		
	<b>Tee with reducer</b>						
	Size (mm) outside diameter						
	15x12x15			No.	45		
	22x15x22			No.	28		
	22x12x22			No.	17		
	<b>Reducer</b>						
	Size (mm) outside diameter						
	12x9			No.	61		
	15x12			No.	22		
	22x15			No.	17		
	28x22			No.	6		
	<b>Socket</b>						
	Size (mm) outside diameter						
	12			No.	252		
	15			No.	106		
	22			No.	69		
	28			No.	66		
	35			No.	25		
	<b>Copper to bronze adapter</b>						
	15			No.	4		
	22			No.	5		
	28			No.	4		
III	<b>External copper insulation</b>						
	<i>Supply and install Flexible Closed Cell Elastomeric Pipe Insulation. 20mm insulation, vapor barrier with aluminum foil cladding. Insulation should be as per ASTM C 518.</i>						
	<i>pipe size (mm)</i>						
	<b>Diameter in mm</b>						
	Dia. 22mm			ml	85		
	Dia. 28mm			ml	44		

#### 4. Filtu Hospital

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
1	MEDICAL GAS SYSTEMS FOR OR, NICU, OR, ICU						
1.1	Automatic oxygen manifold system			Set	1		
	Supply, installation, testing and commissioning of Automatic oxygen cylinder manifolds.						
	The unit is supplied as a complete factory tested package.						
	The plant includes exhaust, relief valve, pressure switch, supply isolation valve, on-return valve and all accessories to make the system functional.						
	control type- fully automatic						
	CYLINDER CAPACITY- 2x10						
	The cylinder manifold should be as per as BS EN ISO 7396-1:2007+A2:2010 standard. EN ISO 7386 and EN ISO 7396-1, ISO 10083, European Pharmacopeia HTM 02-01						
1.2	MEDICAL GAS TERMINAL UNITS			No.	54		
	Supply, Installation, testing and commissioning of medical gas terminal unit.						
	The unit is supplied as a complete package, fully tested prior to shipping. The unit includes maintenance valve safety nut, check valve, flush box with base block sealing, O-ring, plug -in coupling, internal and external gas identification, release bushing and cover plate.						
	oxygen terminals (wall mounted) (BS type)						
1.3	AREA ALARM UNIT			No.	3		
	Supply, Installation, testing and commissioning of medical gas area alarm module.						
	The unit is supplied as a complete package, fully tested prior to shipping. shall be used for all medical gases specified on the drawing.						
	The module must fulfill HTM 02 01 requirements.						
	1 GASES AREA ALARM UNITS						
1.4	ZONE SERVICE UNITS			No.	3		
	Supply, Installation, testing and commissioning of medical gas Zone service Valve unit with valves,						

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	pressure gauges and NIST connect fully comply to BS ES ISO 7396-1:2007+A2 2010						
	The unit is supplied as a complete package, fully tested prior to shipping. The unit equipped with stamped gas identification shut-off valve (100% leakage free.) The unit shall be used for all medical gases specified on the drawing.						
	Note service valve unit can also be integrated with area alarm in one control panel as per HTM 01 02						
	The module must fulfill HTM 02 01 requirements.						
	1 GASES AREA valve box						
1.5	<b>OXYGEN FLOW METER W/HUMIDIFIER</b>			No.	10		
	Supply of medical oxygen gas flow meter with humidifier compatible with BS type wall terminal units						
	As per specification in the attachment, including regulatory & standards: bears CE marking under MDR, ISO 13485						
	0-3.5 L/min, accuracy 10%, single taper graduations 0.25 L/min						
	The module must fulfill HTM 02 01 requirements.						
1.5	<b>OXYGEN FLOW METER W/HUMIDIFIER</b>			No.	8		
	Supply of medical oxygen gas flow meter with humidifier compatible with BS type wall terminal units						
	As per specification in the attachment, including regulatory & standards: bears CE marking under MDR, ISO 13485						
	0-5 L/min, accuracy 10%, single taper graduations 0.25 L/min						
	The module must fulfill HTM 02 01 requirements.						
1.6	<b>OXYGEN FLOW METER W/HUMIDIFIER</b>			No.	36		
	Supply of medical oxygen gas flow meter with humidifier compatible with BS type wall terminal units						
	As per specification in the attachment, including regulatory & standards: bears CE marking under MDR, ISO 13485						
	0-15 L/min, accuracy 10%, dual taper graduations 0.5 L/min (0-5 L/min range) and 1 L/min (5 L/min – maximum range)						
	The module must fulfill HTM 2022 requirements.						

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
1.7	<b>Medical copper pipe</b>						
	Supply, installation, testing and commissioning of copper pipes for medical gases including fittings, valves, expansion, bellows, hangers, brackets, supports and all accessories, as per BS EN 13348:2008 Standard						
	should conform to ASTM B-280/B-819 specifications, is specially cleaned, de-burred, purged and pressurized with nitrogen gas, and features easy to remove, installer friendly, rubber plugs.						
	requires the use of Type K or L copper tube (see ASTM B 819).						
	Dia. 12mm			ml	210		
	Dia. 15mm			ml	95		
	Dia. 22mm			ml	165		
	Dia. 28mm			ml	90		
1.9	<b>LINE VALVES</b>						
	Supply, installation, testing and commissioning of copper pipes Ball valves as per the drawing						
	Ball Valve Set, with Coupling to copper pipe - 15mm			No.	2		
	Ball Valve Set, with Coupling to copper pipe - 22mm			No.	4		
	Ball Valve Set, with Coupling to copper pipe - 28mm			No.	4		
1.1	<b>Support structure</b>			lps	1		
	Supply and install all the necessary support structure for the medical gas system pile line and Equipment's as per the drawing and HTM standard The center distance of supports shall not exceed the following up to and including: - Up to 10mm outside diameter pipe - 1,00m 12 to 15mm outside diameter pipe - 1,25m 22mm outside diameter pipe - 1,80m 28mm outside diameter pipe - 2,5m 35 to 76mm - see project design drawings Note: Consideration should be given to additional supports near LVAs, elbows etc where the potential effects of inadvertently applied torque can result in severe pipeline distortion or fracture.						
1.11	<b>Copper fittings and accessories</b>			lps	1		



S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	Supply and install all the necessary accessories and fittings for proper installation of the medical pipeline in accordance with HTM standard please check the attached fitting and accessories for reference but not limited to.						
1.12	<b>Pipe trunking</b>			ml	410		
	Supply and install all the necessary Trunking for the medical gas system pile line and Equipment's as per the drawing and HTM standard width 100mmx50mm						
<b>2</b>	<b>MEDICAL GAS SYSTEM FOR PEDIATRICICU AND EMERGENCY BUILDINGS</b>						
2.1	<b>Automatic oxygen manifold system</b>			Set	1		
	Supply, installation, testing and commission of Automatic oxygen cylinder manifolds.						
	The unit is supplied as a complete factory tested package.						
	The plant includes exhaust, relief valve, pressure switch, supply isolation valve, on-return valve and all accessories to make the system functional.						
	control type- fully automatic						
	CYLINDER CAPACITY- 2x5						
	The cylinder manifold should be as per as BS EN ISO 7396-1:2007+A2:2010 standard. EN ISO 7386 and EN ISO 7396-1, ISO 10083, European Pharmacopeia HTM 02-01						
2.2	<b>MEDICAL GAS TERMINAL UNITS</b>			No.	26		
	Supply, Installation, testing and commissioning of medical gas terminal unit.						
	The unit is supplied as a complete package, fully tested prior to shipping. The unit includes maintenance valve safety nut, check valve, flush box with base block sealing, O-ring, plug -in coupling, internal and external gas identification, release bushing and cover plate.						
	oxygen terminals (wall mounted) (BS type)						
2.3	<b>AREA ALARM UNIT</b>			No.	3		
	Supply, Installation, testing and commissioning of medical gas area alarm module.						

