

**Embassy of India
Rabat
(Morocco)**

Tender document No. RAB/885/01/2020

Dated 16 March 2020

**Tender Document
for supply and installation of
X-Ray Baggage Inspection System (X-BIS)**

Last date for submission of bids: 06 April, 2020

88, Rue Ouled Tidrarine, Souissi, Rabat

NOTICE INVITING TENDER

Subject: Procurement of X-Ray Baggage Inspection System (X-BIS).

Embassy of India, Rabat invites Tender under two bid system from registered and authorized firms/agencies for supply and installation of X-Ray Baggage Inspection System (X-BIS) to the Embassy of India, Rabat as per the specifications given in the tender documents.

2. The tender document can be downloaded from Mission's website <https://indianembassyrabat.gov.in/> and from CPP Portal: <https://eprocure.gov.in/epublish/app>. No fee for Tender Document will be charged.
3. The interested firms/agencies have to submit their tenders in two bid system i. e. (i) Technical Bid and (ii) Financial Bid. Tenders are to be submitted to the Head of Chancery, Embassy of India, Rabat at 88, Rue Ouled Tidrarine, Souissi, Rabat. All the necessary documents including those in support of eligibility criteria etc. (except the Financial Bid) are to be submitted along with the Technical Bid in a sealed envelope. The Financial Bid must be submitted in a separate sealed envelope. No bid(s) will be accepted after the expiry of stipulated date and time for the purpose under any circumstances.
4. The Earnest Money Deposit (EMD) of MAD 2000/- (Dirhams Two thousand only) in the form of Account Payee Demand Draft/Pay Order drawn in favour of "Embassy of India, Rabat" is required to be submitted along with bid. Bids shall not be considered in case the EMD is not submitted and would be rejected summarily.
5. The Technical Bids will be opened on 07 April 2020 at 1100hrs by the Committee authorized by the Competent Authority of this Mission. The financial bids of only those bidders whose Technical Bids are accepted, shall be opened by the Committee authorized for the purpose. The date for opening of Financial Bids would be intimated to the respective bidders in due course.
6. The Embassy of India, Rabat reserves the right to reject any or all the bids without assigning any reason and the decision of the Head of Chancery shall be final and binding.

(Niravkumar B. Sutariya)
Head of Chancery

LETTER OF BID

Dated: _____

To,

Shri Niravkumar B. Sutariya
Head of Chancery
Embassy of India,
88, Rue Ouled Tidrarine, Souissi
Rabat

Ref: Invitation for Bid No. RAB/885/01/2020 dated 16 March, 2020.

We, the undersigned, declare that:

We have examined and have no reservations to the Bidding Documents, including Addenda issued in accordance with Instructions to Bidders,

We offer to execute in conformity with the Bidding Documents for supply of X-Ray Baggage Inspection System (X-BIS) at the 88, Rue Ouled Tidrarine, Souissi, Rabat.

Our bid shall be valid for a period of 180 days from the date fixed for the bid submission deadline in accordance with the Bidding Documents and shall remain binding upon us and may be accepted at any time before the expiry of the period.

If our bid is accepted, we commit to submit a Performance Security Deposit in accordance with the Bidding Documents.

We also declare that the Government of the Kingdom of Morocco or any other Government body has not declared us ineligible or blacklisted us on charges of engaging in corrupt, fraudulent, collusive or coercive practices or any failure/lapses of serious nature.

We also accept all the terms and conditions of this bidding document and undertake to abide by them, including the condition that you are not bound to accept highest ranked bid/ lowest bid or any other bid that you may receive.

Yours sincerely,

Authorized Signatory

(Authorized person shall attach a copy of Authorization for signing on behalf of Bidding company)

Full Name and Designation

(To be printed on Bidder's letterhead)

DATES TO REMEMBER

Sl. No.	Events	Date
1.	Tender Publish Date	16.03.2020
2.	Bid Submission start date	17.03.2020 (at 0900 hrs)
3.	Bid submission end date	06.04.2020 (upto 1700 hrs)
4.	Opening of Technical Bids	07.04.2020 (at 1100 hrs)*
5.	Opening of Financial Bids (of only those who qualify in the minimum eligibility criteria)	Date to be intimated later*

***Note: “The bids will be opened in the O/o Head of Chancery, Embassy of India, Rabat, Morocco”**

SECTION I: INVITATION FOR BIDS (IFB)

1. The Embassy of India, Rabat invites sealed bids from eligible bidders for supply of X-Ray Baggage Inspection System (X-BIS) as per the specifications and instruction mentioned in **Annexure A**.
2. Two bid system:

The two-bid system will be followed for this tender. In this system, bidder must submit his offer as explained below:

Envelope No. 1: "Technical Bid" shall contain:

- a. Duly filled Technical Bid (Annexure 6) with proper seal and signature of authorized person
- b. A Demand draft of MAD 2000/- (Dirhams Two thousand only) towards Earnest Money Deposit.
- c. Self Attested copy of TVA Registration certificate, as applicable.
- d. A copy of Certificate of Incorporation, Partnership Deed/Memorandum and Articles of Association, as applicable
- e. The bidder should submit an undertaking to the effect that a Performance Bank Guarantee (PBG) of 10% of the order value will be submitted in case the Embassy of India, Rabat decides to place the Purchase Order with them.
- f. The bidder must submit plan/arrangement for installation and warranty services/after sale services to be provided at site.
- g. Detailed technical specifications make & model, part number and compliance to the Schedule of Requirement for which bid is submitted.
- h. Other related documents e. g. Trade License etc. as mentioned in the tender document but not listed here.

Envelope 2: "Financial Bid" shall contain:

Price Schedule complete in all respects with proper seal and signature of authorized person (as per Annexure-2). Both the technical bid and financial bid envelopes should be sealed separately and clearly marked as "Envelope no. 1 - Technical Bid" and "Envelope no. 2 - Financial Bid". Both the sealed envelopes should be placed in a third larger envelope clearly mentioning "Technical Bid & Financial Bid" for supply of X-BIS and addressed to 'Head of Chancery, Embassy of India, Rabat, 88, Rue Ouled Tidrarine, Souissi, Rabat.'

- **Note 1: Please write tender number on each envelope and seal all the envelopes.**
- **Note 2: Please do not put "Financial Bid" (prices quoted) in the technical bid envelope. If the price quoted is submitted with technical bid, the tender will be rejected.**

3. Opening of Technical Bids:
 - i. All the technical bids received by the Embassy of India, Rabat will be opened on April 07 at 1100 hrs in the O/o Head of Chancery, Embassy of India, Rabat.
 - j. After being opened, the Technical Bids will be evaluated, by the Embassy of India, Rabat, based on the available documents submitted by the bidder.
 - k. After evaluation of the Technical Bids, the Embassy of India, Rabat will intimate the date for opening of the Financial Bids of only those bidders who qualify at Technical Bid stage.

- l. Financial Bids of those bidders who do not qualify at Technical Bid stage will be returned to the respective bidders un-opened.
4. Opening of Financial bids:
 - a. Financial bids of the short listed bidders only will be opened, in the presence of the bidders or their authorized representative, who choose to attend, date to be intimated later.
 - b. The authorized representative of bidders, present at the time of opening of the bids shall be required to sign an attendance sheet as a proof of having attended the financial bid opening.
 - c. The bidder's name, bid prices, discounts and such other details considered as appropriate by the Embassy of India, Rabat will be announced at the time of the opening of the bids.
 - d. Technically accepted competitive bids ONLY will be considered for the opening of Financial Bids.

SECTION II: INSTRUCTIONS TO BIDDERS (ITB)

1. Implementation/Timelines

The supply and installation must be completed within 03 weeks, after placement of purchase order.

2. Location for the Supply and Installation

The equipment covered by this document are required to be supplied and installed at Embassy of India, Rabat (88, Rue Ouled Tidrarine, Souissi, Rabat)

3. Order Placements and Release of Payment

The Purchase Order and payment shall be processed by “Head of Chancery, Embassy of India, Rabat”

4. Amendment of Bidding Documents

At any time prior to the deadline for submission of bids, The Embassy of India, Rabat may, for any reason, whether on its own initiative or in response to the clarification request by a prospective bidder, modify the bid document.

5. Earnest Money Deposit (EMD)

- ❖ The tender documents must be accompanied by Earnest Money Deposit (EMD) of appropriate amount, in the form of a Demand Draft (DD) drawn on any Nationalized Bank, in favour of “Embassy of India, Rabat”. The amount towards EMD is MAD 2000/- (Dirhams Two thousand only) and should be submitted in the envelope containing technical bid. Bids submitted without EMD will stand rejected. EMD will be accepted only in the form of Demand Draft/Pay Order.
- ❖ No interest shall be payable on EMD.
- ❖ The EMD will be returned to the bidder(s) whose offer is not accepted, within 30 days from the date of the placing of the final order(s) on the selected bidder(s).
- ❖ The successful bidder, on award of contract/order, must send the contract/order acceptance in writing, within 07 days of award of contract/ order, failing which the EMD will be forfeited and the order will be placed to the next successful bidder.
- ❖ **The EMD shall be forfeited:**
 - If the bidder withdraws the bid during the period of bid validity specified in the tender.
 - If the bidder fails to furnish the acceptance in writing, within 07 days of award of contract/order.
 - In case a successful bidder fails to furnish the Performance Bank Guarantee.

