

DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

MINISTRY OF HEALTH

**SUPPLY AND INSTALLATION OF INVERTER TYPE AIR
CONDITIONERS**

TEACHING HOSPITAL – PERADENIYA

CONTRACT NO.

BIDDING DOCUMENT

Volume I

Section 01 – Instructions to Bidders

Section 02 – Standard Forms (Contract)

Section 03 – Conditions of Contract

Volume II – (For the use as “Original” document)

Invitation for Bid

Section 04 – Form of Bid and Qualification Information

Section 05 – Bidding Data and Contract Data

Section 06 – Specifications

Section 07 – Bill of Quantities

Section 09 – Standard Forms (Bid)

Volume III – (For the use as “Copy” of document)

Invitation for Bid

Section 04 – Form of Bid and Qualification Information

Section 07 – Bill of Quantities

ENGINEER

CENTRAL ENGINEERING CONSULTANCY BUREAU

NO.415,

BAUDDHALOKA MAWATHA,

COLOMBO 07.

EMPLOYEE

DIRECTOR,

TEACHING HOSPITAL

PERADENIYA.

FEB 2025

CONTENTS

	Page
INVITATION FOR BIDS	1
Section 4 - FORM OF BID AND QUALIFICATION INFORMATION	4
Form of Bid	5
Qualification Information	6
Section 5 - BIDDING DATA AND CONTRACT DATA	8
Bidding Data	9
Contract Data	13
Section 6 - SPECIFICATIONS	16
Section 7 - BILL OF QUANTITIES	28
Preambles to Bill of Quantities	29
Bill of Quantities	31
Technical Schedule – Mechanical	33
Maintenance Agreement	35
Section 9 - STANDARD FORMS (BID)	36
Form of Bid Security	37
Check List	38

INVITATION FOR BIDS

INVITATION FOR BIDS (IFB)
MINISTRY OF HEALTH

SUPPLY AND INSTALLATION OF INVERTER TYPE AIR CONDITIONERS

TEACHING HOSPITAL – PERADENIYA

CONTRACT NO.

1. The Director, Teaching Hospital, Peradeniya, on behalf of the Ministry of Health, “Suwasiripaya”, 385, Rev Baddegama Wimalawansa Thero Mawatha, Colombo 10, invites sealed bids from eligible and qualified bidders for the “**Supply and Installation of Inverter type Air Conditioners – Teaching Hospital, Peradeniya**”, Contract No: as described in document and estimated to basic cost of approximately Rs. **13 Million (Excluding VAT)**. **Construction period is 91 Days.**

The Site is Located at the premises of Teaching Hospital, Peradeniya. Under this contract, Supply and Installation of Inverter type Air Conditioners with necessary ancillary works should be done. For more information, please refer Specifications and Bill of Quantities. Bidders are advised to visit the site prior to price the bid. Work should be carried out without disturbing the day to day activities of the hospital.

2. Bidding will be conducted through **National Competitive Bidding Procedure.**
3. To be eligible for contract award, the successful bidder shall not have been blacklisted and shall meet the following requirements.
 - Grade – EM 03 or above
 - Specialty – Mechanical Ventilation and Air Conditioning (MVAC)
4. Qualification requirements to qualify for contract award include be eligible for contract award.
 - Average annual volume of construction work performed in the last five years shall be at least **Rs. 20 M.**
 - Experience in the construction of at least one contract of a similar nature and to a value of not less than **Rs.10 Million** to the Works over 10 years. **Attach as an annex.**
 - The minimum amount of liquid assets and/or credit facilities as exclusive of any advance payments which may be not less than **Rs. 13 M.** Credit facility should be addressed to Director, Teaching Hospital, Peradeniya and should be exclusive of this particular project.

Managerial / Technical

Engineer Assistant (Mechanical) (Full time) – NDT, NDES, HNDE (Mechanical) Engineering or equivalent qualification with minimum 5 years’ Experience.

5. Interested bidders may obtain further information from Director, Teaching Hospital, and Peradeniya Tel. No. 081-2388001 and can inspect the Bidding Document at the address given below from **09.00 hrs to 15.00 hrs.**
6. A complete set of Bidding Documents in English language may be purchased by interested bidders on the submission of a written application to the **Director, Teaching Hospital, Peradeniya**, from **14/02/2025** until **07/03/2025** from **09.00 hrs to 15.00 hrs.** Upon payment of a non-refundable fee of **Rs. 4,000.00** to the **Shroff, Teaching Hospital, Peradeniya.** The method of payment will be cash only.

7. Bids shall be delivered to the address below, on or before **07/03/2025 at 14.00 hrs** late bids will be rejected. Bids will be opened soon after closing in the presence of the Bidders or Bidder's representatives who choose to attend.
8. Bid shall be valid up to 91 days from Bid closing dateto (date) or any extended period requested by client.
9. All bids shall be accompanied by a "Bid security" of **Rupees Two Hundred Thousand Only (Rs. 200,000.00)**. Bid Security shall be valid up to 119 days from Bid closing date to(date)

The address referred to above is,

**Director,
Teaching Hospital,
Peradeniya.
Tel. No. 081-2388001**

Section - 4

**FORM OF BID AND QUALIFICATION
INFORMATION**

FORM OF BID

SUPPLY AND INSTALLATION OF INVERTOR TYPE AIR CONDITIONERS

TEACHING HOSPITAL, PERADENIYA

CONTRACT NO.

To: Director,
Teaching Hospital,
Peradeniya.

