

CENTRE FOR INDUSTRIAL CONSULTANCY AND SPONSORED RESEARCH (IC&SR)**IIT MADRAS, CHENNAI 600 036****BID INVITATION**

For and on behalf of IC & SR, IIT Madras, Chennai-36, sealed tenders are invited in **THREE COVER SYSTEM** (ELIGIBILITY BID, TECHNICAL BID AND FINANCIAL BID) for the work briefly described hereunder:

1)	Description of Item	Supply and commissioning of Immersive Projector Based Visualization System
2)	Specification No.	OED/2019/14/NTCPWC/KMUR
	Tender Reference No.	OED/KMUR/009/2019
3)	Earnest Money Deposit	<p>Rs. 9,00000- (Rupees Nine lakhs only) in the form of DD drawn issued by any nationalized /commercial bank in favour of "The Registrar, IIT Madras", Chennai. The DD shall be enclosed in the Technical Bid failing which the tender will be summarily rejected.</p> <p>If the contractors/Tenderers withdraw their offer in the course of tendering process after submission and /or fails to undertake the above work after issuance of the work order or letter of acceptance, the EMD furnished shall be forfeited without any further correspondence or reference to the contractors /Tenderers.</p>
4)	Last date for submission of bids	15.00 hours. on -11/06/2019
5)	Method of submission of Tender	<p>The tenders shall be submitted under Three cover system (i.e. Eligibility Bid, Technical Bid and Financial Bid)</p> <p>Eligibility Bid: For eligibility bid, please refer to Page 11 under the heading eligibility of bidders for opening technical bid cover.</p> <p>Technical Bid: The Technical bid shall contain only the technical details/specifications, balance sheets along with the copies of the work orders/completion. The price bid shall be kept in a separate sealed cover.</p> <p>Financial Bid: The Financial bid shall contain item wise price for each item. The rates quoted shall cover all commercials terms including cost of labour</p>

		<p>charges, transportation, payment terms etc. and shall be exclusive of Taxes and duties which will be paid/reimbursed by IIT Madras as applicable. However, the tenderers shall indicate applicable taxes and their rates at the time of submission of bids.</p> <p>The three bids shall be placed in separate covers and superscribed as “Eligibility Bid” “Technical Bid” or “Financial Bid” as the case may be, and sealed. The financial bid shall not be enclosed in the technical bid cover and if done will render the bid liable for rejection. Both the sealed covers shall be placed in an outer cover and superscribed with the name of the work, tender number etc.</p>
6)	Date & Place of Opening of Tender (Technical bid)	<p>The offers/bids will be opened by a duly constituted tender committee at 16-17 hours IST on -11.06.2019 Conference Room of NTCPWC, 6th Floor, New Academic Complex, IIT Madras, Chennai. If the due date happens to be a holiday, the received tender will be opened on the next working day at the time specified above</p> <p>On the day of opening only the main cover and the Technical Bids will be opened in the presence of the tenderers who wish to participate. The unopened financial bids of all the bidders will be placed in a separate cover and sealed.</p>
7)	Validity of offer	90 days from the date of opening
8)	Clarification to be obtained from	<p>Prof. K. Murali / Dr.D.KumaranRaju (+91-9840687934)</p> <p>ntcpwc@iitm.ac.in/raju@ntcpwc.iitm.ac.in</p>
9)	Cost associated with the tendering process	The bidders shall meet all the expenses and IIT Madras shall not be responsible for any costs associated with the tendering process.
10)	Tender Inviting Authority	The Senior Manager, Project Purchase, IC &SR, building 2 nd floor, Indian Institute of Technology, Madras, Chennai-600 036
11)	Authority to accept the bid	IC & SR, IIT Madras reserves the full right to accept or reject any tender at any stage without assigning any reasons.