6. Period of validity of bids:

- a. Bids shall be valid for a minimum 180 days from the date of submission of bids. A bid valid for a shorter period shall stand rejected.
- b. The Embassy of India, Rabat may ask for the bidder’s consent to extend the period of validity. Such request and the response shall be made in writing only. The bidder is free not to accept such re-

quest without forfeiting the EMD. A bidder agreeing to the request for extension will not be permitted to modify his bid.

7. Submission of Bids:

The Bid shall be neatly arranged, plain and intelligible. Each page of the bid should be signed. They should not contain any terms and conditions, printed or otherwise, which are not applicable to the Bid. The conditional bid will be summarily rejected. Insertions, postscripts, additions and alterations shall not be recognized, unless confirmed by bidder's signature.

8. Deadline for Submission of Bids:

a. Bids must be submitted before the due date and time at the address specified in the tender document. In the event of the specified date for the submission of bids being declared a holiday for the Embassy of India, Rabat, the bid-closing deadline will stand extended to the next working day up to the same time.

b. The Embassy of India, Rabat may extend this deadline for submission of bids by amending the bid documents and the same shall be suitably notified on the website of the Embassy of India, Rabat.

9. Late Bids:

Any bid inadvertently received after the deadline for submission of bids, will not be accepted and returned unopened to the bidder.

10. Criteria for Award of Contract/Order:

a. The Embassy of India, Rabat shall award the contract to the eligible bidder whose technical bid has been accepted and determined as the lowest evaluated financial bid.

b. The lowest price criteria shall be applied on the total.

11. Purchaser's Right to amend Scope of Work:

If, for any unforeseen reasons, the Embassy of India, Rabat is required to change the Scope of Supply, this change shall be acceptable to the bidder without change in the unit price quoted.

12. Interpretation of the clauses in the Tender Document

In case of any ambiguity/ dispute in the interpretation of any of the clauses in this Tender Document, Embassy of India's interpretation of the clauses shall be final and binding on all parties.

SECTION III: MINIMUM ELIGIBILITY CRITERIA

1. The following shall be the minimum eligibility criteria for selection of bidders at technical bid stage of the bidding process:-

(a) Legally Valid Entity: The Bidder/Bidding Firm shall necessarily be a legally valid entity either in the form of a Limited Company or a Private Limited Company registered under the relevant Act or a firm having trade license granted by City Corporation to do business in Rabat. The proof for supporting the legal validity of the Bidder/Bidding Firm shall be attached with the bid.

(b) Registration: The Bidder/Bidding Firm must have VAT registration with the concerned authority. The proof in support of the same shall be attached with the bid documents.

(c) Experience: The Bidder shall have experience in undertaking similar projects for Embassies /High Commissions /Government offices/hotel/large business establishments.

(d) Company profile/information regarding key personnel: The bidding company shall also include in its bid, as per proforma at Annexure-6 of this document, details about the company and about its key personnel.

2. Documents supporting the Minimum Eligibility Criteria:

(i) As proof of having fully adhered to the minimum eligibility criteria under Section III, 1 (a), attested copies of certificates issued by the respective authority should be attached with the bid documents.

(ii) As proof of having fully adhered to minimum eligibility criteria at 1(b), attested copy of VAT registration certificate should be attached with the bidding document.

(iii) As proof of having fully adhered to minimum eligibility criteria at 1(c), attested copies of experience certificates for completed work/ongoing work issued by the Foreign Embassies/High Commissions/Government offices/hotel/large business establishments shall be attached with bid document.

(iv) As proof of having fully adhered to minimum eligibility criteria at 1(d), copies of supporting documents for company profile/information about key personnel may be provided along with Annexure-6 of this tender document.

SECTION IV: SPECIAL CONDITIONS OF CONTRACT (SCC)

1. Prices:

- a. The price quoted shall be considered firm and no price escalation will be permitted.
- b. Bidders must quote the price in the format given in Price Schedule at Annexure -2 of this document.
- c. All amounts are to be quoted only in Moroccan Dirhams.
- d. The prices quoted should be inclusive of freight, insurance, packing, distribution, after sales service.

