

REQUEST FOR PROPOSALS

For the installation, testing and commissioning of medical oxygen cylinder manifolds, medical oxygen piping, and medical oxygen terminals at University Teaching Hospital in Lusaka, Zambia.

TIMELINE OF IMPORTANT DATES

Publication of Request For Proposal Documents	Tuesday, November 2nd, 2021
Mandatory Site Visit	Tuesday, November 16th, 2021
Due date for Proposals	By 12:30PM Friday, December 3rd, 2021

PATH, on behalf of the Ministry of Health in Zambia, invites interested eligible organizations to submit proposals for the installation, testing and commission of manifolds, piping and terminal units for medical oxygen at University Teaching Hospital in Lusaka, Zambia.

IMPORTANT NOTE

Distribution of this document / RFP does not mean there is any commitment on the part of PATH to engage any bidder. PATH will not reimburse or otherwise bear any costs associated with these RFPs regardless of whether bidder is selected to implement the project. No fee is required in submission of these proposals. PATH reserves the right to purchase its requirements outside the contract if the items are urgently required and not immediately available or if the supplier fails to perform in terms of this contract.

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1.0 INTRODUCTION

“COVID-19 Respiratory Care Global Market Coordination” is a grant-aided project funded by the Bill & Melinda Gates Foundation. The goal is to support global efforts to reduce the COVID-19 burden and to develop long-term oxygen scale-up strategies.

Through this grant, PATH is implementing the “ACT [Access to COVID-19 Tools] Accelerator Emergency Oxygen Procurement for Zambia” grant funded by Unitaid. This grant is intended to support emergency procurement and installation of oxygen equipment and infrastructure in response to the COVID-19 pandemic. The goal is to reinforce the Zambian health care system to respond to future waves of COVID-19.

2.0 SCOPE OF WORK

This document serves as a request for proposals (RFP) for qualified vendors who are interested in bidding for the installation, testing, and commission of manifolds and medical gas piping for oxygen at University Teaching Hospital in Lusaka, Zambia (UTH) according to Health Technical Memorandum (HTM) 02-01 (Parts A and B) and International Organization for Standardization (ISO) 7396-1:2016.

The scope of work covers purchasing and delivery of equipment/commodities to UTH, setup of equipment, installation, configuration, commissioning, and training of end users on the use and basic maintenance of equipment/commodities.

The following criteria are to be considered for each ward identified:

- Installation of manifolds for 20 cylinders.
- Installation of oxygen terminal units.
- Installation of medical grade piping from manifolds to oxygen terminal units.
- Provision of indication of test pressures and flows.
- Supply of oxygen flow meters with humidifiers.
- Creation of design flows that align with manifolds and that are capable of addressing clinical needs.

- Construction of appropriate shelters to house the oxygen manifolds or renovation of already-existing areas.

Interested bidders shall conduct mandatory visits to the sites at the hospital where the manifolds and piping need to be installed to evaluate the needs and develop the Bill of Quantities (BOQ) before submitting an offer. **A bid without a documented and signed site visit, along with minutes from the visit itself, will not be considered.**

3.0 REQUEST FOR PROPOSALS (RFP) TIMELINE

Key RFPs dates and timelines are indicated in the table below. All times are in Central Africa Time (GMT + 2).

	Activity	Dates
1	Availability of RFPs	Tuesday, November 2 nd , 2021
2	Site visit ¹	Tuesday, November 16 th , 2021
3	Deadline for submitting questions	By 5:00PM Thursday, November 18 th , 2021
4	Deadline for submitting answers	Monday, November 22 nd , 2021
5	Deadline for receiving bids	By 12:30PM Friday, December 3 rd , 2021
6	Conclusion of evaluation of bids	By Friday, December 17 th , 2021
7	Negotiations and conclusion of contract	By Thursday, December 23 rd , 2021
8	Issuing of Contract Award Letter	By Tuesday, January 4 th , 2021
9	Delivery/start of installation at site(s)	By Monday, January 10 th , 2021

¹second visit date of Tuesday, November 23rd TBD.

4.0 SELECTION CRITERIA

4.1 Compliance criteria

The determination of compliance with the bid solicitation documents will be based on the content of the bid itself without any extenuating circumstances.

All compliant bids shall meet/provide the following:

- Submitted in the English language.
- Compliance with the technical requirements specified by the bid solicitation documents.
- A cover letter duly signed by an individual or individuals authorized to bind the bidder contractually (power of attorney).
- Bidder must be an established legal entity, registered in their respective countries.
- Proof of registration with all the necessary and relevant authorities within the country of registration (e.g., PACRA if it is a Zambian company).
- Plans to incorporate local intermediaries in the provision of services, if necessary.
- Letters of association with other services providers, if submitting as a joint venture or as a consortium.
- Evidence of corporate, regulatory, and tax compliance. (e.g., certificate of good standing from respective industrial regulators).
- Evidence of experience, technical capability, and resources in carrying out similar assignments including details of clients to which such goods and services were provided
 - Three traceable references should be provided
- Details of bidder's organizational structure.
- Compliance with the special and general conditions specified by the bid solicitation documents.
- Proof of after-sales service capacity and warranty.
- Delivery lead time estimates.