Gentleman,

1. Having examined the Standard Bidding Document - Procurement of Works (ICTAD/SBD/01-Second edition, January 2007 and Addendum 01 issued in October 2009 & Addendum 02 issued in February 2011) , Schedule for Conditions of Contract, Specifications, Drawings and Bill of Quantities and Addenda for the execution of the above-named Works, we the undersigned, offer to execute and complete such Works and remedy any defect therein in conformity with the aforesaid Conditions of Contract, Specifications, Drawings, Bill of Quantities and Addenda for the sum of Sri Lankan Rupees
(LKR Rs.) or such other sums as may be ascertained in accordance with the said Conditions.
2. We acknowledge that the Contract Data forms part of our Bid.
3. We undertake, if our Bid is accepted, to commence the Works as stipulated in the Contract Data, and to complete the whole of the Works comprised in the Contract within the time stated in the Contract Data.
4. We agree to abide by this Bid for the period of 91 days from the date fixed for receiving or any extended period and it shall remain binding upon us and may be accepted at any time before the expiration of that period.
5. Unless and until a formal Agreement is prepared and executed this Bid, together with your written acceptance thereof, shall constitute a binding contract between us.
6. We understand that you are not bound to accept the lowest of any Bid you may receive.

Dated this..... Day of 2025 in the capacity of..... Duly authorized to sign bids for and on behalf of

.....
(IN BLOCK CAPITAL)

Signature :
Address :
.....
Witness :
.....

QUALIFICATION INFORMATION*(To be completed and submitted by the Bidder with the Bid)*

ICTAD Registration	
Registration number	<i>(Attach copies of relevant pages from the registration book) (if available)</i>
Grade	EM 3 or above
Specialty	Mechanical Ventilation and Air Conditioning (MVAC)
Expiry Date	
Blacklisted Contractors	
Have you been declared as a defaulted contractor by NPA or any other agency? (Yes/No)	
If yes provide details	
VAT Registration Number	
Legal status	<i>(Attach relevant status copies, as annex)</i>
Value of Construction works Performed in last 10 years	<i>(Attach certified copies of certificate of completion, etc. and other documents such as profit-loss and income expenditure statement)</i>
Year 2020	
Year 2019	
Year 20....	
Year 20.....	
Year 20.....	
Value of similar works completed in last 10 years (indicate only the three largest projects)	1. Value Rs..... Year 2. Value Rs..... Year 3. Value Rs..... Year (Attach certified copies of Letter of award & certificate of completion)
Credit Facility	

Qualification and experience of Key staff - Site & Head Office (Permanent, Contract Basis & Consultants)	Category, Experience and Qualifications	Required Nos.	Proposed by bidder (Name, experience and Qualifications)
	1.Engineer Assistant (Mechanical) (Full time) – NDT, NDES, HNDE (Mechanical) Engineering or equivalent qualification with minimum 5 years Experience.	01	(Attach certified copies of key staff attached to the project)

Section - 5

BIDDING DATA AND CONTRACT DATA

G. BIDDING DATA**Instructions to Bidders**

Clause Reference (1.1) The Employer is
Name & Address: **Director,
Teaching Hospital, Peradeniya.**

This work consist of Supply and Installation of Invertor type Air Conditioners at Teaching Hospital, Peradeniya.

a. For more information, Please refer the Bill of Quantities.

(1.2) Intended Completion Date is **91** Days from the Start Date.

(1.3) The office for collection of bid form is

Teaching Hospital, Peradeniya.

The non-refundable Bid fee is **Rupees 4,000.00**

The Bid forms will be issued **until**

(2.1) The source of funds is **Government of Sri Lanka**

(4.3) The Following information shall be provided in Section 4 for the bidder (if available)

- * CIDA Registration
Registration number:
Grade
Specialty
Expiry Date
- * VAT Registration number
- * Construction program
- * Legal status (Sole proprietor, partnership, company etc.)
- * Total monetary value of construction work performed for each of the last five years;
- * Experience in works of a similar nature and size for each of last five years;
- * Major items of construction equipment proposed to carryout the contract; (if specified equipment be needed)
- * Qualifications and experience of key site management and technical personnel proposed for the contract
- * A valid certificate issued by the Registrar of Public Contract in accordance with Section 8 of Public Contract Act No 03 of 1987 (PCA 3).
- * Any other

(4.4) Post qualification criteria:
The following minimum qualification criteria shall be met by the bidder to qualify for the award of contract.

- Average annual volume of construction work performed in the last five years shall be at least **Rs. 20 M.**
- Experience in the construction of at least one contract of a similar nature and to a value of not less than **Rs.10 Million** to the Works over 10 years. **Attach as an annex.**
- The minimum amount of liquid assets and/or credit facilities as exclusive of any advance payments which may be not less than **Rs. 13 M.** Credit facility should be addressed to Director, Teaching Hospital, Peradeniya and should be exclusive of this particular project.
- Minimum persons with qualifications and experience

Managerial / Technical

1. Engineer Assistant (Mechanical) (Full time) – NDT, NDES, HNDE (Mechanical) Engineering or equivalent qualification with minimum 5 years Experience.

(8.1)

Content of Bidding Document

Content of the bidding document changed as follows to fulfill bidders requirement in submission of Bid.

The Bidding document consists of three volumes (Volume 1, Volume 2 & Volume 3) and comprise the documents listed below.

Volume I

- Section 1 – Instruction to Bidders
- Section 2 - Standard Forms (Contract)
- Section 3 - Condition of Contract

Volume II

- Invitation for Bids
- Section 4 - Form of Bid and Qualification Information
- Section 5 - Bidding Data and Contract Data
- Section 6 - Specifications
- Section 7 - Bills of Quantities and Technical Schedules
- Section 9 - Standard Forms (Bid)

Volume III

- Invitation for Bids
- Section 4 - Form of Bid and Qualification Information
- Section 7 - Bills of Quantities and Technical Schedules

(9.1)

Employer's address for the purpose of clarification is;

Name : Director
Address : Teaching Hospital, Peradeniya.

Tel/Fax : 081-2388001

(11.1)

The language of the bidding document shall be English.

(12.1)

The Bid submitted by the bidder shall comprise the following:

- (A) enclosed in the envelope marked as "ORIGINAL";
 - (a) Volume II
 - (b) Bid security or Bid-Securing Declaration as specified

(B) enclosed in the envelop marked as “COPY”

(a) Volume III

(13.3) Only VAT will be paid.

VAT component shall not be included in the rates. The amount written in the Form of Bid shall be without VAT. However, VAT component shall be shown separately at the end of the BOQ.

(13.4) The Contract is subjected to price adjustment in accordance with Clause 47 of the Conditions of Contract.