2. Performance Bank Guarantee (PBG):

The successful bidder will be required to furnish the Performance Bank Guarantee in form of a Bank Guarantee for the 10% (ten percent) amount of the Purchase Order within 15 days of receipt of Purchase Order, as per the format attached to this document (Refer Annexure – 5). This bank guarantee shall remain valid till the completion of warranty period.

3. Warranty:

All the items supplied shall carry minimum 03 (Three) year on site comprehensive warranty from the date of Installation & Commissioning. The bidder must undertake to provide the installation and warranty service at Rabat. The repairing/ rectification/replacement/configuration required, if any, of the items under warranty must be done at on site workshop.

4. Payments:

- a. 70% of the payment will be made on delivery of material and production of claim with supporting document.
- b. Payment of 20% against successful installation & commissioning as per contract document and to the satisfaction of Embassy of India Rabat.
- c. Balance 10% payment will be made on the completion of warranty period or against submission of Bank Guarantee of equivalent amount from any bank valid for the entire period of warranty.

5. Penalty for delayed Services:

- a. The Embassy of India, Rabat reserves the right to levy penalty @ of 1 % of order value per week of delay beyond the scheduled deliveries/execution of the order successfully, subject to maximum of 5% of the order value.

- b. The Embassy of India, Rabat reserves the right to cancel the order in case the delay is more than 02 weeks.

- c. The penalties, if any shall be recovered from the 20% claim due after installation & commissioning.

6. Force Majeure:

The Embassy of India, Rabat may consider relaxing the penalty and delivery requirements, as specified in this document, if and to the extent that, the delay in performance or other failure to perform its obligations under the contract is the result of a Force Majeure. Force Majeure is defined as an event of effect that cannot reasonably be anticipated such as acts of nature (like earthquakes, floods, storms etc.), acts of states, the direct and indirect consequences of wars (declared or undeclared), hostilities, national emergencies, civil commotion and strikes at successful Bidder's premises.

Tender Submission Sheet
(To be submitted with the Financial bid only)

Invitation for Tender No:

Date:

Tender Name:

To:

[Name and address of Employer]

We, the undersigned, offer to execute and complete in conformity with the Conditions of Contract and associated Contract Documents including Addenda Nos. and maintain the whole of the said works at the rates quoted against each items in the Bill of Quantities.

The total price of our Tender is:

Dh.: [insert value in figures)

[Insert value in Words]

Our Tender shall be valid for the period stated in the ITB and it shall remain binding upon us and may be accepted at any time before the expiration of that period. A Tender Security for an amount of Dh. ----- only is attached in the form of a *[state pay order; bank draft]* valid for a period of 28 days beyond the Tender validity date.

If our Tender is accepted, we commit to obtaining a Performance Security in the amount stated in the ITB and valid for a period of 28 days beyond the date of issue of the Defect Liability Certificate of Works.

We declare that the Government of the Kingdom of Morocco has not declared us, and any Subcontractors or Contractors for any part of the Contract ineligible on charges of engaging in corrupt, fraudulent, collusive or coercive practices.

We are not participating as Tenders in more than one Tender in this Tendering process. We understand that your written Notification of Award shall constitute the acceptance of our Tender and shall become a binding Contract between us, until a formal Contract is prepared and executed.

We understand that you are not bound to accept the lowest evaluated Tender or any other Tender that you may receive.

Signed

In the capacity of:

Duly authorized to sign the Tender on behalf of the Tender.

**Format for submitting the Price Schedule for supply of one unit of
X-Ray Baggage Inspection System (X- BIS) to the Embassy of India, Rabat
(To be submitted along with the financial bid only)**

BID No. RAB/885/01/2020

Date:

To,

Head of Chancery
Embassy of India
88, Rue Ouled Tidrarine
Rabat (Morocco)

Price Schedule

S. No.	Item	Total Bid Quantity	Total Price (in MAD)
1	2	3	4
1	X-Ray Baggage Inspection System	1 (One)	

Note:

Above quoted price for supply of one unit of X-BIS is complete in all respect as per technical specifications and terms & conditions mentioned in the bid document.

Yours faithfully,

(Signature of Authorized Signatory)

Name:

Designation:

Company seal:

Notification of Award

Contract No:

Date:

To:

[Name of Contractor]

This is to notify you that your Tender dated *[insert date]* for the execution of the Works for *[name of project/Contract]* for the Contract Price of Dh. *[amount in figures and in words]*, as corrected and modified in accordance with the Instructions to Tenders is hereby accepted by *[name of Employer]*.