4.2 Bid evaluation format

A two-stage format will be utilized to evaluate eligible proposals:

- a) Technical needs to pass with a minimum score; and

b) The technical score will then be weighted with the financial bid.

Evaluation of technical proposals will be completed by the bid evaluators prior to opening of any price proposals. Only bidders that pass the technical stage will proceed to financial or commercial evaluation. The successful bidder shall be selected based on the best offer for technical specifications, delivery lead time, and price. PATH additionally reserves the right to negotiate the substance of the finalists' proposals. PATH may select more than one vendor for the award of contract.

The successful bidder will be selected in stage b) under an evaluation method such as the quality and cost-based selection method (QCBS).

Technical scores will be calculated according to the bidder's ability to meet a variety of parameters.

4.3 RFP related questions, clarifications and submissions

All questions related to these RFPs should be directed to zambiaprourement@path.org before the deadline set forth in the timeline.

4.4 RFP terms and conditions

The distribution of this document does not mean there is any commitment on the part of PATH to engage any bidder. PATH will not reimburse or otherwise bear any costs associated with these RFPs regardless of whether applicant is selected to implement the project. No fee is required in submission of these quotes.

PATH reserves the right to purchase its requirements outside the contract if the items are urgently required and not immediately available, or if the supplier fails to perform in terms of this contract.

4.5 Response format

4.5.1 Technical specifications

Bidders are requested to visit UTH and provide a Bill of Quantities (BOQ) in the format provided in **Part III** (under “4.5.9.2 Submission documentation”). Bidders are requested to respect the format provided while submitting their BOQ.

Please note that the BOQ template provided, together with this RFP, is for reference purposes only. Bidders are free to deviate after their review of the facilities and design. The end requirement is that the bidders should deliver a fully functional system and ensure that any existing infrastructure indirectly affected in the construction process is remedied to its original state.

Both local bidders and bidders that have local and regional representation shall be preferred in order to provide training, technical support, maintenance, and warranty service. The bidders shall have certified personnel for technical support.

Identified items in the BOQ shall include all supporting materials such as manuals, installation drivers and accessories for optimum performance as indicated below.

- Product name (short description)
- Manufacturer’s name
- Country of origin
- Product certifications from approved regulating body (any of certificate of conformity; current Good Manufacturing Practices Certificate; relevant ISOs standards)
- Product reference or model numbers
- Product adherence with provided PATH specifications.
- Product production batch size (if applicable)
- Product hazardous classification (if applicable)

- Recommended storage conditions such as temperature, pressure, humidity, etc. (if applicable)
- Complete technical specification, including technical data sheet, brochures, and catalogues.
- All equipment requiring a power supply shall be between 220V – 250V. With Standard British sockets and plugs (or, where not possible, with a provided adaptor).
- Confirmation of at least two preventive maintenance services before the end of 2-year warranty.
- Confirmation of a technical support through vendor's/agents local or regional offices.

4.5.2 Variation from Technical Specifications

Should the items offered not comply with the technical specifications indicated by PATH in **Part VII**, or wherever alternatives are offered, it is the bidder's responsibility to provide the full descriptive specification and documentation of such items. In such instances the item must be clearly marked as an alternate and not being in compliance with specifications.

4.5.3 Firms details and requirements

The vendor will be required to submit the following documentation for details.

- i. Corporate details as per template in **Part I**.
- ii. Certificate of incorporation.
- iii. Valid National Council for Construction Category B, Grade 3 to 5.
- iv. Valid certificate of tax clearance and proof of 2020 tax filing from Zambia Revenue Authority (for Zambian bidders).
- v. Confirmation of performance bank guarantee.
- vi. Bank bid security of 2 % of the total bid sum.
- vii. At least three references proving that the bidder has performed similar assignments in both public and private hospitals. Certificates of completion of these assignments are requested.

The rates quoted shall remain valid for a period of not less than 90 days after the deadline submission date of this tender.

4.5.4 Samples

PATH reserves the right to request to bidder to present the product packing and/or packaging samples for evaluation of the item prior to any award. Samples shall be subject to technical review and laboratory analysis where appropriate.

4.5.5 Delivery Information and Delivery lead time

Bidders shall indicate the guaranteed minimum lead time for delivery of each item offered. Delivery lead time is defined as from the time the vendor received PATH's purchase order/contract until the goods arrive and are fully installed and tested at the destination.