(15.1) The Bid shall be valid up to 91 Days from closing date of Bid.

(16.1) Bid shall include a Bid Security using the form included in Section 9.

(16.2) Bid Security shall be;

- For an amount **Rs. 200,000.00.**
- Valid until 119 days from closing date of Bid.

Securities and guarantees issued by an agency acceptable to employer using the forms for bid security (unconditional guarantee) included in section 09 standard forms in favor of Director, Teaching Hospital, Peradeniya. The agencies acceptable to the Employer are :

- Commercial Bank operated in Sri Lanka approved by the Central Bank of Sri Lanka.
- Constructions Guarantee Fund

Alternatively, the Bidder can pay cash to Shroff of **Teaching Hospital, Peradeniya.**

No interests will be paid on cash deposits.

(17.0) Pre Bid meeting will be held at **Director office, Teaching Hospital, Peradeniya at 10.30 hrs on 21/02/2025.**

(19.2) a The Employer’s address for the purpose of Bid submission is:

Teaching Hospital, Peradeniya.

(19.2) b Contract Name: **Supply and Installation of Inverter type Air Conditioners – Teaching Hospital, Peradeniya**

Contract No. :

(20.1) The deadline for submission of Bids shall be **14.00 hrs on 17/03/2025.**

(34.0) The amount of **Performance security is 5% of the Initial Contract Price.**

The form acceptable is sample format which is in volume I – Section 2, Standard Forms.

Securities and Guarantees issued by an agency acceptable to employer using the forms for Performance Bond (Unconditional Guarantee) included in Volume I-Section 2, standard forms. The agencies acceptable to the Employer are

- Commercial Bank operated in Sri Lanka approved by the Central Bank of Sri Lanka.
- Constructions Guarantee Fund

Alternatively, the Bidder can pay cash to shroff of the **Teaching Hospital, Peradeniya.**

No interest will be paid on cash deposits.

(35.1) The advance payment security is 20% of the initial Contract price excluding provisional sum.

Securities and Guarantees issued by an agency acceptable to employer using the forms for Advance Payment Bond (Unconditional Guarantee) included in volume I – Section 2, Standard Forms. The agencies acceptable to the Employer are

- Commercial Bank operated in Sri Lanka approved by the Central Bank of Sri Lanka.
- Constructions Guarantee Fund

(36.0) IESL is the authorized agent for appointing an adjudicator.

CONTRACT DATA

(Please note that the Clause nos. given hereunder is that of Conditions of Contract)

(1.1) The Employer is

Name : Director
Teaching Hospital, Peradeniya.

Address : **Teaching Hospital, Peradeniya.**

(1.1) The Engineer is

Name : **The General Manager**

Address : **Central Engineering Consultancy Bureau
: No.415, Bauddhaloka Mawatha,
: Colombo 07.**

Name of Engineer's Representative: **Additional General Manager
(Special Project-1)**

(1.1) The Works mainly consists of

Works mainly consists of Supply and Installation of Invertor type Air Conditioners for Teaching Hospital, Peradeniya.

a. For more information, Please refer the Bill of Quantities.

(1.1) Site is located at **Teaching Hospital, Peradeniya.**

The Start Date shall be **fourteen (14) Days** from the Letter of Acceptance.

(8.1) Schedule of other contractors : None

(9.1) Schedule of Key Personnel:

Minimum persons with qualifications and experience to be defined,
Managerial / Technical

1. Engineer Assistant (Mechanical) (Full time) – NDT, NDES, HNDE (Mechanical) Engineering or equivalent qualification with minimum 5 years Experience.

- (13.1) The minimum insurance cover shall be:
- (a) The minimum cover for insurance of the Works and of Plant and Material is **110% of the Initial Contract price.**
- The maximum deductible for insurance of Works and of Plant and Material is **5% of initial Contract price.**
- (b)
- The minimum cover for loss or damage to Equipment is “**Cost of equipment**”
 - The maximum deductible for insurance of Equipment is **5% of the minimum cover for equipments**
- (c) The minimum cover for personal injury or death:
- For third party and employees of the Employer and other persons engaged by the Employer in the Works is **Rupees Five Hundred Thousand** per event. Number of events unlimited.
- (d) The minimum cover for insurance of other property (other than the site):
- Five Hundred Thousand
- (13.2) (a) The minimum cover for personnel injury or death,
- For the Contractor’s workmen is Rs. **500,000.00** per event. Number of events unlimited.
 - Contractor’s employee’s other than workmen is Rs. **500,000.00** per event. Number of events unlimited.
- (17.1) The Intended Completion Date for the whole of Works shall be **91 Days from the Start Date.**
- (21.1) The Site Possession Date shall be **Fourteen (14) Days** from Letter of Acceptance.
- (27) The Contractor shall submit a realistic Construction Programme made out from MS Project software for the Works within **Seven Days** of delivery of the Letter of Acceptance. Critical path/paths must be clearly shown in the programme. Soft copy must be submitted to the Engineer at the time of submission of hard copy of construction programme.
- The period between Programme update is **30 Days**. But Contractor shall submit a revised programme whenever the previous programme is inconsistent with actual progress.
- The amount to be withheld for late submission of an updated Programme is **2% of the Initial Contract Price.**
- (35.1) The Defects Liability Period is **365 Days.**

(39.2) Engineer may order variations up to a total cumulative bill value including variation not exceeding 110% of initial contract sum

(40.2) In fixing the appropriate new rates, mark up for overheads & profits shall be limited to maximum of 16% of the “Basic Cost” of such items. The Basic cost means cost of materials, labour and equipments.

In fixing such “Basic cost” the Engineer shall use the rates for labour as given below and prices for materials and equipments shall be used the prevailing market prices.”

Category	Rate (Rs)
Skill Labour	3,250.00
Labour	2,500.00

(47.1) Price adjustments not applicable.

(48.1) The retention from each payment shall be **Ten percent** of the certified work done. The limit of retention shall be **Five percent** of the Initial Contract Price.

(48.3) Not applicable.