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	The unit is supplied as a complete package, fully tested prior to shipping. shall be used for all medical gases specified on the drawing.						
	The module must fulfill HTM 02 01 requirements.						
	1 GASES AREA ALARM UNITS						
2.4	<b>ZONE SERVICE UNITS</b>			No.	3		
	Supply, Installation, testing and commissioning of medical gas Zone service Valve unit with valves, pressure gauges and NIST connect fully comply to BS ES ISO 7396-1:2007+A2 2010						
	The unit is supplied as a complete package, fully tested prior to shipping. The unit equipped with stamped gas identification shut-off valve (100% leakage free.) The unit shall be used for all medical gases specified on the drawing.						
	Note service valve unit can also be integrated with area alarm in one control panel as per HTM 01 02						
	The module must fulfill HTM 02 01 requirements.						
	1 GASES AREA valve box						
2.5	<b>OXYGEN FLOW METER W/HUMIDIFIER</b>			No.	8		
	Supply of medical oxygen gas flow meter with humidifier compatible with BS type wall terminal units						
	As per specification in the attachment, including regulatory & standards: bears CE marking under MDR, ISO 13485						
	0-5 L/min, accuracy 10%, single taper graduations 0.5 L/min						
	The module must fulfill HTM 02 01 requirements.						
2.6	<b>OXYGEN FLOW METER W/HUMIDIFIER</b>			No.	18		
	Supply of medical oxygen gas flow meter with humidifier compatible with BS type wall terminal units						
	As per specification in the attachment, including regulatory & standards: bears CE marking under MDR, ISO 13485						
	0-15 L/min, accuracy 10%, dual taper graduations 0.5 L/min (0-5 L/min range) and 1 L/min (5 L/min – maximum range)						
	The module must fulfill HTM 2022 requirements.						
2.7	<b>Medical copper pipe</b>						

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	Supply, installation, testing, and commissioning of copper pipes for medical gases including fittings, valves, expansion, bellows, hangers, brackets, supports and all accessories, as per BS EN 13348:2008 Standard						
	should conform to ASTM B-280/B-819 specifications, is specially cleaned, de-burred, purged and pressurized with nitrogen gas, and features easy to remove, installer friendly, rubber plugs.						
	requires the use of Type K or L copper tube (see ASTM B 819).						
	Dia. 12mm			ml	220		
	Dia. 15mm			ml	80		
	Dia. 22mm			ml	125		
2.8	<b>LINE VALVES</b>						
	Supply, installation, testing, and commissioning of copper pipes Ball valves as per the drawing						
	Ball Valve Set, with Coupling to copper pipe - 22mm			No.	6		
	Ball Valve Set, with Coupling to copper pipe - 28mm			No.	2		
2.9	<b>Support structure</b>			lps	1		
	Supply and install all the necessary support structure for the medical gas system pile line and Equipment's as per the drawing and HTM standard The center distance of supports shall not exceed the following up to and including: - Up to 10mm outside diameter pipe - 1,00m 12 to 15mm outside diameter pipe - 1,25m 22mm outside diameter pipe - 1,80m 28mm outside diameter pipe - 2,5m 35 to 76mm - see project design drawings Note: Consideration should be given to additional supports near LVAs, elbows etc where the potential effects of inadvertently applied torque can result in severe pipeline distortion or fracture.						
2.1	<b>Copper fittings and accessories</b>			lps	1		
	Supply and install all the necessary accessories and fittings for proper installation of the medical pipeline in accordance to HTM standard please check the attached fitting and accessories for reference but not limited to.						
2.11	<b>Pipe trunking</b>			ml	265		

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	Supply and install all the necessary Trunking for the medical gas system pile line and Equipment's as per the drawing and HTM standard width 100mmx50mm						
	<b>FITTING AND ACCESSORIES LIST</b>						
I	<b>Installation accessories</b>						
	Brazing rod			Kg	10		
	Adapter to hose Outlets probes /Adaptors as per BS EN ISO9170-1:2008 standard.			No	12		
	spare gauge for manifold			No	4		
	spare Gauge for alarm units,			No	6		
	Spare manifold hose 3/4 3/4			No.	15		
	Spare manifold hose 1/2 1/2			No.	15		
	flux powder			kg	0.5		
II	<b>copper fitting</b>						
	copper fitting from size 9mm to 35mm Elbow, Tee, Tee-reducer, socket, reducer						
	<b>Elbow Size (mm) outside diameter</b>						
	12			No.	156		
	15			No.	65		
	22			No.	50		
	28			No.	15		
	<b>Tee</b>						
	tee Size (mm) outside diameter						
	12			No.	80		
	15			No.	30		
	22			No.	20		
	28			No.	10		
	<b>Tee with reducer</b>						
	Size (mm) outside diameter						
	15x12x15			No.	40		
	22x15x22			No.	25		
	22x12x22			No.	15		
	<b>Reducer</b>						
	Size (mm) outside diameter						
	12x9			No.	55		
	15x12			No.	20		
	22x15			No.	15		

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	28x22			No.	5		
	<b>Socket</b>						
	Size (mm) outside diameter						
	12			No.	225		
	15			No.	94.5		
	22			No.	85.5		
	28			No.	58.5		
	35			No.	22.5		
	<b>Copper to bronze adapter</b>						
	15			No.	2		
	22			No.	10		
	28			No.	6		
III	<b>External copper insulation</b>						
	<i>Supply and install Flexible Closed Cell Elastomeric Pipe Insulation. 20mm insulation, vapor barrier with aluminum foil cladding. insulation should be as per ASTM C 518.</i>						
	<i>pipe size (mm)</i>						
	<b>Diameter in mm</b>						
	Dia. 22mm			ml	90		
	Dia. 28mm			ml	32		

## 5. Sawula Hospital

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
1	<b>MEDICAL GAS SYSTEMS FOR OR, NICU, ICU, SURGICAL WARD, PEDI EMERGENCY,</b>						
1.1	<b>Automatic oxygen manifold system</b>			Set	1		
	Supply, installation, testing and commissioning of Automatic oxygen cylinder manifolds.						
	The unit is supplied as a complete factory tested package.						
	The plant includes exhaust, relief valve, pressure switch, supply isolation valve, on-return valve and all accessories to make the system functional.						
	control type- fully automatic						
	CYLINDER CAPACITY- 2x10						
	The cylinder manifold should be as per as BS EN ISO 7396-1:2007+A2:2010 standard. EN ISO 7386 and EN ISO 7396-1, ISO 10083, European Pharmacopeia HTM 02-01						
1.2	<b>MEDICAL GAS TERMINAL UNITS</b>			No.	84		
	Supply, Installation, testing and commissioning of medical gas terminal unit.						
	The unit is supplied as a complete package, fully tested prior to shipping. The unit includes maintenance valve safety nut, check valve, flush box with base block sealing, O-ring, plug -in coupling, internal and external gas identification, release bushing and cover plate.						
	The plant must fulfill HTM 02 01 requirements.						
	oxygen terminals (wall mounted) (BS type)						
1.3	<b>AREA ALARM UNIT</b>			No.	5		
	Supply, Installation, testing and commissioning of medical gas area alarm module.						
	The unit is supplied as a complete package, fully tested prior to shipping. shall be used for all medical gases specified on the drawing.						
	The module must fulfill HTM 02 01 requirements.						
	1 GASES AREA ALARM UNITS						
1.4	<b>ZONE SERVICE UNITS</b>			No.	5		
	Supply, Installation, testing and commissioning of medical gas Zone service Valve unit with valves, pressure gauges and NIST connect fully comply to BS ES ISO 7396-1:2007+A2 2010						
	The unit is supplied as a complete package, fully tested prior to shipping. The unit equipped with stamped gas identification shut-off valve (100%						