You are requested to proceed with the execution of the Works on the basis that this Notification of Award shall constitute the formation of a Contract, which shall become binding upon you furnishing a Performance Security and signing the Contract Agreement within Seven (7) days.

We attach the Contract Agreement for your perusal and signature.

Signed

Duly authorized to sign for and on behalf of

[name of Procuring Entity]

Date:

Contract Agreement

THIS AGREEMENT made the *[day]* day of *[month]* *[year]* between *[name and address of Employer]* (hereinafter called “the Employer”) of the one part and *[name and address of Contractor]* (hereinafter called “the Contractor”) of the other part:

WHEREAS the Employer invited Tenders for certain works, viz, *[brief description of works]* and has accepted a Tender by the Contractor for the execution of those works in the sum of Dirhams *[Contract price in figures and in words]* (hereinafter called “the Contract Price”).

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the General Conditions of Contract hereafter referred to.
2. The documents forming the Contract shall be interpreted in the following order of priority:
 - a. the signed Contract Agreement;
 - b. the letter of Notification of Award
 - c. the completed Tender Submission Sheet as submitted by the Tender;
 - d. the priced Bill of Quantities as submitted by the Tender;
 - e. Scope of Work, and
 - f. Performance Bank Guarantee
3. In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Employer to execute and complete the works and to remedy any defects therein in conformity in all respects with the provisions of the Contract.
4. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the works and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with the laws of Morocco on the day, month and year first written above.

For the Employer:
Signature
Print Name
In the presence of
Name & Address

For the Contractor:

PROFORMA OF BANK GUARANTEE
(on non-judicial paper of appropriate value)

To,
Head of Chancery
Embassy of India
Rabat

BANK GUARANTEES NO:

DATE:

Dear Sir(S)

This has reference to the Purchase Order No. _____ Dated _____ been placed by EOI, Rabat M/s (Name & Address of vendor) for.

The conditions of this order provide that the vendor shall,

- 1. Arrange to deliver the items listed in the said order to the consignee, as per details given in said order, and
- 2. Arrange for the comprehensive warranty service support towards the items supplied by vendor on site across Morocco, as per the warranty clause in said purchase order.

M/s (Name of Vendor) has accepted the said purchase order with the terms and conditions stipulated therein and have agreed to issue the performance bank guarantee on their part, towards promises and assurance of their contractual obligations vide the purchase order No. _____ M/s. (name of vendor) holds a current account with us and has approached us and at their request and in consideration of the promises, we hereby furnish such guarantees as mentioned hereinafter.

EOI, Rabat shall be at liberty without reference to the Bank and without affecting the full liability of the Bank here under to take any other undertaking of security in respect of the suppliers obligations and /or liabilities under or in connection with the said contract or to vary the terms vis-a-vis the supplier or the said contract or to grant time and or indulgence to the supplier or to reduce or to increase or otherwise vary the prices or the total contract value or to forebear from enforcement of all or any of the obligations of the supplier under the said contract and/or the remedies of the EOI, Rabat under any security(ies) now, or hereafter held by the EOI, Rabat and no such dealing(s) with the supplier or release or forbearance whatsoever shall have the effect of releasing the bank from its full liability of the EOI, Rabat here under or of prejudicing right of the EOI, Rabat against the bank.

This undertaking guarantee shall be a continuing undertaking guarantee and shall remain valid and irrevocable for all claims of the EOI, Rabat and liabilities of the supplier arising upto and until date.....

Your right to recover the said sum of Dh. _____ (Dirhams _____ only) from us in manner aforesaid will not be affected/or suspended by Reason of the fact that any dispute or disputes have been raised the said M/s and/or that any dispute or disputes are pending before any officer, tribunal or court or Arbitrator.

Our liability under this guarantee is restricted to Dh. _____ (Dirhams _____ Only) Our guarantee shall remain in force until unless a suit action to enforce a claim under guarantee is filed against us within six months from (which is date of expiry of guarantee) all your rights under the said guarantee shall be forfeited and we shall be relieved and discharged from all liabilities there under.

We have power to issue this guarantee in your favour under Memorandum and Articles of Association of our Bank and the undersigned has full power to do under the power of Attorney dated.