(49.1) The liquidated damages for the whole of the Works shall be **0.05% of the Initial Contract Price per Day**.

The maximum amount of liquidated damages for the whole of the Works shall be **Ten percent** of the Initial Contract Price.

(52.1) Performance Security shall be provided to the Employer no later than the date specified in the letter of Acceptance and shall be issued to an amount to Five percent of the Initial Contract Price in the form of an unconditional guarantee acceptable to The Employer. The Performance Security shall be valid unit a date 28 Days beyond The issuance of final certificate under sub clause 55.

A Performance Security equivalent to the remaining value of the total maintenance cost shall be maintained by the Contactor during the full maintenance period.

(55.2) Contractor shall enter in to the maintenance agreement with the Employer as per the Contract before the expiring of Defect Liability Period and failure shall be considered of a breach of contract.

(58.1) Schedule of Operating and Maintenance Manuals. – As built drawings and operation manuals shall be submitted within 14 days after completion of each activity

(60.1) The percentage to apply to the value of the work not completed, representing the Employer’s additional cost for completing the Works, is **Twenty Five percent** of Balance work according to the Initial Contract Price.

(63.7) The attendance fee payable to the contractor on nominated/specialized sub contract work shall not exceed 8%

SECTION 6

SPECIFICATIONS

SPECIFICATIONS FOR AIR CONDITIONING SYSTEM

PART 1 - GENERAL TECHNICAL SPECIFICATION

1.0 INTRODUCTION

This section consists of the general rules that apply to the design, manufacture, shop testing, delivery to site, erection, factory testing, site testing, commissioning, maintaining and handing over the material, equipment, plants and services required for Supply and Installation of Invertor type Air Conditioners, Teaching Hospital, Peradeniya.

1.1 APPLICABLE PUBLICATIONS & STANDARDS

Standards and Publications of the following organizations form part of these Specifications to the extent indicated by the references thereto unless superseded by Part-II Detailed Technical Specifications.

BS	-	British Standards
ASHRAE	-	American Society of Heating Refrigeration and Air Conditioning Engineers
ASTM	-	American Society for Testing Materials
NFPA	-	National Fire Protection Association
ANSI	-	American National Standards Institute
SMACNA	-	Sheet Metal and Air Conditioning Contractor's National Association
ARI	-	Air Conditioning and Refrigeration Institute
AMCA	-	Air Moving and Conditioning Association
ASME	-	American Society of Mechanical Engineers
DIN	-	Deutches Institute for Normung
UL	-	Underwriters Laboratories
AFI	-	Air Filters Institute
IEC	-	International Electro-Technical Commission

1.2 CO-ORDINATION

The Contractor shall co-ordinate the air conditioning installation with installation work of all trades involved in the project to avoid interference with lighting fixtures, piping, ducts, etc.

1.3 FIRE RETARDMENT

Material and equipment for fire retardment, shall be installed in accordance with NFPA standard No. 90A, and No. 204.5 or as specified otherwise hereinafter.

1.4 SUBMISSION FOR APPROVAL

The Contractor shall submit the following for the Engineer's approval

- Selection Data/Equipment Data
- Samples of Materials, Component and Fixtures.
- Shop drawings
- Assembly, Erection and Installation Drawings and Manuals
- Schematic & Interconnection Diagrams
- Certificate of Compliance/Test Reports
- Operation and Maintenance Manuals
- Electrical power supply requirement

Selection data shall be submitted and shall consist of engineering selection tables provided by the manufacturer. The Contractor shall indicate in these, the items selected and their designation for cooling equipment. It shall be made quite clear as to which factors have been taken into account by the manufacturer to correct the listed gross capacity into the net capacity required, due to extreme outside temperature, altitude, enthalpy of entering and leaving air, fan required, fan static pressure, fan RPM, fan motor and temperature differential between supply air entering and return air leaving the room.

1.5 POWER FACTOR IMPROVEMENT

Each motor of rating 5 KW and above shall be fitted in parallel with a power-factor improvement capacitor of optimum rating conforming to motor manufacturer's recommendations to avoid self-excitation and its harmful effects.

Capacitors shall be manufactured to IEC 70 and 70A and shall comprise an oil impregnated, self-healing metalized film dielectric, enclosed in an air-cooled, vacuum sealed metal case. Losses shall be less than 0.5 watts per KVA. Capacitors shall incorporate a disconnection system which will disconnect the capacitor internally from the terminal in the event the self-healing capacity is unable to clear a breakdown.

1.6 VIBRATION & NOISE

Vibration and noise control of equipment installed is a prime importance. The Contractor shall pay special attention to the problem of vibration and noise and is required to guarantee that the installation will not generate vibration or noise of the intensity to exceed the specified limits or cause annoyance to the occupants in the area.

1.7 SCOPE OF WORK

The scope of work described herein shall be applicable to the works of Supply and Installation of Inverter type Air Conditioners, Teaching Hospital, Peradeniya.

- a. Supply and installation of 06 no of new wall mounted Inverter type 9000 Btu/hr Splits unit.

- b. Supply and installation of 04 no of new wall mounted Inverter type 12,000 Btu/hr Splits unit.
- c. Supply and installation of 04 no of new wall mounted Inverter type 18,000 Btu/hr Splits unit.
- d. Supply and installation of 15 no of new wall mounted Inverter type 24,000 Btu/hr Splits unit.

1.8 AIR COOLED, INVERTER TYPE WALL MOUNTED SPLIT AIR CONDITIONER

Split type Air conditioners shall be of the direct expansion inverter type. Each air conditioner shall consist of a fan coil section of required capacity and a matching outdoor condensing unit.

Both indoor and outdoor units shall be from same manufacturer and properly assembled. Internal piping and wiring must be factory tested and refrigerant charged with in the factory.

Indoor Unit

Indoor unit shall consist of an evaporator coil, centrifugal forward curve fan, air filter, electronic expansion valve and other necessary controls.

The type of the indoor units shall be of the Wall mounted inverter. The cabinet and air panel shall be constructed according to relevant manufacturing standards. . The refrigerant cycle shall be equipped with a heat exchanger, an electronic expansion valve, solenoid valves and flare connections etc.