Bidders are requested to state reasonable lead times; PATH shall monitor and measure delivery performance in comparison with guaranteed minimum lead time indicated in this RFP timeline.

4.5.6 Site visit

Bidder shall be required to submit a confirmation of mandatory guided site visit. PATH will designate a project consultant and a local focal person to guide the bidders during the site visit, and these officials will be the ones to sign the confirmation. The confirmation shall also be stamped by a valid official stamp of the health facility. Bidders must also provide evidence of minutes from site visit.

Site visits will be held on November 16th, 2021 from 10:00AM to 12:00PM local time.

Please notify of your intention to visit in advance by sending an email to zambiaprocedurement@path.org. Upon receipt of this email, specific instructions for the visit will be provided.

4.5.7 After sales support and quality control

After sales service support and quality control for all installed components shall be provided by way of a Service Level Agreement (SLA) inclusive of costs of spare parts, service, and maintenance. Details to be included, but not limited to are as follows:

- i. SLA and quality control requirements.
- ii. itemization of spare parts with tallying based on total quantities required over term of contract.
- iii. Clearly indicated labor personnel and time-related costs.
- iv. Labour response time and other pertinent information.

Additionally, if the SLA is to be managed or provided by 3rd party, the bidder must describe the nature of the partnership and provides details for all partners involved.

4.5.8 Financial/Cost Specifications

Interested parties are asked to submit, under separate cover, a detailed financial proposal for the procurement of the needs in the BOQ; installation, testing, and commissioning costs; as well as training cost using the forms provided in **Part IV, Part V, and Part VI**, respectively.

Value for money will be a key criterion in selection and the final budget will be agreed to with the successful bidder.

The financial proposal is to be completed as per financial proposal templates found in Parts **IV, V, and VI**, and shall comprise of the following details with costs given in US dollars (USD):

- BOQ for proposed medical oxygen manifold and piped network, as per template in Part III
- Additional required equipment and materials for installation
- Labour costs (including installation, commissioning, and training)
- After-sales Service Level Agreement (SLA): Spares, itemized, costed per unit and total

We request that the BOQ, costs for installation, and labour costs be split by ward in the financial proposal templates.

4.5.9 Submission

4.5.9.1 Submission instructions

Interested bidders are required to submit the well-printed bids in the tender box at the following address no later than the deadline defined in the timetable shown in Section 3.0.

Stand# 11059, Mikwala House, Brentwood Drive, Long Acres,
 Post.Net Box 370 , Pvt. Bag E10
 Lusaka, Zambia,
 Tel: +260 211 378 950
 Web: www.path.org

The bidders must include the following in their submission

- Name of the company
- A statement with the following: Bid Submission for the “Installation, Testing, and Commissioning of Oxygen Manifolds, Piping, and Terminals at University Teaching Hospital”

Bids must be appropriately bound, sealed, and labeled. Electronic bidding will **not** be permitted.

Bids not complying with these instructions will be automatically rejected.

4.5.9.2 Submission documentation

Part I: Vendor Details

Registered Company Name	
Company Registration Number	
Local Address (headquarters) in Zambia	
Phone Number	
Contact name, and position	
Contact information: Phone Email	
Name of local agent formally registered in Zambia (if no headquarters in Zambia)	
Years in business	
Quality (attach copies of each certificate)	
Company registration (attach relevant registrations and licenses)	

References (attach references)	
Tax documents (attach tax clearance certificate and 2020 filing from Zambia Revenue Authority)	
Tax Identification Number (TPIN)	
Bank bid security of 2% of the total bid sum.	
Performance bank guarantee	

Part II: List of wards to install oxygen manifolds (one manifold per ward)

SN	WARD	Number of Terminals	Piping Requirements	LOCATION
1	E21	32	Piping to terminal units	UTH
2	E22	32	Piping to terminal units	UTH
3	Phase 5 Theatre	21	Piping to terminal units	UTH
4	Adult Emergency Ward	0	No piping to terminal units required (already existing)	UTH
5	Phase 3 Theatre	6	Piping to terminal units	UTH

Part III: Bill of quantities template

#	Item	Specification	Unit	Quantity	Total Cost (USD)

Part IV: Financial

#	Item	Unit	Quantity	Unit price (Including Taxes)	Total price (Including Taxes)
Total Cost (Including Taxes)					

Part V: Costing of installation, testing and commissioning

#	Facility	Projected Timeline (Start Date – End Date)	Total Cost in USD (Including Taxes)
Total Cost			

Part VI: Cost of training

#	Facility	Projected Timeline (Start Date – End Date)	Total Cost in USD (Including Taxes)
Total Cost			

Part VII: Technical specifications

TECHNICAL SPECIFICATIONS FOR THE INSTALLATION, TESTING AND COMMISSIONING OF PIPING AND TERMINAL UNITS FOR MEDICAL OXYGEN AT UNIVERSITY TEACHING HOSPITAL

A. Description of the project

PATH on behalf of the Ministry of Health in Zambia is pleased to invite interested and capable organizations to submit quotes for the installation, testing, and commissioning of oxygen cylinder manifolds, oxygen terminal units, and medical gas piping at UTH.