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	leakage free.) The unit shall be used for all medical gases specified on the drawing.						
	Note service valve unit can also be integrated with area alarm in one control panel as per HTM 01 02						
	The module must fulfill HTM 02 01 requirements.						
	1 GASES AREA valve box						
1.5	<b>OXYGEN FLOW METER W/HUMIDIFIER</b>			No.	20		
	Supply of medical oxygen gas flow meter with humidifier compatible with BS type wall terminal units						
	As per specification in the attachment, including regulatory & standards: bears CE marking under MDR, ISO 13485						
	0-3.5 L/min, accuracy 10%, single taper graduations 0.25 L/min						
	The module must fulfill HTM 02 01 requirements.						
	FLOW METER						
1.6	<b>OXYGEN FLOW METER W/HUMIDIFIER</b>			No.	30		
	Supply of medical oxygen gas flow meter with humidifier compatible with BS type wall terminal units						
	As per specification in the attachment, including regulatory & standards: bears CE marking under MDR, ISO 13485						
	0-5 L/min, accuracy 10%, single taper graduations 0.5 L/min						
	The module must fulfill HTM 02 01 requirements.						
1.7	<b>OXYGEN FLOW METER W/HUMIDIFIER</b>			No.	60		
	Supply of medical oxygen gas flow meter with humidifier compatible with BS type wall terminal units						
	As per specification in the attachment, including regulatory & standards: bears CE marking under MDR, ISO 13485						
	0-15 L/min, accuracy 10%, dual taper graduations 0.5 L/min (0-5 L/min range) and 1 L/min (5 L/min – maximum range)						
	The module must fulfill HTM 2022 requirements.						
1.8	<b>Medical copper pipe</b>						
	Supply, installation, testing, and commissioning of copper pipes for medical gases including fittings, valves, expansion, bellows, hangers, brackets, supports and all accessories, as per BS EN 13348:2008 Standard						

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	should conform to ASTM B-280/B-819 specifications, is specially cleaned, de-burred, purged and pressurized with nitrogen gas, and features easy to remove, installer friendly, rubber plugs.						
	requires the use of Type K or L copper tube (see ASTM B 819).						
	Dia. 12mm			ml	385		
	Dia. 15mm			ml	230		
	Dia. 22mm			ml	265		
	Dia. 28mm			ml	115		
1.9	<b>LINE VALVES</b>						
	Supply, installation, testing and commissioning of copper pipes Ball valves as per the drawing						
	Ball Valve Set, with Coupling to copper pipe - 15mm			No.	4		
	Ball Valve Set, with Coupling to copper pipe - 22mm			No.	10		
	Ball Valve Set, with Coupling to copper pipe - 28mm			No.	6		
1.1	<b>Support structure</b>			lps	1		
	Supply and install all the necessary support structure for the medical gas system pile line and Equipment's as per the drawing and HTM standard The center distance of supports shall not exceed the following up to and including: - Up to 10mm outside diameter pipe - 1,00m - 12 to 15mm outside diameter pipe - 1,25m - 22mm outside diameter pipe - 1,80m - 28mm outside diameter pipe - 2,5m - 35 to 76mm - see project design drawings Note: Consideration should be given to additional supports near LVAs, elbows etc where the potential effects of inadvertently applied torque can result in severe pipeline distortion or fracture						
1.11	<b>Copper fittings and accessories</b>			lps	1		
	Supply and install all the necessary accessories and fittings for proper installation of the medical pipeline in accordance to HTM standard please check the attached fitting and accessories for reference but not limited to.						
1.12	<b>Pipe trunking</b>			ml	520		
	Supply and install all the necessary Trunking for the medical gas system pile line and Equipment's as per the drawing and HTM standard width 100mmx50mm						
2	<b>MEDICAL GAS SYSTEM FOR PEDIATRIC WARD</b>						



S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
2.1	<b>Automatic oxygen manifold system</b>			Set	1		
	Supply, installation, testing and commission of Automatic oxygen cylinder manifolds.						
	The unit is supplied as a complete factory tested package.						
	The plant includes exhaust, relief valve, pressure switch, supply isolation valve, on-return valve and all accessories to make the system functional.						
	control type- fully automatic						
	CYLINDER CAPACITY- 2x5						
	The cylinder manifold should be as per as BS EN ISO 7396-1:2007+A2:2010 standard. ENISO 7386 and ENISO 7396-1, ISO 10083, European Pharmacopeia HTM 02-01						
2.2	<b>MEDICAL GAS TERMINAL UNITS</b>			No.	24		
	Supply, installation, testing, and commissioning of medical gas terminal unit.						
	The unit is supplied as a complete package, fully tested prior to shipping. The unit includes maintenance valve safety nut, check valve, flush box with base block sea;omg ring ,O-ring, plug -in coupling, internal and external gas identification, release bushing and cover plate.						
	The plant must fulfill HTM 02 01 requirements.						
	oxygen terminals(wall mounted)(BS type)						
2.3	<b>AREA ALARM UNIT</b>			No.	1		
	Supply, Installation, testing and commissioning of medical gas area alarm module.						
	The unit is supplied as a complete package, fully tested prior to shipping. shall be used for all medical gases specified on the drawing.						
	The module must fulfill HTM 02 01 requirements.						
	1 GASES AREA ALARM UNITS						
2.4	<b>ZONE SERVICE UNITS</b>			No.	1		
	Supply, Installation, testing and commissioning of medical gas Zone service Valve unit with valves, pressure gauges and NIST connect fully comply to BS ES ISO 7396-1:2007+A2 2010						
	The unit is supplied as a complete package, fully tested prior to shipping. The unit equipped with stamped gas identification shut-off valve (100% leakage free) The unit shall be used for all medical gases specified on the drawing.						
	Note service valve unit can also be integrated with area alarm in one control panel as per HTM 01 02						
	The module must fulfill HTM 02 01 requirements.						
	1 GASES AREA valve box						