Notwithstanding anything contained herein:

- A. Our liability under this guarantee shall not exceed Dh.....(in words)
- B. This bank guarantee shall be valid up to.....& unless a suit for action to enforce a claim under guarantee is filed against us within six months from the date of expiry of guarantee. All your rights under

the said guarantee shall be forfeited and we shall be relieved and discharged from all liabilities there after
i.e. after six months from the date of expiry of this Bank guarantee

- C. We are liable to pay the guaranteed amount or any parts thereof under this bank guarantee only and only if you serve upon us a written claim or demand or before
- D. The Bank guarantee will expire on

Granted by the Bank

Yours faithfully,

For (Name of Bank)

SEAL OF THE BANK

Authorized Signatory

CONTACT DETAILS FORM

GENERAL DETAILS OF BIDDER

NAME OF THE COMPANY

NAME AND DESIGNATION OF

AUTHORIZED REPRESENTATIVE

COMMUNICATION ADDRESS

PHONE NO./MOBILE NO.

FAX E-MAIL I.D.

PARTICULAR DETAILS OF THE BIDDER'S REPRESENTATIVE NAME OF THE CONTACT PERSON DESIGNATION

PHONE No

MOBILE No

E-MAIL ID

DETAILS ABOUT KEY PERSONNEL OF THE BIDDING COMPANY (With ID proof/supporting documents)

- 1.
- 2.
- 3.
- 4.
- 5.

**(Seal and Signature of
authorized person of the company)**

Specifications of Baggage Scanner

1. Resolution : 42 SWG or better
2. Tunnel Size : Shall be minimum 600mm X 400mm with 10% variation only on higher side.
3. Penetration ≥ 40 mm Steel.
4. Voltage 180 - 260 V, 50 Hz single phase.
5. **Conveyer Belt**
 1. Speed should be at least 0.2 meters per second or better.
 2. Maximum load should be 165 Kg.
 3. Conveyor belt height should be at least 800 mm.
 4. Facility of bi-direction scanning be available.
 5. Idle SS rollers to be provided with input/out frames at both ends of the tunnel.
6. **X-Ray Generator**
 1. Cooling - Sealed oil bath.
 2. Anode Voltage ≥ 160 Kev
 3. Tube Current ≤ 1 mA
 4. Beam divergence - 60 degrees. The x-ray beam divergence should be such that the complete image of maximum size of bag is displayed without corner cuts.
7. **Image Processing**
 1. Sensor - Folded array
 2. Grey Levels ≥ 4096
 3. Display - High resolution 22" or better LED Colour monitors, Flicker-free, minimum 1920 X 1080 pixels full HD display 30 watt and low radiation.
 4. Beam divergence - 60 degrees.
8. **Computer configuration for image Storing and archiving.**
 1. Latest generation compatible with X-Ray machine having the following minimum features or better.
 2. Processor: Core i5 or better available in market.
 3. Hard Disk: 1 TB or better.
 4. CD/DVD Drive R/W
 5. RAM 8 GB or better.
 6. UPS: Reputed make online UPS like Tata libert, APC, Microtek etc. with minimum 30 minutes backup on full load by using SMF batteries.
 1. Capacity - Commensurate capacity as per load.
 2. Voltage range - 180-260 V, 50 Hz single phase.
 3. Output voltage - 230 VAC +/- 1%
 4. Transfer Time - 0 ms
9. Zoom facility should be available to magnify the chosen area of an image eight times (XS) or more. Image features shall be key board controller.
10. The machine should be film safe.
11. The machine should have features of multi energy X-ray imaging facility (140 KeV approx.) where materials of different atomic number will be displayed in different colours to distinguish between organic and inorganic materials. With this method should be possible to distinguish high density organic materials including explosives. Machines should have variable colour or material striping to facilitate the operator to monitor images of organic materials for closure scrutiny. All suspicious items (explosives, high density material, narcotics) should be displayed in one mode and that should be online.
12. Facility for variable contrast must be incorporated to allow enhancement of lighter and darker portion of the image.
13. If the machine fails to penetrate an item, then an alarm (visual and audio both) should be generated to notify the operator.
14. The **threat image projection (TIP)** system software to be incorporated as per details given below:

1. TIP software facility shall be incorporated in the offered x-ray machines to assist supervisors in testing the operator alertness and training X-ray screeners to improve their ability in identifying specific threat object. The system will create a threat object and the same will be superimposed on monitor screen while a bag is being screened. To acknowledge that the operator has seen the false object, operator must press the control panel key that will cause the computer generated threat object to disappear from X-rayed bag image on the VDU screen. Each operator's action shall be recorded in the hard disc of the computer for the auditing purpose by the supervisor or other authorized person.

2. Design of the System

1. TIP software should be compatible with other X-ray technologies such as automatic reject unit, dual x-ray screen technologies, automatic threat recognition system etc. All x-ray image functions must be available at the same time along with the TIP.