Participation in the competitive bidding is open on equal conditions to all interested parties with experience in medical gas piping

B. The purpose of project

The COVID-19 global pandemic has shown that access to medical oxygen across health care facilities is vital for the treatment of hypoxemic patients.

Zambia has slowed the speed and consequences of the pandemic on the general population, but gaps in access to respiratory care, and especially access to medical oxygen, were identified and deemed urgent and to be addressed as quickly as possible. The first step is to ensure that health care facilities can safely deliver medical oxygen to patients every time it is needed in the quantity required.

The main objective of this project is to install at UTH, medical oxygen manifolds, pipeline systems, oxygen terminal units, and oxygen delivery accessories that adhere to international standards.

Staff in the hospital should be trained to competently use and ensure regular operation of the installed medical gas pipeline system. The equipment should be correctly designed, continuously monitored, and adequately maintained to deliver the oxygen.

ISO 7396-1:2016, which specifies requirements for design, installation, function, performance, testing, commissioning, and documentation of pipeline systems used in health care facilities, shall be strictly adhered to.

C. Detailed Scope of work for project

The scope of project is to do the following in five wards at UTH:

- Supply, install, test, and commission medical oxygen automatic changeover cylinder manifolds.
- Supply, install, test, and commission area line valve alarms.
- Supply, install, test, and commission medical oxygen piping systems to terminal units in 4 wards and to an isolation point in 1 ward.
- Label medical gas pipeline systems.

Furthermore, the project will also include training of designated hospital-based personnel in the proper use and basic maintenance of the medical oxygen manifold, pipeline, and terminal units.

D. Contractor Responsibilities

The contractor shall be responsible for the supply, installation, testing and commissioning of oxygen automatic change over manifolds, medical oxygen piping, oxygen terminal units, area valve alarms, and labeling of medical oxygen systems at UTH.

The contractor shall be responsible for electrical installation necessary for oxygen systems and users training.

The contractor shall be responsible for free maintenance (preventive and corrective) of oxygen pipeline system and manifolds during warranty period.

E. Medical Oxygen Manifold and Oxygen Pipelines System

SN	Item Description	Specification/Comment
1	<p style="text-align: center;">Oxygen system</p> <ol style="list-style-type: none"> 1. The requested manifold shall comply with an international standard like CE or FDA and shall come with all required fixing support. 2. The manifold system must have automatic changeover from one bank to the other, while at the same time actuating the warning system. 3. The manifold system shall switch from the “bank in use” to the “reserve bank” without fluctuation in the final line pressure. 4. The input pressure for each bank line shall be tested to run on a maximum of 300 bars, displayed on the pressure gauge of each line. 5. Each bank shall have its own analog manometer/gauge to indicate the pressure and line pressure in the pipeline distribution system. 6. Manifold must have three pressure gauges at a minimum: one for each line and a working pressure gauge. 7. Working pressure of the manifold shall be four to eight bars as output in the distribution line. 	

	<ul style="list-style-type: none">8. Each pressure regulator shall be fitted with a safety valve. The manifold shall have safety relief valves.9. All pipes within the manifold must conform to the specified size.10. This manifold shall be equipped with all accessories for easy cylinder changing, including a chain to prevent them from falling.11. Pigtails for connecting the manifold to the cylinders shall be long and flexible enough to allow easy connection to the cylinders without having to strain.12. The pigtails shall be made of stainless steel with two outer reinforcing jackets of stainless-steel wire with appropriate connectors using British standards.13. Gauges that must be provided are, but are not limited to, the following:<ul style="list-style-type: none">1) One high-pressure gauge for each bank.2) One pressure gauge to indicate the low pressure on the distribution system.14. All pressure gauges shall have a maximum reading that is not below twice normal working pressure.15. The manifold shall be securely bolted to a channel iron frame or directly to the wall and shall not be enclosed.	
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	<p>16. Cylinder support racks with supporting steel frame for the cylinders shall be installed.</p> <p>17. All securing bolts shall be provided by the contractor, who shall mark out the position of holes in the floor for drilling by the building contractor. Any grouting in shall be done by the contractor, who shall also erect the steelwork.</p>	
<p>2</p>	<p style="text-align: center;">Oxygen manifold</p> <ol style="list-style-type: none"> 1. Oxygen manifold should be configured for 2 x 10 units (10 on each bank) of class J cylinders (British standard) and should be suitable to withstand a working pressure of 150 bars. 2. Left side shall be a 10-cylinder manifold bank and right side shall also be a 10-cylinder manifold bank complete with 20 flexible pigtail pipes and 20 non-return valves. 3. 300 bar certified, labeled, and tested high-pressure flexible pigtails made of stainless steel should be installed. 4. Pigtails shall indicate the direction flow with end brass adapters suitable for oxygen cylinders and manifold. 5. Manifold shall have analogue pressure control. It shall be supplied with three pressure gauges (one each for right bank, 	