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
2.5	<b>OXYGEN FLOW METER W/HUMIDIFIER</b>			No.	24		
	Supply of medical oxygen gas flow meter with humidifier compatible with BS type wall terminal units						
	As per specification in the attachment, including regulatory & standards: bears CE marking under MDR, ISO 13485						
	0-5 L/min, accuracy 10%, single taper graduations 0.5 L/min						
	The module must fulfill HTM 02 01 requirements.						
	FLOW METER						
2.7	<b>Medical copper pipe</b>						
	Supply, installation, testing, and commissioning of copper pipes for medical gases including fittings, valves, expansion, bellows, hangers, brackets, supports and all accessories, as per BS EN 13348:2008 Standard						
	should conform to ASTM B-280/B-819 specifications, is specially cleaned, de-burred, purged and pressurized with nitrogen gas, and features easy to remove, installer friendly, rubber plugs.						
	requires the use of Type K or L copper tube (see ASTM B 819).						
	Dia. 12mm			ml	115		
	Dia. 15mm			ml	80		
	Dia. 22mm			ml	65		
2.8	<b>LINE VALVES</b>			No.	2		
	Supply, installation, testing and commissioning of copper pipes Ball valves as per the drawing						
	Ball Valve Set, with Coupling to copper pipe - 22mm						
2.9	<b>Support structure</b>			lps	1		
	Supply and install all the necessary support structure for the medical gas system pile line and Equipment's as per the drawing and HTM standard The center distance of supports shall not exceed the following up to and including: - Up to 10mm outside diameter pipe - 1,00m 12 to 15mm outside diameter pipe - 1,25m 22mm outside diameter pipe - 1,80m 28mm outside diameter pipe - 2,5m 35 to 76mm - see project design drawings Note: Consideration should be given to additional supports near LVAs, elbows etc where the potential effects of inadvertently applied torque can result in severe pipeline distortion or fracture.						
2.1	<b>Copper fittings and accessories</b>			lps	1		

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	Supply and install all the necessary accessories and fittings for proper installation of the medical pipeline in accordance to HTM standard please check the attached fitting and accessories for reference but not limited to.						
2.11	<b>Pipe trunking</b>			lps	185		
	Supply and install all the necessary Trunking for the medical gas system pile line and Equipment's as per the drawing and HTM standard width 100mmx50mm						
<b>FITTING AND ACCESSORIES LIST</b>							
I	<b>Installation accessories</b>						
	Brazing rod			Kg	10		
	Adapter to hose Outlets probes /Adaptors as per BS EN ISO9170-1:2008 standard.			No	12		
	spare gauge for manifold			No	4		
	spare Guage for alarm units,			No	6		
	Spare manifold hose 3/4 3/4			No.	15		
	Spare manifold hose 1/2 1/2			No.	15		
	flux powder			kg	0.5		
II	<b>copper fitting</b>						
	copper fitting from size 9mm to 35mm Elbow, Tee, Tee-reducer, socket, reducer						
	<b>Elbow Size (mm) outside diameter</b>						
	12			No.	248		
	15			No.	95		
	22			No.	31		
	28			No.	12		
	Tee						
	<b>Tee Size (mm) outside diameter</b>						
	12			No.	106		
	15			No.	40		
	22			No.	25		
	28			No.	13		
	<b>Tee with reducer</b>						
	Size (mm) outside diameter						
	15x12x15			No.	53		
	22x15x22			No.	33		
	22x12x22			No.	20		
	<b>Reducer</b>						

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	Size (mm) outside diameter						
	12x9			No.	73		
	15x12			No.	26		
	22x15			No.	20		
	28x22			No.	7		
	<b>Socket</b>						
	Size (mm) outside diameter						
	12			No.	297		
	15			No.	125		
	22			No.	81		
	28			No.	78		
	35			No.	30		
	Copper to bronze adapter						
	15			No.	4		
	22			No.	5		
III	<b>External copper insulation</b>						
	<i>Supply and install Flexible Closed Cell Elastomeric Pipe Insulation. 20mm insulation, vapor barrier with aluminum foil cladding. Insulation should be as per ASTM C 518.</i>						
	<i>pipe size (mm)</i>						
	<b>Diameter in mm</b>						
	Dia. 22mm			ml	180		
	Dia. 28mm			ml	68		

## 6. Sabian Hospital

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
1	<b>MEDICAL GAS SYSTEMS FOR OR, NICU, ICU, PEDIATRIC, AND MEDICAL WARD BUILDINGS</b>						
1.1	<b>Automatic oxygen manifold system</b>			Set	1		
	Supply, installation, testing, and commission of Automatic oxygen cylinder manifolds.						
	The unit is supplied as a complete factory tested package.						
	The plant includes exhaust, relief valve, pressure switch, supply isolation valve, on-return valve and all accessories to make the system functional.						
	control type- fully automatic						
	CYLINDER CAPACITY- 2x10						
	The cylinder manifold should be as per as BS EN ISO 7396-1:2007+A2:2010 standard. ENISO 7386 and ENISO 7396-1, ISO 10083, European Pharmacopeia HTM 02-01						
1.2	<b>MEDICAL GAS TERMINAL UNITS</b>			No.	111		
	Supply, Installation, testing and commissioning of medical gas terminal unit.						
	The unit is supplied as a complete package, fully tested prior to shipping. The unit includes maintenance valve safety nut, check valve, flush box with base block sealing ring, O-ring, plug -in coupling, internal and external gas identification, release bushing and cover plate.						
	The plant must fulfill HTM 02 01 requirements.						
	oxygen terminals (wall mounted) (BS type)						
1.3	<b>AREA ALARM UNIT</b>			No.	4		
	Supply, Installation, testing and commissioning of medical gas area alarm module.						
	The unit is supplied as a complete package, fully tested prior to shipping. shall be used for all medical gases specified on the drawing.						
	The module must fulfill HTM 02 01 requirements.						
	1 GASES AREA ALARM UNITS						
1.4	<b>ZONE SERVICE UNITS</b>			No.	4		
	Supply, Installation, testing and commissioning of medical gas Zone service Valve unit with valves, pressure gauges and NIST connect fully comply to BS ES ISO 7396-1:2007+A2 2010						
	The unit is supplied as a complete package, fully tested prior to shipping. The unit equipped with stamped gas identification shut-off valve (100% leakage free.) The unit shall be used for all medical gases specified on the drawing.						
	Note service valve unit can also be integrated with area alarm in one control panel as per HTM 01 02						
	The module must fulfill HTM 02 01 requirements.						

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	1 GASES AREA valve box						
1.5	<b>OXYGEN FLOW METER W/HUMIDIFIER</b>			No.	18		
	Supply of medical oxygen gas flow meter with humidifier compatible with BS type wall terminal units						
	As per specification in the attachment, including regulatory & standards: bears CE marking under MDR, ISO 13485						
	0-3.5 L/min, accuracy 10%, single taper graduations 0.25 L/min						
	The module must fulfill HTM 02 01 requirements.						
1.6	<b>OXYGEN FLOW METER W/HUMIDIFIER</b>			No.	11		
	Supply of medical oxygen gas flow meter with humidifier compatible with BS type wall terminal units						
	As per specification in the attachment, including regulatory & standards: bears CE marking under MDR, ISO 13485						
	0-5 L/min, accuracy 10%, single taper graduations 0.5 L/min						
	The module must fulfill HTM 02 01 requirements.						
1.7	<b>OXYGEN FLOW METER W/HUMIDIFIER</b>			No.	89		
1.8	<b>Medical copper pipe</b>						
	Supply, installation, testing and commissioning of copper pipes for medical gases including fittings, valves, expansion, bellows, hangers, brackets, supports and all accessories, as per BS EN 13348:2008 Standard						
	should conform to ASTM B-280/B-819 specifications, is specially cleaned, de-burred, purged and pressurized with nitrogen gas, and features easy to remove, installer friendly, rubber plugs.						
	requires the use of Type K or L copper tube (see ASTM B 819).						
	Dia. 12mm			ml	432		
	Dia. 15mm			ml	102		
	Dia. 22mm			ml	162		
	Dia. 28mm			ml	36		
1.9	<b>LINE VALVES</b>						
	Supply, installation, testing and commissioning of copper pipes Ball valves as per the drawing						
	Ball Valve Set, with Coupling to copper pipe - 22mm			No.	6		
	Ball Valve Set, with Coupling to copper pipe - 28mm			No.	2		
1.1	<b>Support structure</b>			lps	1		