The fan shall be of the multi-blade centrifugal type, statically and dynamically balanced and directly drive by a motor of suitable capacity. The motor bearing shall be of the permanently lubricated type. The heat exchanger shall be of the multi-pass, cross finned tube type, equipped with highly efficient Aluminium fins, mechanically bonded to seamless, oxygen free copper tubes. The coil shall be cleaned, dehydrated and tested for leakage at the factory.

Indoor unit shall have minimum three fan speeds, where at medium speed, noise of the indoor unit shall be less than 35 dB(A).

Outdoor Unit

The Air Conditioner outdoor units shall be light weight with weatherproof construction suitable for outdoor installation. Condensing unit shall consist of high efficiency hermetic compressor preferable in scroll, air cooled condenser with quiet fan, necessary controls, refrigeration circuit and valves.

The cabinet shall be constructed according to relevant manufacturing standards with weather

proofed materials for coastal installation.

The capacities of the units shall be carefully selected to match the capacities of the indoor units. The service panel shall be easily removable for service access to the electrical components and the compressor section. Each refrigeration cycle shall be equipped with highly efficient compressors, solenoid valves heat protected against breakdown by a quick response over current relays, high pressure switches, wrap around type oil heaters and discharge gas thermistors.

The outdoor fans shall be of the plastic propeller type and dynamically balanced. The heat exchanger shall be of the multi pass, cross finned tube type equipped with highly efficient aluminium fins, mechanically bonded to oxygen free copper tubes. Condenser coil shall be specially coated for extra protection in highly corrosive environment.

Digital scroll DC inverter compressor shall be equipped with over current and over/under voltage protection devices. In addition to the compressor protection devices the indoor fan motor and the outdoor fan motor shall be equipped with an internal thermostat. The compressor shall be spring mounted on rubber isolators. Refrigeration circuit shall have a high capacity dryer in the system to remove moisture and dirt.

Condenser fan shall be directly connected to a weather protected, quiet, high efficiency motor. Fan guard shall be provided and shall be protected from rust by a PVC coating.

Standard operating and safety controls such as high-pressure switch, low-pressure switch etc must include with the outdoor units.

PART 2 - DETAILED TECHNICAL SPECIFICATION FOR NEW AIR CONDITIONING UNIT

1.0 SCOPE

This section specifies the detailed requirements of the design, manufacture, supply, delivery, installation, testing, commissioning and maintenance during the defects liability period of Supply and Installation of Inverter type Air Conditioners, Teaching Hospital, Peradeniya.

The air conditioning units offered shall be of the standard manufactured products and not of the modified type to meet the specified requirements. Origin of air conditioning units shall be Japan, Europe or USA.

2.0 SELECTION OF AIR CONDITIONING SYSTEM

The following ratings have been established during preliminary design of the air conditioning system.

Wall mounted split type air conditioner complete with required accessories.

(i)	Number of units	-	06
	Minimum cooling capacity of the unit	-	9,000Btu/hr
	Type	-	Inverter
(ii)	Number of units	-	04
	Minimum cooling capacity of the unit	-	12,000Btu/hr
	Type	-	Inverter
(iii)	Number of units	-	04
	Minimum cooling capacity of the unit	-	18,000Btu/hr
	Type	-	Inverter
(iv)	Number of units	-	15
	Minimum cooling capacity of the unit	-	24,000Btu/hr
	Type	-	Inverter

3.0 INSTALLATION

Refrigerant lines shall be installed as recommended by the manufacturer, taking care not to lose the refrigerant charge or allow air to enter the lines or equipment. Refrigerant piping where exposed inside the building or outside shall be vapour sealed and clad in aluminium or gypsum board covers.

The units shall be mounted on the vibration isolation pads to minimise the excessive noise and vibration.

4.0 INSTALLATION (Electrical Works).

All equipments shall be installed accordance with the relevant British Standards or equivalent to the approval of the Engineer. Particular attention shall be paid to the protection of equipment during the construction period.

5.0 MATERIALS

Test reports on materials used tested according to the relevant standards shall be provided if called for by the Engineer.

6.0 TEST EQUIPMENT, SPECIAL TOOLS AND RECOMMENDED SPARES

Bidder shall submit with the Bid a complete itemized list of test equipment, special tools and recommended spares needed to enable the user to carry out maintenance work. All test equipment, special tools and recommended spares shall be on site when the commissioning work is completed and shall be handed over with the system to the Engineer.

7.0 SUBMISSIONS

The Contractor shall submit for approval the following documents and samples in quantities as indicated:

7.1 SHOP DRAWINGS

Shop drawings of all piping systems, electrical circuit, wiring diagram and any other drawings necessary for fabrication and installation of the system are required from the contractor.

7.2 TECHNICAL LITERATURE OF EQUIPMENT

Technical literature of all equipment proposed to be used in the system inclusive of dimensional drawings, capacity, tables, test reports and other relevant information shall be supplied in triplicate for the Engineer or determine the adequacy and suitability of the equipment for the proposed air-conditioning system.

7.3 OPERATION AND MAINTENANCE MANUALS

- (a) The Contractor shall furnish three (03) copies of an operation and maintenance manual which shall contain complete instructions for overall operation of the facility and its component parts. The manual shall also include the operation and maintenance charts specified above. Drawings to be photo-reduced for incorporation into the Manuals to facilitate reference and reduction in volume. Manuals shall be complete, detailed guides

for the maintenance and operation of equipment and systems and shall include complete information necessary for start-up, adjustments, maintaining continuous operation for long periods of time and dismantling and re-assembling of the complete units and sub-assembly.

(b) The Manuals shall include, but shall not be limited to, the following:-

- Table of contents
- The principal description of the systems with flow diagrams
- The start-up operation and shutdown description with flow diagrams. Different kinds of malfunctions and emergency situations shall be considered
- List of equipment with installation and functioning description and with necessary diagrams
- Specifications of every type of equipment and performance tables and charts
- As-built wiring and control diagrams
- Assembly drawing and instructions indicating the constructions of equipment
- Operation program with necessary schedules and tables for test running
- Maintenance program and instructions with necessary schedules, tables and descriptive data
- Trouble shooting lists
- List of recommended spare parts
- Details of all lubricating oils and grease required and filter replacement
- List of recommended tools

Illustration shall include 'exploded' views showing and identifying each and every separate item regardless of significance. Emphasis shall be placed on the use of special tools and instruments.