12)	Evaluation of offer and opening of financial bids	<p>The Technical bids opened shall be evaluated by a duly constituted committee or its sub-committee to ascertain the suitability of the bid in accordance with the specification and other requirements of the tender.</p> <p>The Financial bids of only those technically qualified bidders will be opened under intimation to the qualified bidders. The Financial bids of other bidders shall be returned unopened.</p>
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SECTION – I
INSTRUCTION TO BIDDERS

1.1. GENERAL

1.1.1 Specification No. OED/2019/14/NTCPWC/KMUR

1.1.2 For and on behalf of the Centre for Industrial Consultancy and Sponsored Research (IC&SR), IITM, National Technology Centre for Ports, Waterways and Coast (NTCPWC) of sealed competitive bids under Three Cover system are invited as per the details furnished hereunder:

1.2 SCOPE OF WORK

The scope of the work under this tender, inter alia, covers supply and commissioning of Projector Based Visualization System. The detailed scope, Technical specification and other terms and conditions are elaborated under relevant schedule of this tender.

1.3 EARNEST MONEY DEPOSIT (EMD)

Rs.9,00,000/ (Rs. Nine lakhs only) in the form of DD drawn issued by any nationalized /commercial bank in favour of "The Registrar, IIT Madras", Chennai. The DD shall be enclosed in the Technical Bid failing the tender will be summarily rejected.

If the contractor/Tenderer withdraws his offer in the course of Tender processing after its submission and /or fails to undertake the above work after issuance of the work order or letter of acceptance, the EMD furnished shall be forfeited without any further reference to the contractor/Tenderer.

No interest shall be paid on the EMD. The EMD deposited by the successful bidder shall be returned after the receipt and acceptance of Performance security and issue of the work order/purchase order. The EMD submitted by all other unsuccessful tenderers shall be returned within 10 days upon finalization of the award of contract and on receipt of a request along with the advanced stamped receipt.

1.4 SUBMISSION OF TENDER:

1.4.1 Tender shall be submitted in Three cover system (i.e.) "Eligibility bid", "Technical bid" and "Financial Bid". The technical and financial bids shall be placed in separate covers and super scribed as "Technical Bid" and "Financial Bid" as the case may be, and superscribed "**Procurement of Projector Based Visualization System and Tender Number and sealed.**" Both the sealed covers shall be put in an outer cover and superscribed with the name of the work with tender number etc.

Cover-1: Eligibility of Bidder for opening technical bid. Details are given under separate heading with Table -1 (Track Record) which is mandatory to submit for Eligibility criteria.

Cover 2: Technical bid shall contain only the technical details/specifications, balance sheets along with the copies of the work orders/completion certificate.

Prices should not be included in the Technical bid. However, an unfilled signed price bid shall be kept in the technical bid.

Cover-3: The Financial bid shall contain item wise price for each item. The rates quoted shall cover all commercials terms including cost of labour charges, transportation, payment terms etc. and shall be exclusive of Taxes and duties which will be paid/reimbursed by IIT Madras as applicable. However, the tenderers shall indicate the applicable taxes and their rates at the time of submitting the bids.

1.4.2 The Main cover containing both Technical bid and Financial bid in separate sealed covers shall be delivered or sent to the below mentioned address within the scheduled date and time specified for receipt of the tenders:

The Senior Manager, Project Purchase,
IC & SR Building, 2nd floor
Indian Institute of Technology Madras,
Chennai 600 036

1.4.3 The bidders have the option of sending the bid by Registered Post, courier or handing over the bid in person. NTCPCW shall not be responsible for any postal or delivery delays. Bids submitted by Telex/Fax/Telegram/E-mail etc. will not be accepted.

1.5 SCHEDULE FOR RECEIPT AND OPENING OF BID:

a) Last date and time for receipt of both the bids: 11.06.2019 @15.00hrs.

b) Date and time for opening of technical bid : 11.06.2019 (16.00 to 17.00 hrs)

If the due date for tender opening happens to be a holiday, the tenders will be opened at the time mentioned earlier on the next working day.

1.6 OPENING OF TENDER:

The main cover and the cover containing the 'Technical Bid' alone shall be opened at the Conference Room of NTCPCW, 6th Floor, New Academic Complex, IIT Madras, Chennai on the due date and time prescribed in the presence of such of those tenderers who may desire to participate in the tender opening.

1.6.1 On the day of opening of the tender, the financial bids of all the tenderers who submitted their bid, shall be placed in a separate cover and sealed in the presence of Tenderers who participated in the Tender opening. The financial bid of only the Tenderers whose Technical offers have been qualified will be opened at a later date under intimation to the successful bidders. The financial bids of the nonqualified bidders in Technical evaluation shall be returned to them unopened.