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	Supply and install all the necessary support structure for the medical gas system pile line and Equipment's as per the drawing and HTM standard The center distance of supports shall not exceed the following up to and including: - Up to 10mm outside diameter pipe - 1,00m 12 to 15mm outside diameter pipe - 1,25m 22mm outside diameter pipe - 1,80m 28mm outside diameter pipe - 2,5m 35 to 76mm - see project design drawings Note: Consideration should be given to additional supports near LVAs, elbows etc where the potential effects of inadvertently applied torque can result in severe pipeline distortion or fracture.						
1.11	<b>Copper fittings and accessories</b>			lps	1		
	Supply and install all the necessary accessories and fittings for proper installation of the medical pipeline in accordance to HTM standard please check the attached fitting and accessories for reference but not limited to.						
1.12	<b>Pipe trunking</b>			ml	610		
	Supply and install all the necessary Trunking for the medical gas system pile line and Equipment's as per the drawing and HTM standard width 100mmx50mm						
2	<b>MEDICAL GAS SYSTEMS FOR EMERGENCY</b>						
2.1	<b>Automatic oxygen manifold system</b>			Set	1		
	Supply, installation, testing and commission of Automatic oxygen cylinder manifolds.						
	The unit is supplied as a complete factory tested package.						
	The plant includes exhaust, relief valve, pressure switch, supply isolation valve, on-return valve and all accessories to make the system functional.						
	control type- fully automatic						
	CYLINDER CAPACITY: 2x5						
	The cylinder manifold should be as per as BS EN ISO 7396-1:2007+A2:2010 standard. EN ISO 7386 and EN ISO 7396-1, ISO 10083, European Pharmacopeia HTM 02-01						
2.2	<b>MEDICAL GAS TERMINAL UNITS</b>			No.	24		
	Supply, Installation, testing and commissioning of medical gas terminal unit.						
	The unit is supplied as a complete package, fully tested prior to shipping. The unit includes maintenance valve safety nut, check valve, flush box with base block sealing ring, O-ring, plug -in coupling, internal and external gas identification, release bushing and cover plate.						
	The plant must fulfill HTM 02 01 requirements.						
	oxygen terminals (wall mounted) (BS type)						
2.3	<b>AREA ALARM UNIT</b>			No.	1		

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	Supply, Installation, testing and commissioning of medical gas area alarm module.						
	The unit is supplied as a complete package, fully tested prior to shipping. shall be used for all medical gases specified on the drawing.						
	The module must fulfill HTM 02 01 requirements.						
	1 GASES AREA ALARM UNITS						
2.4	<b>ZONE SERVICE UNITS</b>			No.	1		
	Supply, Installation, testing and commissioning of medical gas Zone service Valve unit with valves, pressure gauges and NIST connect fully comply to BS ES ISO 7396-1:2007+A2 2010						
	The unit is supplied as a complete package, fully tested prior to shipping. The unit equipped with stamped gas identification shut-off valve (100% leakage free.) The unit shall be used for all medical gases specified on the drawing.						
	Note service valve unit can also be integrated with area alarm in one control panel as per HTM 01 02						
	The module must fulfill HTM 02 01 requirements.						
	1 GASES AREA valve box						
2.5	<b>OXYGEN FLOW METER W/HUMIDIFIER</b>			No.	24		
	Supply of medical oxygen gas flow meter with humidifier compatible with BS type wall terminal units						
	As per specification in the attachment, including regulatory & standards: bears CE marking under MDR, ISO 13485						
	0-15 L/inaccuracy 10%, dual taper graduations 0.5 L/min (0-5 L/min range) and 1 L/min (5 L/min – maximum range)						
	The module must fulfill HTM 2022 requirements.						
	FLOW METER						
2.6	<b>Medical copper pipe</b>						
	Supply, installation, testing, and commissioning of copper pipes for medical gases including fittings, valves, expansion, bellows, hangers, brackets, supports and all accessories, as per BS EN 13348:2008 Standard						
	should conform to ASTM B-280/B-819 specifications, is specially cleaned, de-burred, purged and pressurized with nitrogen gas, and features easy to remove, installer friendly, rubber plugs.						
	requires the use of Type K or L copper tube (see ASTM B 819).						
	Dia. 12mm			ml	102		
	Dia. 15mm			ml	56		
	Dia. 22mm			ml	48		
2.7	<b>LINE VALVES</b>						



S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	Supply, installation, testing, and commissioning of copper pipes Ball valves as per the drawing						
	Ball Valve Set, with Coupling to copper pipe - 15mm			No.	2		
	Ball Valve Set, with Coupling to copper pipe - 22mm			No.	2		
2.8	<b>Support structure</b>			lps	1		
	Supply and install all the necessary support structure for the medical gas system pile line and Equipment's as per the drawing and HTM standard						
	The center distance of supports shall not exceed the following up to and including: -						
	Up to 10mm outside diameter pipe - 1,00m						
	12 to 15mm outside diameter pipe - 1,25m						
	22mm outside diameter pipe - 1,80m						
	28mm outside diameter pipe - 2,5m						
	35 to 76mm - see project design drawings						
	Note: Consideration should be given to additional supports near LVAs, elbows etc where the potential effects of inadvertently applied torque can result in severe pipeline distortion or fracture.						
2.9	<b>Copper fittings and accessories</b>			lps	1		
	Supply and install all the necessary accessories and fittings for proper installation of the medical pipe line in accordance to HTM standard please check the attached fitting and accessories for reference but not limited to.						
2.1	<b>Pipe trunking</b>			ml	710		
	Supply and install all the necessary Trunking for the medical gas system pile line and Equipment's as per the drawing and HTM standard						
	width 100mmx50mm						
<b>FITTING AND ACCESSORIES LIST</b>							
I	<b>Installation accessories</b>						
	Brithing rod			Kg	10		
	Adapter to hose Outlets probes /Adaptors as per BS EN ISO9170-1:2008 standard.			No	32		
	spare Guage for manifold			No	2		
	spare Guage for alarm units,			No	4		
	Spare manifold hose 3/4 3/4			No.	10		
	Spare manifold hose 1/2 1/2			No.	10		
	flux powder			kg	0.5		
II	<b>Copper fitting</b>						

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	copper fitting from size 9mm to 35mm Elbow, Tee, Tee-reducer, socket, reducer						
	<b>Elbow Size (mm) outside diameter</b>						
	12			No.	54		
	15			No.	18		
	22			No.	30		
	28			No.	6		
	Tee						
	<b>Tee Size (mm) outside diameter</b>						
	12			No.	66		
	15			No.	6		
	22			No.	6		
	28			No.	6		
	<b>Tee with reducer</b>						
	Size (mm) outside diameter						
	15x12x15			No.	42		
	22x15x22			No.	12		
	22x12x22			No.	6		
	<b>Reducer</b>						
	Size (mm) outside diameter						
	12x9			No.	114		
	15x12			No.	30		
	22x15			No.	18		
	28x22			No.	6		
	<b>Socket</b>						
	Size (mm) outside diameter						
	12			No.	259		
	15			No.	61		
	22			No.	97		
	28			No.	22		
	<b>Copper to bronze adapter</b>						
	22			No.	10		
	28			No.	2		
III	<b>External copper insulation</b>						
	<i>Supply and install Flexible Closed Cell Elastomeric Pipe Insulation. 20mm insulation, vapor barrier with aluminum foil cladding.insulation should be as per ASTM C 518.</i>						
	<i>pipe size (mm)</i>						
	<b>Diameter in mm</b>						
	Dia. 22mm			ml	70		