The function of each piece of equipment, component, accessory and control shall be explained clearly and thoroughly and all required precautions emphasized including the reason for each precaution. Manuals must refer to the exact model, style and size as the piece of equipment and system being furnished.

(c) In addition the Manuals shall include, but shall not be limited to the following:

- (i) A general description of the scope, purpose and manner of working of each system of apparatus forming part of the Works.
- (ii) A detailed description of the scope, purpose and manner of working of each system of control and special services.
- (iii) Data on general design parameters together with manufacturers' information concerning correct operation, etc. based on commissioning tests.

- (iv) Clear and comprehensive instructions for the switching on, operation and closing down of each system of apparatus.
- (v) Clear and comprehensive instructions for the dealing with emergency conditions for each system or apparatus.
- (vi) Instructions in respect of any precautionary measures from time to time necessary (eg. against corrosion).
- (vii) Instructions in respect of the care of apparatus normally subject to seasonal disuse.
- (viii) Instructions as to the nature, extent and frequency of servicing necessary properly to maintain the Works in good condition and as to the materials to be used for the purpose. This information may be supported in detail, but not replaced by, maintenance instructions provided by the suppliers of particular component apparatus.
- (ix) The names and addresses of suppliers of all major components of the Works as may potentially be required to obtain spare parts or replacements including local agents.
- (x) A full set of As Built Drawings.
- (d) Copies of manufacturer's data shall be supplied with respect to the nature, type and method of operation of individual pieces of equipment, together with their detailed maintenance instruction. Such data, in the form of individual booklets and the like, shall be indexed and cross-referenced to the Operation and Maintenance Instructions and presented suitably protected in box files or folders. Manuals referring to equipment similar to but of a different model, style and size than that furnished will not be accepted.
- (e) The Contractor shall submit to the Engineer a draft copy of the operating and maintenance manual before commencing the system commissioning. The final manual shall be submitted for the Engineer's approval not less than 30 days prior to provisional handing over date.
The provisional handing over of the installation cannot take place before the manuals and reference documents are updated, completed and provisionally reviewed by the Engineer.
- (f) During the Maintenance period the Contractor shall revise and complete the manual as considered necessary by him or by the Engineer and a full record shall be maintained by the Contractor.
- (g) The Engineer reserves the right to determine whether the above specified information as submitted by the Contractor is adequate and complete and to require such additional submissions by the Contractor as necessary to ensure the

satisfactory operation of the various items of equipment and to fulfill the intent of the Specification.

- (h) The manuals shall be contained in volume strongly bound in flexible covers and suitable for heavy usage over a long period.

7.4 SAMPLES

Samples of all materials to be supplied under the contract such as pipes, ducting materials and multiple fittings such as valves, electric components shall be supplied to the Engineer for approval. Such samples shall be kept with the Engineer until completion of the Works and same will be released to the Contractor on completion of work. The items of supplies used for the project shall be at least equal in quality to the approved sample.

7.5 AS-BUILT DRAWINGS

On completion of the installation, the Contractor shall prepare a set of As-built drawings incorporating all changes made to the original design and drawings, which drawings shall represent an accurate description of the installed systems. These drawings shall be bound with covers in to an album and handed over to the Engineer.

7.6 HANDING OVER DOCUMENTS

The final handing over documents to be submitted by the Contractor on completion of the installation shall comprise the following:

- a) Operation and maintenance manuals (03 copies)
- b) Commissioning sheets (03 copies)
- c) Test reports (03 copies)
- d) As built drawings (03 copies)

These documents should be supplied to the Engineer within 30 days on issue of taking over certificate.

8.0 TRAINING OF OWNER'S STAFF

Bidders shall submit with the Bid, a full proposal of the recommended training necessary for the owner's personnel to attend to routine testing, maintenance service and minor repairs including an indication of the duration of such training. The number of persons required to be trained shall be determined jointly by the Engineer, and the Contractor.

The scope of training shall include on-site training and such training shall be prior to hand-over of the system. Technical training and system operation instructions to the owner's personnel shall also be provided during the commissioning and performance tests phases of the system.

System operation instructions shall be given by an experienced and competent representative of the Contractor who is thoroughly conversant with the air conditioning system installed.

9.0 SITE TESTING AND COMMISSIONING

Bidders shall submit with the Bid, a complete proposal with time schedule for testing and commissioning of the air conditioning system. The program shall include a trial operation of all main equipment with any necessary adjustments to ensure that the system is working correctly. The Contractor shall provide all instruments and equipment together with commissioning engineers and adequate assistance for carrying out the commissioning and testing activity, which shall be done in accordance with the recommendations of relevant Standards. If any portion the works fails to pass the tests, the Contractor shall, at his own expense carry out such alterations or replacements as are required to the satisfaction of the Engineer.

The Engineer shall be at liberty to call for further commissioning when such alterations have been completed to their satisfactory. The Contractor shall provide commissioning spares at his own expense.

Spare parts earmarked for maintenance shall not be used during this period.

10.0 MAINTENANCE CONTRACT

Bidder shall indicate his prices for the same in the schedule for Service and Maintenance after defect liability Period under Annual fee for providing comprehensive maintenance service. Prices shall include for the cost of maintaining required Performance Security. Further the bidder shall submit a sample maintenance sheets along with his bid. Contractor shall enter into a maintenance agreement to maintain the works after the Defect Liability Period for five years.

Bid shall submit the terms and charges for service and maintenance contract along with the Bid.