1.6.2 The representative attending the opening of tenders should be duly authorized by the respective participating firms.

1.6.3 If the tenderer has any doubt about the meaning of any portion of this specification, they may address the Tender inviting authority so as to reach the concerned authority

at least one week prior to opening of this tender. Clarifications, beyond the stipulated date will not be entertained.

1.7 Tender Inviting Authority

The Senior Manager, Project Purchase,
IC & SR Building 2nd floor,
Indian Institute of Technology Madras,
Chennai 600 036

1.7.1 Receipt of Late bids.

The offers received after the due date and time will not be considered. The institute shall not be responsible for the late receipt of tender owing to postal/courier or delays and/or lost during the transit.

1.7.2 Do not quote the optional items or additional items unless otherwise stipulated in the tender documents /specifications.

1.7.3 All amendments, time extension, clarifications etc., will be uploaded on the IITM website only and will neither be published in newspapers nor individual communications sent. Bidders should regularly visit the above website to keep themselves updated. No extension in the bid due date/time shall be considered on account of delay in receipt of any document by post.

1.7.4 Acknowledgements: - The tenderer hereby acknowledges that they have read and noted all the conditions mentioned in this document and also agree to abide by all such conditions.

SECTION II
COMMERCIAL AND TECHNICAL CONDITIONS

2.1 GENERAL

The scope of services shall be as detailed in Section-III.

2.2 LOCATION: The equipment shall be initially installed in NTCPWC at New Academic Complex, 6th Floor, IIT Madras and later shifted and reinstalled at IIT-M Thaiyur campus.

2.3 COMPLETENESS OF TENDER

The tender shall be complete in all aspects. The Bidders shall furnish all relevant details called for in this document and also attach supporting documents, wherever required, either in original or duly notarized, for consideration by the tender inviting authority or their authorized representatives. The tenders not containing the complete details as required are liable for rejection.

2.4 SUBMISSION OF TENDER

Tenderers are advised to send their tenders well in advance so as to reach this office in time. Tenders though posted in time but delayed in transit by post will not be considered, if received after the due date and time.

2.5 PRICE

Tenderer shall quote FIRM Price only, to be quoted in Indian Rupees. For pricing structure, kindly see the Annexure-I. Unit rates for individual items and Taxes should be quoted separately. Total price of the work shall also be filled in at the appropriate place.

2.6 VALIDITY OF TENDER

The tenders should be valid for a period of 90 days (ninety days) from the date of opening of tender. In case any bidder quotes a lower validity period than that specified, their offer shall be liable for rejection. In exceptional circumstances, the purchaser may solicit the bidder's consent for an extension of the period of validity. The request and response thereto shall be made in writing (including mail).

2.7 EMPLOYER RESERVES THE RIGHT

- a) Not to accept the lowest or any tender.
- b) To reject any or all the tenders without assigning any reasons thereof.
- c) To relax or waive any of the conditions stipulated in the tender specification as deemed necessary in the best interest of the project for good and sufficient reasons.
- d) To revise the quantum of works/completion period of work of any or all the items covered by this enquiry during the pendency of contract and to terminate the contract before completion of the stipulated contract period.

2.8 EVALUATION AND COMPARISON OF TENDER OFFERS

- a) The evaluation of the Tender will be done as per IIT Madras guidelines in vogue.
- b) The evaluation shall include contract value of works with applicable sales/service tax, etc.,

- c) In case of discrepancy between the prices quoted in words and in figures, the lower of the two shall be considered.

2.9 PERFORMANCE BANK GUARANTEE:

The successful bidder shall submit performance Bank guarantee for an amount equivalent to 10% of the value of the contract. The performance bank guarantee shall be furnished as per the format attached.

In case the successful bidder wishes to submit Bank Guarantee (BG) towards performance obligations viz. Performance Bank Guarantee, the BG should be routed through Beneficiary bank to the end user bank. The Bank Guarantee should remain valid for a period of sixty days beyond the date of completion of all contractual obligations of the contractor Including warranty.

ONLY AFTER SUBMISSION OF PERFORMANCE SECURITY, THE CONTRACT AGREEMENT SHALL BE EXECUTED AND ANY PAYMENT UNDER THIS AGREEMENT SHALL BE RELEASED.