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	Dia. 28mm			ml	25		

#### 7. Jagul Hospital

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
<b>1</b>	<b>MEDICAL GAS SYSTEMS FOR OR, NICU, ICU, PEDIATRIC, AND, MEDICAL WARD BUILDING</b>						
1.1	<b>Automatic oxygen manifold system</b>			Set	1		
	Supply, installation, testing and commissioning of Automatic oxygen cylinder manifolds.						
	The unit is supplied as a complete factory tested package.						
	The plant includes exhaust, relief valve, pressure switch, supply isolation valve, on-return valve and all accessories to make the system functional.						
	control type- fully automatic						
	CYLINDER CAPACITY- 2x10						
	The cylinder manifold should be as per as BS EN ISO 7396-1:2007+A2:2010 standard EN ISO 7386 and EN ISO 7396-1, ISO 10083, European Pharmacopeia HTM 02-01						
1.2	<b>MEDICAL GAS TERMINAL UNITS</b>			No.	74		
	Supply, Installation, testing and commissioning of medical gas terminal unit.						
	The unit is supplied as a complete package, fully tested prior to shipping. The unit includes maintenance valve safety nut, check valve, flush box with base block sealing, O-ring, plug -in coupling, internal and external gas identification, release bushing and cover plate.						
	The plant must fulfill HTM 02 01 requirements.						
	oxygen terminals (wall mounted) (BS type)						
1.3	<b>AREA ALARM UNIT</b>			No.	3		
	Supply, Installation, testing and commissioning of medical gas area alarm module.						
	The unit is supplied as a complete package, fully tested prior to shipping. shall be used for all medical gases specified on the drawing.						
	The module must fulfill HTM 02 01 requirements.						
	1 GASES AREA ALARM UNITS						
1.4	<b>ZONE SERVICE UNITS</b>			No.	3		

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	Supply, Installation, testing and commissioning of medical gas Zone service Valve unit with valves, pressure gauges and NIST connect fully comply to BS ES ISO 7396-1:2007+A2 2010						
	The unit is supplied as a complete package, fully tested prior to shipping. The unit equipped with stamped gas identification shut-off valve (100% leakage free.) The unit shall be used for all medical gases specified on the drawing.						
	Note service valve unit can also be integrated with area alarm in one control panel as per HTM 01 02						
	The module must fulfill HTM 02 01 requirements.						
	1 GASES AREA valve box						
1.5	<b>OXYGEN FLOW METER W/HUMIDIFIER</b>			No.	10		
	Supply of medical oxygen gas flow meter with humidifier compatible with BS type wall terminal units						
	As per specification in the attachment, including regulatory & standards: bears CE marking under MDR, ISO 13485						
	0-5 L/min, accuracy 10%, single taper graduations 0.5 L/min						
	The module must fulfill HTM 02 01 requirements.						
1.6	<b>OXYGEN FLOW METER W/HUMIDIFIER</b>			No.	64		
	Supply of medical oxygen gas flow meter with humidifier compatible with BS type wall terminal units						
	As per specification in the attachment, including regulatory & standards: bears CE marking under MDR, ISO 13485						
	0-15 L/min, accuracy 10%, dual taper graduations 0.5 L/min (0-5 L/min range) and 1 L/min (5 L/min – maximum range)						
	The module must fulfill HTM 2022 requirements.						
1.7	<b>Medical copper pipe</b>						
	Supply, installation, testing, and commissioning of copper pipes for medical gases including fittings, valves, expansion, bellows, hangers, brackets, supports and all accessories, as per BS EN 13348:2008 Standard						
	should conform to ASTM B-280/B-819 specifications, is specially cleaned, de-burred, purged and pressurized with nitrogen gas, and features easy to remove, installer friendly, rubber plugs.						
	requires the use of Type K or L copper tube (see ASTM B 819).						

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	Dia. 12mm			ml	348		
	Dia. 15mm			ml	60		
	Dia. 22mm			ml	114		
	Dia. 28mm			ml	30		
1.8	<b>LINE VALVES</b>						
	Supply, installation, testing and commissioning of copper pipes Ball valves as per the drawing						
	Ball Valve Set, with Coupling to copper pipe - 15mm			No.	5		
	Ball Valve Set, with Coupling to copper pipe - 22mm			No.	5		
	Ball Valve Set, with Coupling to copper pipe - 28mm			No.	2		
1.9	<b>Support structure</b>			lps	1		
	Supply and install all the necessary support structure for the medical gas system pile line and Equipment's as per the drawing and HTM standard The center distance of supports shall not exceed the following up to and including: - Up to 10mm outside diameter pipe - 1,00m 12 to 15mm outside diameter pipe - 1,25m 22mm outside diameter pipe - 1,80m 28mm outside diameter pipe - 2,5m 35 to 76mm - see project design drawings Note: Consideration should be given to additional supports near LVAs, elbows etc where the potential effects of inadvertently applied torque can result in severe pipeline distortion or fracture.						
1.1	<b>Copper fittings and accessories</b>			lps	1		
	Supply and install all the necessary accessories and fittings for proper installation of the medical pipe line in accordance to HTM standard please check the attached fitting and accessories for reference but not limited to.						
1.11	<b>Pipe trunking</b>			ml	460		
	Supply and install all the necessary Trunking for the medical gas system pile line and Equipment's as per the drawing and HTM standard width 100mmx50mm						
	<b>FITTING AND ACCESSORIES LIST</b>						
I	<b>Installation accessories</b>						
	Brazing rod			Kg	10		

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	Adapter to hose Outlets probes /Adaptors as per BS EN ISO9170-1:2008 standard.			No	10		
	spare Guage for manifold			No	2		
	spare Guage for alarm units,			No	3		
	Spare manifold hose 3/4 3/4			No.	10		
	Spare manifold hose 1/2 1/2			No.	10		
	flux powder			kg	0.5		
II	<b>Copper fitting</b>						
	copper fitting from size 9mm to 35mm Elbow, Tee, Tee-reducer, socket, reducer						
	Elbow Size (mm) outside diameter						
	12			No.	42		
	15			No.	24		
	22			No.	18		
	28			No.	6		
	Tee						
	tee Size (mm) outside diameter						
	12			No.	42		
	15			No.	6		
	22			No.	6		
	28			No.	6		
	Tee with reducer						
	Size (mm) outside diameter						
	15x12x15			No.	24		
	22x15x22			No.	6		
	22x12x22			No.	6		
	reducer						
	Size (mm) outside diameter						
	12x9			No.	96		
	15x12			No.	30		
	22x15			No.	18		
	28x22			No.	6		
	socket						
	Size (mm) outside diameter						
	12			No.	250		
	15			No.	60		
	22			No.	80		
	28			No.	25		

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	Copper to bronze adapter						
	22			No.	10		
	28			No.	2		
III	<b>External copper insulation</b>						
	<i>Supply and install Flexible Closed Cell Elastomeric Pipe Insulation. 20mm insulation, vapor barrier with aluminum foil cladding. Insulation should be as per ASTM C 518.</i>						
	<i>pipe size (mm)</i>						
	<b>Diameter in mm</b>						
	Dia. 22mm			ml	25		
	Dia. 28mm			ml	25		