SECTION - 07

BILL OF QUANTITIES

PREAMBLE TO THE BILL OF QUANTITIES

1. The Conditions of Contract, the Specifications are to be read in conjunction with the Bill of Quantities.
2. The cost of complying with all conditions, obligations and liabilities described in the Conditions of Contract and the Specifications and the Bill of Quantities **including all overhead charges (excluding VAT), profit and Preliminaries** and carrying out the work as described shall be deemed to be spread over and included in the prices or sums stated by the Bidder in the Bill of Quantities. VAT should be separately added.
3. If the Bidder failed to price any Items in the Bill of Quantities then the cost of the work under such Item shall be held to be spread over and included in the prices given against other Items of work.
4. When trade names, brand and/or catalogue numbers are referred to, sole preference to any material or equipment is not intended. Any other material or equipment may be used, provided that the characteristics of type, quality, appearance, finish, method of construction and/or performance is equal to or superior to specify.
5. Whenever the method of measurement is not clear from documents available, the principles as given in the Sri Lanka Standard 573, 1999, Method of Measurement of Building Work shall be applicable.
6. All items of work shall comply exactly with the Contract unless otherwise approved by the Engineer and the rates and sums inserted in the Bill of Quantities shall be deemed to apply to the work as specified. If, for his convenience or reasons of availability, the Contractor proposes and the Engineer approves the use or provision of alternative items, materials or method of working, or equivalent or superior quality to those specified in the Contract, the rates and sums inserted in the Bill of Quantities shall not in any case be increased as a result.
7. The quantities set out in the Bill of Quantities are provisional and cover the approximate scope of the work which is anticipated to be performed by the Contractor. The actual quantities used for final measurement purposes will be determined by the Engineer by measurement of the work completed by the Contractor.
8. Where, for his own purposes or due to his own default, the Contractor carries out the Works in such a manner that the quantity of any Item of work in particular component to be measured for payment purposes differs from that directed by the Engineer, then payment shall be made according to the lesser of the actual quantity and that directed. An excess quantity in one part of the component shall not, however, be allowed to offset a deficit elsewhere in the same component for measurement purposes.
9. Where the determination for payment purposes of the quantity of any Item of work depends upon the measurement of existing features or ground levels and the like, then prior to carrying out any operations which might affect such measurement, the Contractor shall first take such levels and measurements as the Engineer may direct and, after the Engineer has had the opportunity to check the same, they shall be certified as agreed by both the Engineer and the Contractor.
10. In the event that the Contractor fails to observe the above procedure, the Engineer shall determine the quantity to be assumed for payment purposes using the best information available to him, and his decision in the matter shall be final.

11. Selected Bidder shall comply with the arrangement of work in the buildings and be ready to work part by part as required by the Authorities of Teaching Hospital, Peradeniya.
12. Rates in Bill of Quantities shall include all necessary material for supply, installation and testing & commissioning of Air Conditioning units and necessary materials such as cables, PVC conduits, PVC sunk boxes etc and labour required to complete the electrical installation to good working order.
13. Except where specifically stated, all costs associated with provision of all holes, openings, chases and ducts in other builders' work required for installation and make them good , shall be included in the rates.
14. The Bills of Quantities should therefore, be priced to reflect all factors that would affect the bid and the progress of the works.
15. All electrical accessories should comply with relevant BS/IEC standards. For electrical accessories, manufacturer's guarantee should be produced if necessary.
16. The wiring installation shall comply with the requirements of IEE Wiring Regulations, latest edition.
17. Bidder should pay special attention to the work to be carried out, causing minimum disturbance or hindrance to the normal functions and activities of the users of the Teaching Hospital, Peradeniya.
18. Screens should be provided to prevent dust escaping from working areas.
19. Metric units are used throughout the Bill of Quantities for measurement purposes unless otherwise indicated. Abbreviations used in the Contract are as follows:-

mm	-	Millimeter
m	-	Linear meter
kg	-	Kilogram
m ²	-	Square meter
m ³	-	Cubic meter
nr	-	Number
Rs.	-	Sri Lankan Rupees
Cts.	-	Cents
P. S.	-	Provisional sum
L. S.	-	Lump Sum

SUPPLY AND INSTALLATION OF INVERTER TYPE AIR CONDITIONERS

TEACHING HOSPITAL, PERADENIYA

BILL OF QUANTITIES

ITEM	DESCRIPTION	QTY	UNIT	RATE Rs. Cts.	AMOUNT Rs. Cts.
	<u>AIR CONDITIONING SYSTEM</u>				
	<i>Allowed for all cost of supply including CIF, CID, PAL, clearing charges, transport charges, erection, factory testing, site testing, commissioning as per specification and drawings and profits etc.</i>	<i>Note</i>			
	<i>Allowed for cost of providing security bonds, guaranties, insurance of personnel, property, material against accidents, damage, trespass or theft.</i>	<i>Note</i>			
	<i>Allowed for the cost of all temporary works such as scaffolding etc. associated civil and electrical works related to the installation of Air Conditioning System such as drilling of suitable holes in walls, breaking of any parts of walls and finishing works of the same such as plastering, painting, etc. electrical power / control wiring, services connections, etc.</i>	<i>Note</i>			
	All units shall be origin of USA,EU or Japan				
1.0	Supply and installation of Horizontal blow, wall Mounted inverter type Split air conditioning unit having minimum cooling capacity 9,000 Btu/hr , complete with all necessary accessories . (a) Supply and Installation Cost	6	nr	.....	.....
2.0	Supply and installation of Horizontal blow, wall Mounted inverter type Split air conditioning unit having minimum cooling capacity 12,000 Btu/hr , complete with all necessary accessories . (a) Supply and Installation Cost	4	nr	.....	.....
3.0	Supply and installation of Horizontal blow, wall Mounted inverter type Split air conditioning unit having minimum cooling capacity 18,000 Btu/hr , complete with all necessary accessories . (a) Supply and Installation Cost	4	nr	.....	.....
4.0	Supply and installation of Horizontal blow, wall Mounted inverter type Split air conditioning unit having minimum cooling capacity 24,000 Btu/hr , complete with all necessary accessories . (a) Supply and Installation Cost	15	nr	.....	.....
5.0	Testing and Commissioning	Lot	Item	.....	.....
	Total cost of Air Conditioning System Carried to main Summary				.....