	<p>left bank, and pipeline pressure). Line pressure shall be four to eight bar.</p> <p>6. Top frame shall be composed of high-pressure copper pipes with high-pressure brass fittings made of high-tensile brass and connections through non-return valves.</p> <p>7. The design of middle and bottom frames shall be provided to fit both round and flat bottom cylinders safely. The manifold must be tested (hydraulically) at 300 bars and necessary test certificates shall be provided.</p>	
3.	<p style="text-align: center;">Manifold Control Panel</p> <p>1. The manifold control panel shall be fully automatic and be able to switch from “Bank in Use” to “Reserve Bank” without fluctuation in delivery supply line pressure.</p> <p>2. The changeover system shall work pneumatically and without the need for external power.</p> <p>3. Each side of the manifold control system shall be capable of being fully isolated via a full flow ball valve in order to change any regulator without disruption of supply.</p>	
4.	<p style="text-align: center;">Main stop valve</p> <p>1. A main stop valve shall be fitted on the distribution before the service point is reached in order to allow the control panel to be isolated.</p>	

	<ol style="list-style-type: none"> 2. The valve shall be in an accessible position so that it can also serve as an emergency valve and be in the manifold room. 3. It need not be housed in a valve box. 4. A self-closing safety relief valve shall be fitted on the distribution pipe in between the control panel and the main stop valve. 5. Line valves shall be provided for use in the manifold rooms and will be used in the isolation of areas. 6. The valves shall be of a ball and valve type and the body shall be constructed of nickel-plated brass. 7. The valve shall be operated manually by manual lever, opened/closed by a 90° turn. 8. All medical oxygen line ball valves shall provide a full-bore flow and shall be cleaned for oxygen service and tested. 9. The valve assembly shall terminate in copper stub pipes. 10. A locking device shall be provided to lock the valve in a fully opened or fully closed position. 	
<p>5.</p>	<p style="text-align: center;">Area valve service unit</p> <ol style="list-style-type: none"> 1. Area valve service unit shall be constructed in metal with transparent plastic cover. 2. Area valve service unit should have analogue pressure gauges to indicate the pressure in line. It shall contain one area valve (Oxygen). 	

<p>6.</p>	<p>Non-return valve for the supply line.</p> <ol style="list-style-type: none"> 1. It shall be able to support a working pressure of 15 bars, and it shall be the component of the manifold. 	
<p>7.</p>	<p>Copper pipes</p> <ol style="list-style-type: none"> 1. Copper pipes shall be a degreased, solid drawn, seamless, deoxidized, non-arsenical, half-hard, and tempered type. 2. The pipe manufacturer's name shall be marked on each pipe and certified to be used for medical gases. 3. Pipes must come protected on both sides with a specific cover to prevent any contamination. 4. They must comply with an international standard like CE or FDA ones. 5. All the copper pipes shall be inspected by the client or their appointed agents before installation, and the pipes shall be delivered capped at both ends. 6. Medical oxygen copper pipe to be used shall be labeled by using color-coding: white for oxygen. 7. A specific sticker shall be affixed to the pipe showing the flow direction. 8. Each pipe shall be internally clean in such way to prevent gas contamination and potential explosions. 	

	<p>9. Copper piping shall be free of contaminants such as oil, grease, and other readily oxidizable materials.</p> <p>10. All fittings (elbows, connectors, tees, reducing tee, reducers) shall be made of degreased medical copper pipe.</p> <p>11. Copper pipe shall have certification of origin and manufacturer's name and certified to be used for medical gases (supported by documentation).</p>	
<p>8.</p>	<p style="text-align: center;">Pipe sizing</p> <p>1. Pipe shall have straight lengths not less than 6m. The size of pipes for branch lines and outline lines must be:</p> <ul style="list-style-type: none"> a. 22 mm of diameter and 0,9mm of thickness for main distribution. b. 15mm of diameter and 0,7mm of thickness for each block or wing. c. 12 mm of diameter and 0,7mm of thickness for connections to all outlet points for oxygen, medical air, and vacuum. <p>2. Copper pipe should be engraved with manufacturer's name.</p> <ul style="list-style-type: none"> a. 15mm OD x 0.7 mm thick b. 12mm OD x 0.7 mm thick c. 22mm OD x 0.9 mm thick <p>3. Copper pipes should comply with Degreased medical grade copper standard EN 13348:2016, BS 2871</p>	