## 8. Tepi Hospital

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
1	<b>MEDICAL GAS SYSTEMS FOR OR, NICU, SURGICAL WARD, MEDICAL WARD, AND PEDIATRIC BUILDINGS</b>						
1.1	<b>Automatic oxygen manifold system</b>			Set	1		
	Supply, installation, testing and commissioning of Automatic oxygen cylinder manifolds.						
	The unit is supplied as a complete factory tested package.						
	The plant includes exhaust, relief valve, pressure switch, supply isolation valve, on-return valve and all accessories to make the system functional.						
	control type- fully automatic						
	CYLINDER CAPACITY- 2x10						
	The cylinder manifold should be as per as BS EN ISO 7396-1:2007+A2:2010 standard ISO 7386 and EN ISO 7396-1, ISO 10083, European Pharmacopeia HTM 02-01						
1.2	<b>MEDICAL GAS TERMINAL UNITS</b>			No.	109		
	Supply, Installation, testing and commissioning of medical gas terminal unit.						
	The unit is supplied as a complete package, fully tested prior to shipping. The unit includes maintenance valve safety nut, check valve, flush box with base block sealing, O-ring, plug -in coupling, internal and external gas identification, release bushing and cover plate.						
	The plant must fulfill HTM 02 01 requirements.						
	oxygen terminals (wall mounted) (BS type)						
1.3	<b>AREA ALARM UNIT</b>			No.	5		
	Supply, Installation, testing and commissioning of medical gas area alarm module.						
	The unit is supplied as a complete package, fully tested prior to shipping. shall be used for all medical gases specified on the drawing.						
	The module must fulfill HTM 02 01 requirements.						
	1 GASES AREA ALARM UNITS						
1.4	<b>ZONE SERVICE UNITS</b>			No.	5		
	Supply, Installation, testing and commissioning of medical gas Zone service Valve unit with valves, pressure gauges and NIST connect fully comply to BS ES ISO 7396-1:2007+A2 2010						
	The unit is supplied as a complete package, fully tested prior to shipping. The unit equipped with stamped gas identification shut-off valve (100% leakage free.) The unit shall be used for all medical gases specified on the drawing.						
	Note service valve unit can also be integrated with area alarm in one control panel as per HTM 01 02						



S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	The module must fulfill HTM 02 01 requirements.						
	1 GASES AREA valve box						
1.5	<b>OXYGEN FLOW METER W/HUMIDIFIER</b>			No.	22		
	Supply of medical oxygen gas flow meter with humidifier compatible with BS type wall terminal units						
	As per specification in the attachment, including regulatory & standards: bears CE marking under MDR, ISO 13485						
	0-3.5 L/min, accuracy 10%, single taper graduations 0.25 L/min						
	The module must fulfill HTM 02 01 requirements.						
1.6	<b>OXYGEN FLOW METER W/HUMIDIFIER</b>			No.	20		
	Supply of medical oxygen gas flow meter with humidifier compatible with BS type wall terminal units						
	As per specification in the attachment, including regulatory & standards: bears CE marking under MDR, ISO 13485						
	0-5 L/min, accuracy 10%, single taper graduations 0.5 L/min						
	The module must fulfill HTM 02 01 requirements.						
1.7	<b>OXYGEN FLOW METER W/HUMIDIFIER</b>			No.	67		
	Supply of medical oxygen gas flow meter with humidifier compatible with BS type wall terminal units						
	As per specification in the attachment, including regulatory & standards: bears CE marking under MDR, ISO 13485						
	0-15 L/min, accuracy 10%, dual taper graduations 0.5 L/min (0–5 L/min range) and 1 L/min (5 L/min – maximum range)						
	The module must fulfill HTM 2022 requirements.						
1.8	<b>Medical copper pipe</b>						
	Supply, installation, testing and commissioning of copper pipes for medical gases including fittings, valves, expansion, bellows, hangers, brackets, supports and all accessories, as per BS EN 13348:2008 Standard						
	should conform to ASTM B-280/B-819 specifications, is specially cleaned, de-burred, purged and pressurized with nitrogen gas, and features easy to remove, installer friendly, rubber plugs.						
	requires the use of Type K or L copper tube (see ASTM B 819).						
	Dia. 12mm			ml	320		
	Dia. 15mm			ml	22		
	Dia. 22mm			ml	54		
	Dia. 28mm			ml	90		
	Dia. 35mm			ml	42		
1.9	<b>LINE VALVES</b>						

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	Supply, installation, testing and commissioning of copper pipes Ball valves as per the drawing						
	Ball Valve Set, with Coupling to copper pipe - 15mm			No.	2		
	Ball Valve Set, with Coupling to copper pipe - 22mm			No.	4		
	Ball Valve Set, with Coupling to copper pipe - 28mm			No.	4		
	Ball Valve Set, with Coupling to copper pipe - 35mm			No.	2		
1.1	<b>Support structure</b>			lps	1		
	Supply and install all the necessary support structure for the medical gas system pile line and Equipment's as per the drawing and HTM standard The center distance of supports shall not exceed the following up to and including: - Up to 10mm outside diameter pipe - 1,00m 12 to 15mm outside diameter pipe - 1,25m 22mm outside diameter pipe - 1,80m 28mm outside diameter pipe - 2,5m 35 to 76mm - see project design drawings Note: Consideration should be given to additional supports near LVAs, elbows etc where the potential effects of inadvertently applied torque can result in severe pipeline distortion or fracture						
1.11	<b>Copper fittings and accessories</b>			lps	1		
	Supply and install all the necessary accessories and fittings for proper installation of the medical pipeline in accordance to HTM standard please check the attached fitting and accessories for reference but not limited to.						
1.12	<b>Pipe trunking</b>			ml	500		
	Supply and install all the necessary Trunking for the medical gas system pile line and Equipment's as per the drawing and HTM standard width 100mmx50mm						
2	<b>MEDICAL GAS SYSTEM FOR ICU AND EMERGENCY BUILDINGS</b>						
2.1	<b>Automatic oxygen manifold system</b>			Set	1		
	Supply, installation, testing and commission of Automatic oxygen cylinder manifolds.						
	The unit is supplied as a complete factory tested package.						
	The plant includes exhaust, relief valve, pressure switch, supply isolation valve, on-return valve and all accessories to make the system functional.						
	control type- fully automatic						
	CYLINDER CAPACITY- 2x5						
	The cylinder manifold should be as per as BS EN ISO 7396-1:2007+A2:2010 standard. EN ISO 7386 and EN ISO 7396-1, ISO 10083, European Pharmacopeia HTM 02-01						