**SUPPLY AND INSTALLATION OF INVERTER TYPE AIR CONDITIONERS
TEACHING HOSPITAL, PERADENIYA
SUMMARY : BILL OF QUANTITIES**

MECHANICAL WORKS

(a)	Sub Total 1				
(b)	Less: Discount if any (.....%)				
(c)	Sub Total II (a-b)				
TOTAL BID SUM WITHOUT TAXES (c)					

Total Bid Sum to be taken in to Form of Bid (Page No. 03) in words Rupees:
 only.

Amount of V.A.T.(Prevailing VAT) for the Total Bid Sum :- Rs.
 Bidder's VAT Registration No:

.....
 Signature of Bidder

Name and Address of Bidder:

Date.....

.....
 Signature of Witness (1)

Name and Address of Witness (1)

Date.....

.....
 Signature of Witness (2)

Name and Address of Witness (2)

Date.....

TECHNICAL SCHEDULE

SUPPLY AND INSTALLATION OF INVERTER TYPE AIR CONDITIONERS
TEACHING HOSPITAL, PERADENIYA
TECHNICAL SCHEDULE

	Items	As specified	As offered	Remarks
1.0	Split type Air Conditioner 9,000 Btu/hr			
	Make			
	Model			
	Type	Wall mounted, Inverter		
	Manufacturer's Name			
	Country of Origin			
	Country of Manufacture			
	Rated cooling capacity (Btu/hr)	9,000		
	Starting current (A)			
	Running current (A)			
Power Supply	230 V, 50 Hz			
2.0	Split type Air Conditioner 12,000 Btu/hr			
	Make			
	Model			
	Type	Wall mounted, Inverter		
	Manufacturer's Name			
	Country of Origin			
	Country of Manufacture			
	Rated cooling capacity (Btu/hr)	12,000		
	Starting current (A)			
	Running current (A)			
Power Supply	230 V, 50 Hz			
3.0	Split type Air Conditioner 18,000 Btu/hr			
	Make			
	Model			
	Type	Wall mounted, Inverter		
	Manufacturer's Name			
	Country of Origin			
	Country of Manufacture			
	Rated cooling capacity (Btu/hr)	18,000		
	Starting current (A)			
	Running current (A)			
Power Supply				
4.0	Split type Air Conditioner 24,000 Btu/hr			
	Make			
	Model			
	Type	Wall mounted, Inverter		
	Manufacturer's Name			
	Country of Origin			
	Country of Manufacture			
	Rated cooling capacity (Btu/hr)	24,000		
	Starting current (A)			
	Running current (A)			
Power Supply				

**SERVICE AND MAINTENANCE AFTER FREE MAINTENANCE PERIOD FOR INVERTER
TYPE AIR CONDITIONERS**

Annual fee for providing **comprehensive maintenance service**.

The work shall include the sending of Contractor's personnel **once every two months during normal working hours of a normal working day** to inspect, clean, oil, grease and replacement of spares where necessary, adjust the machinery and equipment and attending to emergency call back service immediately the owner notifies the contractor.

The amount quoted for servicing and maintenance shall include the cost of supply of all replacement spares, necessary oil, grease and cleaning materials. **These prices will be considered for bid evaluation to arrive at a final evaluated bid price discounting to present value at the rate of 10% per annum.**

Total per annum
(After free maintenance period)

1st year Rs.
2nd year Rs.
3rd year Rs.
4th year Rs.
5th year Rs.

The bidder shall supply a sample of his proposed service and maintenance contract document.

(Signature) (Signature).....

(Name) (Name)

Section - 9

STANDARD FORMS (BID)

- *Bidders shall submit the completed Form of Bid Security/Bid Securing Declaration as appropriate in compliance with the requirements of the bidding documents.*

FORM OF BID SECURITY

.....
[Insert issuing agency’s name and address of issuing branch or office]

**Beneficiary: Director, Teaching Hospital,
Peradeniya.**

Date: [Insert (by issuing agency) date]

BID GUARANTEE NO.: [Insert (by issuing agency) number] We have been informed that *[Insert (by issuing agency) name of the bidder]*(Hereinafter called “**the Bidder**”) has submitted to you its bid dated [Insert (by issuing agency) date](Hereinafter called “**the Bid**”) for execution of “**Supply and Installation of Invertor type Air Conditioners – Teaching Hospital, Peradeniya**”, (**Contract No:**) under Invitation for Bids No. (“**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 *[Insert name of issuing agency]* hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of *[Insert amount on figures]* *[insert amount in words]* upon receipt by us of your first demand in writing accompanied by a written statement 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; or
- (b) does not accept the correction of errors in accordance with the Instructions to Bidders (hereinafter “the ITB”); or
- (c) having been notified of the acceptance of its Bid by the Employer during the period of bid validity, (i) fails to refuses to execute the Contract Form, if required, or (ii) fails to refuses to furnish a Performance Security, in accordance with the ITB.

This Guarantee shall 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 by the Bidder; or
- (b) If the Bidder is not the successful bidder, upon the earlier of
- (c) Our receipt of a copy of your notification to the Bidder that the bidder was unsuccessful, otherwise it will remain in force up to 28 days beyond the validity of the bid. (.....)

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

.....
[Signature of authorized representative(s)]

Check List for Bidders

Bidders are advised to fill the following table:

ITEM	ITB Clause	Yes (tick)	REFERENCE
Form of Bid			
Addressed to the Employer?	18		
Completed?	18		
Signed?	18		
Bid securing Declaration form (if required)			
Properly filled and signed	16		
Bid Security (if required)			
Addressed to the Employer?	16		
Format as required?	16		
Issuing Agency as specified?	16		
Amount and currency as requested?	16		
Validity 28 days beyond the validity of Bid ?	16		
Qualification Information			
All relevant information completed?	4		
Signed?	4		
Addendum			
Contents of the addendum (if any) taken in to account?	10		
BID package			
All the documents given in ITB Clause 12 enclosed in the original and copy?	12		
ITB Clause 19 followed before Sealing the Bid Package?	19		