<p>9</p>	<p style="text-align: center;">Oxygen outlets terminal</p> <p>1. It shall be British Standard, BS EN 13485 Medical Devices and have the following features:</p> <ul style="list-style-type: none"> • Push to insert and press-to-release mechanism for probes. • Allows plugging of probes from front. • Self-sealing valve on disengaging the probe (quick disconnect). • Non return valve for online servicing/repairing. • Color-coded gas specific front plate (oxygen white). • Totally leak proof, safe & easy to operate. • Body shall be of one-piece brass construction. • They should be positioned at 1.5m height from the floor. 	
<p>10</p>	<p style="text-align: center;">Oxygen flow meter with humidifier bottle</p> <p>1. Back pressure compensated flow meter shall be of accurate gas flow measurement with following features:</p> <ul style="list-style-type: none"> • Control within a range of 0–15 liters per minute and 0–60 liters per minute. • Meets strict precision and durability standards. 	

	<ul style="list-style-type: none"> • Supplied with a suitable connector probe to match with oxygen outlets (British standard). • Complies with British standard. • Flow meter body shall be made of chrome-plated brass materials. • Flow tube shall be made from impact-resistant polycarbonate. <p>2. Humidifier shall be reusable and made of clear plastic supplied with suitable bacteria filters.</p>	
<p>11</p>	<p>Area line pressure medical oxygen and alarm</p> <ol style="list-style-type: none"> 1. The area line pressure alarm shall be a microprocessor-based digital alarm that monitors the pressure of medical oxygen at a specific area of the piped gas system in the hospital. 2. The electronic circuitry shall be such that if the pressure in the gas pipeline drops below the set value, the equipment shall give an audiovisual alarm. 3. The visual alarm shall remain active even after pressing of “mute” button. It shall return to normal condition only when gas pressure returns to normal level. 4. Alarm shall have the following features: 	

	<ul style="list-style-type: none"> • Digital display of line pressure for all the gas, with factory-calibrated pressure sensors. • Audible alarm for high- and low-pressure conditions. • Test and alarm acknowledge (mute) facility. • Small and compact design. • Mounted on a powder-coated mild steel box. • Nut and nipples for connection with pneumatic supply line. • Low-voltage internal operation for safety with input power supply of 230V, 50 Hz AC. • Wall mounting facility. • High/low indication with test facility. 	
<p>12.</p>	<p style="text-align: center;">Installation and testing</p> <ol style="list-style-type: none"> 1. Installation of piping shall be carried out with utmost cleanliness. 2. Only pipes, fittings, and valves that have been degreased and brought in polythene sealed bags shall be used at the site. 3. Pipe-fixing clamps shall be of nonferrous or nondeteriorating plastic suitable for the diameter of the pipe. 4. Adequate supports shall be provided while laying pipelines to ensure pipes do not sag. 	

	<ol style="list-style-type: none"> 5. Spacing of supports shall not exceed 1.5 m for any size of pipe. 6. Suitable sleeves shall be provided wherever pipes cross through walls/slabs. 7. All pipe clamps shall be nonreactive to copper. 8. All leaks and joints revealed during testing should be rectified and retested till the pressure in pipes holds for at least 24 hours. 9. Installation, testing, and commissioning of medical gas pipelines should be carried out as per HTM 2022/HTM 0201 standards. 10. All piping systems should be tested in the presence of the PATH project consultant and client engineer or authorized representative. 	
<p>13.</p>	<p style="text-align: center;">Protection of piping</p> <ol style="list-style-type: none"> 1. Where pipes are to be hidden (i.e., buried in walls or structures), they shall run in conduits or other suitable hard protective piping or run-in metal channels built in and flush with the finished wall surface, with suitable covers painted to match the wall finish. 2. Where pipes are to be run in a location where they may be damaged by trolleys, stretchers, or similar mobile equipment, or where they may be interfered with by the public or other unauthorized persons, they 	