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
2.2	<b>MEDICAL GAS TERMINAL UNITS</b>			No.	28		
	Supply, Installation, testing and commissioning of medical gas terminal unit.						
	The unit is supplied as a complete package, fully tested prior to shipping. The unit includes maintenance valve safety nut, check valve, flush box with base block sealing, O-ring, plug -in coupling, internal and external gas identification, release bushing and cover plate.						
	The plant must fulfill HTM 02 01 requirements.						
	oxygen terminals (wall mounted) (BS type)						
2.3	<b>AREA ALARM UNIT</b>			No.	2		
	Supply, Installation, testing and commissioning of medical gas area alarm module.						
	The unit is supplied as a complete package, fully tested prior to shipping, shall be used for all medical gases specified on the drawing.						
	The module must fulfill HTM 02 01 requirements.						
	1 GASES AREA ALARM UNITS						
2.4	<b>ZONE SERVICE UNITS</b>			No.	2		
	Supply, Installation, testing and commissioning of medical gas Zone service Valve unit with valves, pressure gauges and NIST connect fully comply to BS ES ISO 7396-1:2007+A2 2010						
	The unit is supplied as a complete package, fully tested prior to shipping. The unit equipped with stamped gas identification shut-off valve (100% leakage free.) The unit shall be used for all medical gases specified on the drawing.						
	Note service valve unit can also be integrated with area alarm in one control panel as per HTM 01 02						
	The module must fulfill HTM 02 01 requirements.						
	1 GASES AREA valve box						
2.5	<b>OXYGEN FLOW METER W/HUMIDIFIER</b>			No.	28		
	Supply of medical oxygen gas flow meter with humidifier compatible with BS type wall terminal units						
	As per specification in the attachment, including regulatory & standards: bears CE marking under MDR, ISO 13485						
	0-15 L/min, accuracy 10%, dual taper graduations 0.5 L/min (0-5 L/min range) and 1 L/min (5 L/min – maximum range)						
	The module must fulfill HTM 2022 requirements.						
2.6	<b>Medical copper pipe</b>						
	Supply, installation, testing and commissioning of copper pipes for medical gases including fittings, valves, expansion, bellows, hangers, brackets, supports and all accessories, as per BS EN 13348:2008 Standard						

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	should conform to ASTM B-280/B-819 specifications, is specially cleaned, de-burred, purged and pressurized with nitrogen gas, and features easy to remove, installer friendly, rubber plugs.						
	requires the use of Type K or L copper tube (see ASTM B 819).						
	Dia. 12mm			ml	115		
	Dia. 15mm			ml	36		
	Dia. 22mm			ml	72		
2.7	<b>LINE VALVES</b>			No.	2		
	Supply, installation, testing and commissioning of copper pipes Ball valves as per the drawing						
	7/8" Ball Valve Set, with Coupling to copper pipe - 22mm						
2.8	<b>Support structure</b>			lps	1		
	Supply and install all the necessary support structure for the medical gas system pile line and Equipment's as per the drawing and HTM standard The center distance of supports shall not exceed the following up to and including: - Up to 10mm outside diameter pipe - 1,00m - 12 to 15mm outside diameter pipe - 1,25m - 22mm outside diameter pipe - 1,80m - 28mm outside diameter pipe - 2,5m - 35 to 76mm - see project design drawings Note: Consideration should be given to additional supports near LVAs, elbows etc where the potential effects of inadvertently applied torque can result in severe pipeline distortion or fracture.			lps	1		
2.9	<b>Copper fittings and accessories</b>			lps	1		
	Supply and install all the necessary accessories and fittings for proper installation of the medical pipeline in accordance to HTM standard please check the attached fitting and accessories for reference but not limited to.						
2.1	<b>Pipe trunking</b>			ml	175		
	Supply and install all the necessary Trunking for the medical gas system pile line and Equipment's as per the drawing and HTM standard width 100mmx50mm						
	<b>FITTING AND ACCESSORIES LIST</b>						
I	<b>Installation accessories</b>						
	Brazing rod			Kg	10		
	Adapter to hose Outlets probes /Adaptors as per BS EN ISO9170-1:2008 standard.			No	12		
	spare gauge for manifold			No	4		
	spare Gauge for alarm units,			No	7		

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	Spare manifold hose 3/4 3/4			No.	15		
	Spare manifold hose 1/2 1/2			No.	15		
	flux powder			kg	0.5		
II	<b>Copper fitting</b>						
	copper fitting from size 9mm to 35mm Elbow, Tee, Tee-reducer, socket, reducer						
	Elbow Size (mm) outside diameter						
	12			No.	45		
	15			No.	30		
	22			No.	30		
	28			No.	5		
	35			No.	5		
	Tee						
	tee Size (mm) outside diameter						
	12			No.	65		
	15			No.	15		
	22			No.	5		
	28			No.	5		
	35			No.	5		
	Tee with reducer						
	Size (mm) outside diameter						
	15x12x15			No.	35		
	22x15x22			No.	5		
	22x12x22			No.	5		
	reducer						
	Size (mm) outside diameter						
	12x9			No.	109		
	15x12			No.	20		
	22x15			No.	15		
	28x22			No.	5		
	35x28			No.	5		
	socket						
	Size (mm) outside diameter						
	12			No.	250		
	15			No.	105		
	22			No.	95		
	28			No.	65		
	35			No.	25		
	Copper to bronze adapter						

S.NO	ITEM DESCRIPTION	Model	Country of Origin	UNIT	Qty	Unit Price	Total
	15			No.	2		
	22			No.	10		
	28			No.	6		
	35			No.	2		
III	<b>External copper insulation</b>						
	<i>Supply and install Flexible Closed Cell Elastomeric Pipe Insulation. 20mm insulation , vapor barrier with aluminum foil cladding. insulation should be as per ASTM C 518.</i>						
	<i>pipe size (mm)</i>						
	<b>Diameter in mm</b>						
	Dia. 22mm			ml	50		
	Dia. 28mm			ml	30		
	Dia. 35mm			ml	30		

Please complete the following spares table. In addition to the below-listed items, all necessary items for the continued functionality of the proposed system shall be listed by the vendor as per the winner supplier's standard spare part list. Supplier is responsible for the availability of all required items in the local market after the warranty period for a minimum of 2 years with reasonable price as declared in the table below.

Table 26 -List of Spare parts and Accessories used during and after period<sup>7</sup>

List of required spare parts and accessories for Pipeline and Manifold system				
List of required Spare parts	Unit	Quantity	Unit Price (USD)	Remark

## FORM G: FORM OF BID SECURITY

**Bid Security must be issued using the official letterhead of the Issuing Bank.**  
**Except for indicated fields, no changes may be made on this template.**

<sup>7</sup> The winner bidder should secure company recommended list of spare part and accessories during the warranty period for free and after warranty period with fixed price in USD. This has to be attached with the Purchase Order

To: CHAI

*[Insert contact information as provided in Data Sheet]*

WHEREAS [Name and address of Bidder] (hereinafter called “the Bidder”) has submitted a Bid to CHAI dated [Click here to enter a date.](#) to execute goods and/or services [Insert Title of Goods and/or Services] (hereinafter called “the Bid”):

AND WHEREAS it has been stipulated by you that the Bidder shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security if the Bidder:

- a) Fails to sign the Contract after CHAI has awarded it;
- b) Withdraws its Bid after the date of the opening of the Bids;
- c) Fails to comply with CHAI’s variation of requirement, as per IFB instructions; or
- d) Fails to furnish Performance Security, insurances, or other documents that CHAI may require as a condition to rendering the contract effective.

AND WHEREAS we have agreed to give the Bidder such Bank Guarantee:

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Bidder, up to a total of *[amount of guarantee] [in words and numbers]*, such sum being payable in the types and proportions of currencies in which the Price Bid is payable, and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of *[amount of guarantee as aforesaid]* without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

This guarantee shall be valid up to 28 days after the final date of validity of bids.

#### **SIGNATURE AND SEAL OF THE GUARANTOR BANK**

Signature: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

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

Name of Bank \_\_\_\_\_

Address \_\_\_\_\_

*[Stamp with official stamp of the Bank]*