2.10 PAYMENT TERMS-

- a) 50% of the supply of the equipment at our site.
- b) 40% on completion of installation, commissioning, trial run and on-site user acceptance by IITM.
- c) The balance 10% will be released annually, at equally distributed fractions, based on the satisfactory performance during the warranty period.

2.10.1 Payment will be made either through NEFT/RTGS or cheque on any of the commercial banks or their branches in India as may be decided by NTCPWC from time to time. If the contractor requests for Payment by DD, Exchange commission for issue of bank draft shall be to the account of the contractor. If the purchase involves import of item(s) payment will normally be made through Letter of Credit.

2.10.2 Offers conforming to the above terms of payment alone will be preferred. In the event of any deviation from the specified payment terms, the Authority/ NTCPWC may reject the offers.

2.11 FORCE MAJEURE

Neither the Contractor nor the NTCPWC shall be considered in default in performance of its obligations hereunder if such performance is prevented or delayed for any causes beyond the reasonable control of the party affected, such as war, hostilities , revolution, riot, civil commotion, epidemic, major fires, explosions, floods, earthquakes or because of any law, order, proclamatory regulations or ordinance of Government or because of any act of God, provided notice in writing of such cause with necessary evidence that the obligation under the Contract is thereby affected or prevented or delayed, is given within 14 days from the happening of the event and in any case it is not possible to serve the notice within 14 days period, then within the shortest possible period without delay. In case the force majeure conditions prolong beyond a continuous period of 6 months, the NTCPWC shall be entitled to decide the further course of action including revisions in the terms of Contract, if any.

- 2.11.1** As soon as the cause of Force Majeure has been removed, the party whose ability to perform its obligation has been affected shall notify the other party about the actual delay occurred on account of such activities.
- 2.11.2** Although the time for completion of work shall be suitably extended (not exceeding the period during which the work was stopped on account of Force Majeure clause), such extension shall not result in any financial claim by the Contractor against the Purchaser or on account of such a delay for any other reason whatsoever.

2.12 DUTIES AND TAXES

2.12.1 The price quoted shall be firm and **shall be inclusive of all Taxes duties Transportation, Insurance, Installation charges and other contingent cost for proper completion of the work. However, the GST as applicable shall be indicated separately, which shall be either paid by NTCPWC directly or reimbursed at actuals to the successful bidder. Similarly, Customs duty payable if any, shall be indicated separately which shall also be paid directly/ reimbursed by NTCPWC.**

2.12.2. Applicable income tax will be deducted at source on each bill as per the regulations in force and TDS certificate will be issued.

2.13 LIQUIDATED DAMAGES: -

If the contractor fails to supply the items as specified in the technical specifications within the specified time, or replace the damaged items, within the period specified by the NTCPWC and / or the contractor deserted the work or delayed the work for reasons solely attributable to them, the NTCPWC shall levy the liquidated damage (not by way of penalty) at the rate of 0.5% of the total contract value per week or part thereof subject to maximum of 10% of overall contract value. If the quality of the Goods supplied is not to the satisfaction of the NTCPWC and /or they do not meet the technical standards specified, the NTCPWC shall also reserve its rights to terminate the contract after giving 10 days' notice , in addition to levying Liquidated damages and forfeiting the performance Bank Guarantee. All payments made earlier will also be recovered. The decision of the NTCPWC in this regard is final and binding on the contractor.

2.14 JURISDICTION FOR LEGAL PROCEEDINGS

No suit or any proceedings in regard to any matter arising in any respect under this contract shall be instituted in a Court Save in the City Civil Court of Chennai or the Courts of Small Causes at Chennai. It is agreed that no other courts shall have jurisdiction to entertain any suit or proceedings even though part of the cause of action might arise within their jurisdiction. In case any part of cause of action arises within the jurisdiction of any of the courts in Tamil Nadu and not in the courts in the Chennai City, it is agreed to between the parties that such suits or proceedings shall be instituted in a court within Tamil Nadu and no other court outside Tamil Nadu shall have jurisdiction, even though any part of the cause of action might arise within the jurisdiction of such courts.