	<p>shall be protected by encasement in pipes or metal channels up to heights of 2 m.</p> <ol style="list-style-type: none"> 3. Piping in ducts, roof spaces, or above suspended ceilings shall be laid in admiralty type cable trays. 4. These cable trays must, wherever possible, be installed 150 mm clear of any other piping or conduits that run in the same roof space. 5. All pipes shall be concealed, built in, or surface mounted, depending on the engineer's recommendation. 6. Where the pipes pass through walls, ceilings, etc., they shall be sleeved and provided with wall plates (clamps), which shall be rust free and painted to match the general wall finish. <p>Note: The contractor will have to make good any damages that occur as a result of these works and factor such cost into the BOQ.</p>	
<p>14.</p>	<p style="text-align: center;">Fittings</p> <ol style="list-style-type: none"> 1. Medical oxygen pipeline fittings shall be an end feed type, manufactured from the same grade of copper as the pipes, and be in accordance with the requirements of BS EN 1254-1:1998. 2. Except for threaded joints used in shutoff valves, including terminal unit valves and 	

	<p>where there are plastics materials, all joints shall be hard-soldered or welded.</p> <ol style="list-style-type: none"> 3. Fittings should be factory degreased suitable for oxygen use and be supplied individually sealed in protective polythene bags. 4. Fittings shall be certified for medical use and be accompanied with oil analysis certificate and conformity certificate indicating suitability for medical use. 5. Copper fittings shall be made of copper and suitable for a steam working pressure of 17 bars and especially made for brazed socket type connections. All copper fittings shall conform to EN 1254-1, be factory degreased, certified, and individually packed and with indication for medical use. 6. Copper fittings shall be considered a part of the running length of pipe and counted as one lump sum. 7. Except for the mechanical joint used for components, all metallic pipeline joints shall be brazed or welded. 8. All copper pipes and fittings, like bends, tees, reducers, and straight couplings, shall be joined by fluxless silver brazing method for copper to copper. 9. Bends and tees must be of wrought copper capillary fittings with internal stops. 10. 	
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	<p>10. Copper pipes shall be installed on the wall with metallic white powder coated clamps.</p>	
<p>15</p>	<p>Work experience and other conditions for interested bidders</p> <p>1) Interested companies should have at least three years of working experience in the field of installation of medical gases in hospitals.</p> <p>2) Interested companies shall provide proof of user satisfaction for at least three similar works and the addresses of health facilities where they have installed medical gases systems.</p> <p>3) Interested companies shall have qualified a biomedical engineer(s) or biomedical engineering technologist with at least ten years of experience who is/are specialized in installation and testing of training of users in, and proper commissioning of a medical oxygen pipeline, with proof of documentary evidence as listed below.</p> <p>I. Copy of a bachelor’s degree in biomedical engineering or diploma in biomedical engineering with relevant experience.</p> <p>II. Strong CV in medical gas domain and registration with the Engineering Institute of Zambia or any other internationally recognized engineering body.</p> <p>III. International training certificate of medical gas installation offered by an international institution that is specialized in medical gas.</p>	

IV. The above qualified biomedical engineer or technologist agrees to supervise all activities on-site.

V. Provide a list of key staff to be involved in this project.

- Bidders shall provide the manufacturer’s authorization document for the distribution of medical gases materials.
- Bidders shall provide a signed and stamped proof of mandatory guided site visit.
- Bidders shall provide a separate quotation for procuring materials identified in the BOQ as mentioned in the request for proposals.
- The execution period shall be 60 days from the date of contract signature.
- Bidders shall provide a separate quotation for installation, commissioning, and testing as mentioned in the request for proposals.
- Bidders shall provide a separate quotation for training of operators in the use and basic maintenance of the medical gases pipeline network.
- Bidders shall provide warranty on all installation in respect to design, quality of material, performance, and operation and against any installation defects for a period of not less than two years from date of commissioning and provisional handing over.

	<ul style="list-style-type: none"> • Bidders shall agree to provide free after-sales service and free replacement of defective parts during the warranty period as stated in the service level agreement. • Catalogue and data sheet of the offered equipment from the manufacturer. Clear and legible brochures or download printout must accompany all items put in the BOQ. All brochures should include technical specifications, picture, and manufacturer’s contact details for cross-referencing. • Items offered must be clearly marked/highlighted in the relevant brochure. Bidders must state the page and, where applicable, the catalogue code, for ease of reference. Failure to mark the item in the brochure will result in disqualification for that product/item. • Bidders must give complete answers to the specification in the bidder’s response column provided and avail a soft copy of specification if needed. Wherever the bidder response needs technical explanation and comment, the bidder shall respond in writing with office seal/stamp and signature with date. • Bidders shall clearly state the specifications or needs for the items identified in the BOQ. The use of the following words or statements 	
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	<p>in answering the specifications will instantly disqualify you for further evaluation for that item:</p> <ul style="list-style-type: none"> i) Tick (√) ii) Yes iii) As per specifications iv) Complies v) Copy and paste of technical specifications of this document vi) Compliant vii) As specified viii) Better than specified ix) Leaving a blank space in the response column 	
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Abbreviations: BOQ, Bill of Quantities; BS, British Standards; CE, Conformité Européenne (European Conformity); EN, European Norm; FDA, Food and Drug Administration; HTM, Health Technical Memorandum OD, outside diameter.