3. Image Library

1. The TIP facility should have an image library containing at least 100 explosive devices, 100 knives and 100 firearms in various sizes, shapes, locations and orientations. However, the system shall have facility to expand the library to incorporate additional images by user without assistance of the manufacturer.
2. The image library should contain images of threats at different orientation both plane and end on orientation should be used. Although these will be assigned different file names and reference, it must be possible to cross reference these as the same threat. All threat images protection images must be realistic - representative and non distinguishable from real threat items.

4. Time Interval

1. Programming facility shall be available to project threat images in different intervals. The time period for threat image as well as image mix in percentage shall be user programmable e.g. software shall select 40% images of explosive devices, 35% of fire arms & 25% of knives or random items etc.

2. Once the screener has responded to identify the computer generated threat image, it should remain on the screen for a predefined user programmable time for analysis. The image should be highlighted, upon identification and feedback message shall be visible to the screener.

5. System Administration

1. The threat image projection facility shall have details of user data base such as Venue of function, Name of organization, Name of Screener, user ID number, level of access such as screener, Administrator, Maintenance schedule and password etc.
2. Access to start up menu should be restricted only to the authorized individuals. A log in procedure by means of password or security key could achieve restricted access to each of the comment. The log in procedure should not take longer than 20 second. The system should have facility to bypass the TIP facility, if programmed so by the system administrator. It is to be ensured that the TIP software shall not be hindrance to normal functioning of the x-ray machine.
3. When the operator logs in or logs out, message should be displayed on the Video Display Unit (VDU) screen to confirm that he/she has been correctly logged in or logged out.

6. Feedback Report

1. The threat image projection should be capable of giving feedback HIT MISS or FALSE Alarm message. No message will be presented if a screener correctly passed as clear bag.
2. A HIT message to be presented when a screener has correctly identified a threat image projection image. A MISS message shall be presented when screener fails to identify the TIP image. A False alarm message shall be given when screener incorrectly indicate TIP image when in fact no threat image-projection is present. The feedback should clearly indicate in a screen that a TIP object has been correctly identified/TIP object has been missed/no TIP object was present. Information should be recorded in the data base.

3. Different colour coding shall be used for feedback to the screener. It is recommended that colour code RED for MISS, Green for HIT and Yellow to False Alarm or interrupt be used.
4. The system shall automatically prepare the daily log of events for each shift and for each screener performance. TIP log shall include particulars of Venue, XBIS, Name of Screener, Time and date of threat image, whether threat image was successfully identified or missed etc.
5. The report on threat image projection system may have date and time (from - to -) as per requirement, Screener particulars and decision/outcome i.e. MISS, HIT or False Alarm in percentage as well in absolute numbers, number of bags screened, categories such as explosive devices knife or weapon etc.
6. As a standard practice, daily/weekly/monthly report shall be retrieved. Report shall be for any given time and period, as per command.
7. All data should be stored on the system for a minimum of two months after it has been downloaded. No individual regardless of access rights to the threat image projection components would delete or amend any of threat image projection data or time i.e. threat image projection data on the actual X-ray machine will be read only file.
15. Control desk with security housing and locking provision should be available. The entry of operator personal identification number should be possible through keyboard.
16. Maintenance reminder should be available.
17. Display: Date and Time and Operator ID.
18. Baggage counter preferred.
19. Inverse video.
20. Black and white image.
21. Facility of image enhancement should be available.
22. Machine should be capable of recalling 15-20 previous images.
23. It should have the capability of archiving 3000-4000 images.
24. In case of defective diode arrays, scanning should be disabled and error, message should be displayed on the screen.
25. Copy of all softwares including x-ray software with recovery CD and passwords should be provided.
26. All software features of machine should be online and password protected.
27. System should work on one software only. All software features should be controlled from key board of machine only. Keyboard function should be user friendly. To enable/disable the software features, system should not be rebooted.
28. All models should have online recording facility and images can be recorded in external media like USB drive.
29. All models should have software controlled diagnosis report facility and system should be able to give printout.
30. The machine should be so designed that software enhancement can be easily implemented to take care of new technique in image processing and pattern recognition.
31. The operating temperature should be 0 degree C to 40 degree and storage temperature-20 degree C and 50 degree Celsius.
32. Anti rodent and dust proof cover must be provided.
33. The company manufacturing the equipment should have ISO certification for manufacturing and servicing of x-ray screening machines.
34. **Safety**
 1. The machine must comply with requirement of health and safety regulations with regard to mechanical, Electrical and radiation hazards. The supplier/manufacturers should furnish Test Certificate from Atomic Energy Regulatory Board of India regarding radiation safety.
 2. The radiation level should not exceed accepted health standard (0.1 mR/Hr) at a distance of 5 cms from external housing.
 3. Lead impregnated safety screens should be available at either ends of the tunnel.
 4. Dosimeter be provided for radiation checking.