Part VIII: Bid and Performance Bank guarantee template

Form of Bid Security (Bank Guarantee)

[If required, the Bank shall fill in this Bank Guarantee form in accordance with the instructions indicated in brackets.]

_____ *[Bank's Name and Address of Issuing Branch or Office]*

Beneficiary: _____ *[Name and Address of Procuring Entity]*

Date: _____

BID GUARANTEE No.: _____

We have been informed that *[name of the Bidder]* (hereinafter called "the Bidder") has submitted to you its bid dated (hereinafter called "the Bid") for the execution of *[name of tender]* under Invitation for Bids No. *[IFB number]* ("the IFB").

Furthermore, we understand that, according to your conditions, bids must be supported by a bid guarantee. At the request of the Bidder, we, *[name of Bank]*, hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of *[amount in figures]* (*[amount in words]*) upon receipt by us of your first demand in writing stating that the Bidder is in breach of its obligation(s) under the bid conditions, because the Bidder:

- (a) has withdrawn its Bid during the period of bid validity specified by the Bidder in the Form of Bid; or
- (b) having been notified of the acceptance of its Bid by the Procuring Entity during the period of bid validity,
 - (i) fails or refuses to sign the contract or
 - (ii) fails or refuses to furnish the performance security, in accordance with the Instructions to Bidders.
- (c) does not accept the arithmetic corrections made to the Bidder's Bill of Quantities and bill price list.

This guarantee will expire: (a) if the Bidder is the successful bidder, upon our receipt of copies of the contract signed by the Bidder and the performance security issued to you upon the instruction of the Bidder; or (b) if the Bidder is not the successful bidder, upon the earlier of (i) our receipt of a copy of your notification to the Bidder of the name of the successful bidder; or (ii) thirty days after the expiration of the Bidder's Bid.

Consequently, any demand for payment under this guarantee must be received by us at the office on or before that date.

Date:.....

Name of Authorized Representative personAddress:.....

Position:.....

Signature:..... Seal:.....

Performance Bank Guarantee
(Unconditional)

[The **bank** providing the Guarantee shall fill in this form in accordance with the instructions indicated in brackets, if the Procuring Entity requires this type of security.]
[Insert bank's name and the address of issuing branch or office]

Beneficiary: *[Insert name and address of Procuring Entity]*

Date: *[Insert date]*

PERFORMANCE GUARANTEE No.: *[insert Performance Guarantee number]*

We have been informed that *[insert name of Contractor]* (hereinafter called "the Contractor") has entered into Contract No. *[insert reference number of the Contract]* dated with you, for the execution of *[insert name of Contract and brief description of Works]* (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, a performance guarantee is required.

At the request of the Contractor, we, *[insert name of Bank]*, hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of *[insert amount in figures]* (*[insert amount in words]*),¹ such sum being payable in the types and proportions of currencies in which the Contract Price is payable, upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation(s) under the Contract, without your needing to prove or to show grounds for your demand or the sum specified therein. This guarantee shall expire no later than the . . . day/month/year . . . , and any demand for payment under it must be received by us at this office on or before that date. However, before that expiration date, if the planned contract execution period has been delayed or extended or its value increased, the contractor shall respectively extend the validity period of this performance security or increase its amount accordingly.

Date:.....

Name:.....Address:.....

Position:.....

Signature:..... Seal:.....

1 The Guarantor (bank) shall insert an amount representing the percentage of the Contract Price specified in the Contract and denominated either in the currency (ies) of the Contract or a freely convertible currency acceptable to the Procuring Entity.

5.0 NOTIFICATION OF AWARD AND AWARD OF CONTRACT

(a) Prior to the expiration of the Bid Validity Period, PATH will, by written notice, notify the successful bidder that their bid offer has been accepted by issuing a Notification of Award.

(b) The Notification of Award shall specify the terms and conditions on which the successful bidder is awarded the Contract.

(c) The successful Bidder shall:

(i) within 5 business days from the date of the Notification of Award, sign and return the acknowledgement of its agreement to the terms and conditions set out in the Notification of Award; and

(ii) within 5 days of the date of the Notification of Award obtain and procure, at its cost, the delivery of the Performance Bank Guarantee to PATH.

(d) Upon PATH's receipt of the signed acknowledgment and the Performance Bond:

(i) PATH will commence preparation of the finalized form of the Contract; and

(ii) the Notification of Award will, until such time as a finalized form of the Contract is executed, constitute the binding agreement between PATH and the successful bidder for the Works

The contract shall be governed by the laws and procedures established by the Government of Zambia within the framework of applicable legislation and enactment made concerning commercial dealings.