35. Combined Test Piece (CTP): The manufacturer shall provide one set of CTP per machine for checking serviceability of the machine by the operator. The details of CTP are given below.
1. Combined Test Piece Requirements.
 2. **Single wire Resolution (Test No.1)**: The requirement is to display 42 SWG wire not covered by step wedge. A tick will indicate the visibility of appropriate wire. A set of un-insulated tinned copper wire of size 26, 30, 35, 38, 40 and 42 SWG should be placed on a Perspex sheet. The wires to be laid out in S Shaped curves. The wires should be placed behind varying thickness of aluminum. Metallic marker should be provided using high density material, so that SWG numbers in the Video Display Unit (VDU) are clearly visible.
 3. **Useful Penetration (Test No.2)**: The test defines what level of details can be seen behind a thickness of known material. The CTP should have different gauges of wire behind varying thickness of aluminum. The requirement of this test is that the 26 SWG wire is seen under second step wedge (5/16"). Tick on log sheet will indicate what wires are visible.
 4. **Material discrimination (Test No.3)**: The requirement is that different colours be allocated to the sample of organic and inorganic substances. With multi energy X-Ray it should be possible to distinguish between materials of different average atomic number. This means that organic and inorganic substances can be differentiated. The use of sugar and salt samples encapsulated on the test piece and various materials used in the construction of CTP should check the material discrimination facility. A tick should indicate that the sugar/salt samples are shown in different colour.
 5. **Sample Penetration (Test No.4)**: The requirement is that the lead be visible beneath 26 mm of steel. This test defines what thickness of steel the machine should be able to penetrate. The steel step wedge on the CTP should have steps of at least 2 mm from 16 mm to 30 mm with a lead strip to check that the machine is above or below the requirement. A tick in log sheet should indicate where a lead strip is visible.
 6. **Spatial Resolution (Test No.5)**: The requirement is that vertical and horizontal grating to be seen. This test defines the ability of the system to distinguish and display objects, which are close together. The CTP should have at least 16 copper gratings at right angles to each other. A tick in the log sheet should indicate the gaps in the gratings are visible.
 7. **Thin Metal Imaging (Test No.6)**: This tests the machine's ability to image thin metal. A number of thin metal strips of various thicknesses should be placed in row.
 8. **Method**
 1. The CTP is to be used as a quick routine test carried out daily to ensure that equipment is working properly and satisfactory image is obtained. The results of the tests should be recorded.
 2. The CTP should be placed on the belt and passed through the belt at least once in a day before the baggage is screened or after the x-ray equipment is switched on to ensure that the equipment is working properly. If the image is satisfactory the equipment may be used.
 3. The CTP may be viewed by using image enhancing facility till the operator is satisfied that the machine is working properly. The optimum position of CTP on the belt will depend on x-ray source and detector arrangements. This may be ascertained from the service engineer, if need arises.
 9. **Results**
 1. The best results taking both colour and black and white images into account should be recorded for a particular machine.
 2. The results of test should be recorded giving information like date, time, machine number and type, supervisors name and other remarks.
 3. Supervisory officer should carry out the tests once in a week and compare the results with daily test sheets. In case the images are not up to the standard, service engineer must be asked to rectify the fault. The machine may not be used when its performance is in doubt or not satisfactory in the opinion of the supervisor.
 4. The record must be kept by the operator for one year. The records may be checked by the inspecting officers during this period.

36. **Warranty & Maintenance** - 3 years Warranty and Annual Maintenance Contract for 07 years. Sufficient spares should be available in stock with the supplier and certificate for availability of spares in Rabat for at least 7 years after the warranty period.
37. Miscellaneous: The firm should be able to provide the following along with the equipment:
1. One Test Sample (CTP) for each machine for testing during commissioning and during maintenance.
 2. Suitable voltage stabilizer with isolation transformer.
 3. Training tools - charts, slides, training brochure, training work model, blow up diagram, video films on demonstrations and use etc.
 4. Technical manual giving full description of the item. Practical training for at least 4 times in a year and continuing during the warranty period.
 5. User's handbook and literature on preservation/maintenance as applicable.
 6. Procedure for packing, handling, transportation and storage.