The bidders shall furnish an undertaking in a non-judicial stamp paper of value Rs.100/- agreeing to the above condition as per schedule furnished in Annexure-II. This should be given after issuing the work order – This is applicable for selected L1 bidder

2.15 ACKNOWLEDGEMENT

The tenderer is deemed to have been accepted all the terms and conditions of this tender including.

1. Specific acceptance of terms of payment.
2. Terms of Liquidated damages for delay in completion of work.
3. Validity of tender.

If no indication is given by the tenderer in his offer, it is deemed that the Bidder is agreeable to all the terms and conditions of the NTCPWC stipulated in this tender.

2.16 LANGUAGE OF TENDER

All information in the bid shall be in ENGLISH only. All corrections, over typing etc. in the tender should be duly attested by signature of the authorised representative of the bidder.

2.17 DEVIATIONS IN TENDER

No deviation to the tender conditions shall be entertained.

2.18 TIME OF COMPLETION

The entire work viz. Design, Supply, Installation, Testing & Commissioning of the **IPBVS** system shall be completed in time bound manner. The entire work shall be completed within 30 (Thirty) days from the date of placing of order.

2.19 WARRANTY

All the equipment shall be covered under **5 Years onsite warranty** and all software should have lifetime validity. Preventive maintenance shall be carried out by the bidder at regular intervals (Quarterly) during the Warranty period.

2.20 ELIGIBILITY OF BIDDERS FOR OPENING TECHNICAL BID (COVER-1)

2.20.1 The bidder should have documentary evidence/ authorisation from the OEM for the purposes of selling and supporting the equipment.

2.20.2 The bidder should establish that they have proven track record of providing **Immersive projector-based visualization system (IPBVS)** for the purposes of real-time simulation visualisation applications

2.20.3 For the above purpose they should enclosed relevant documents including completion certificate containing details of the projects in which they had delivered IPBVS and supported in India containing the name of the client, type of installation (Real time /Non real time simulation based systems, Land/Sea/Air/Space/etc), place of installation, year of installation and whether system is in service (as per Table 1).

Table 1. Track Record

S No	Name of client	Type of installation		Place of installation and Description including Horizontal Field of View (HFOV)	Year of installation	System is in service (Y/N)	Details of contact person (email & contact no.)
		Real-time / Non Real-time simulation	Land/Sea/Air/ Space etc				
1							
2							
3							

Please add additional rows if required.

For the purposes of evaluation, *the bidder shall attach the necessary documentary evidence such as Letters of Award/ Certificates of compliance to standards/ Notarized completion documents from the clients. IITM may ask for original documents for sighting. IITM may also visit customer site for the purposes of evaluation.*

IMPORTANT DATES

CHRONOLOGY OF EVENTS

Date of release of RFQ/Tender start date: : **21.05.2019**
Date of Pre-bid meeting : **07.06.2019.**
Date of submission of bids/ Eligibility & Technical bid opening : **11.06.2019.**
Date of announcement of qualified bidders : **13.06.2019.**
Date of Technical Presentation : **17.06.2019**
Date of opening of financial bid : **17.06.2019**

(Followed by Presentation)

Section – III

3. Technical Specification

Name of work: Procurement of Projector Based Visualization System.

Specification No.: OED/2019/14/NTCPWC/KMUR

3.1 SCOPE OF WORK

3.1.1 PREAMBLE

The entire work viz. Design, Supply, Installation, Testing & Commissioning of the **IPBVS** system shall be completed in time bound manner. Hence the successful bidder shall complete the implementation of the **Immersive Projector based visualization system (IPBVS)** within 30 days from the date of LoA / Purchase order.

The location where the projector-based visualization system will be installed is equipped with HVAC, Electrical and Network services. During the pre-bid meeting, the interested bidders will be able to visit and see the location and provide any requisite inputs.

3.1.2 Supply and Installation of IPBVS

The bidder is responsible for supply and installation of the **IPBVS**, comprising of projectors, mounting arrangements, cylindrical curved screen, relevant hardware/software, firmware etc. required to run the real time marine visualization simulation (**RTMVS**). The system proposed by the bidder shall be compatible for the **Image Generator Software (IGS)*** of the (**RTMVS**) and present a realistic environment. The Real Time Visualisation of the Marine/ Sea Surface is of utmost importance to the project. The **IPBVS** for the **RTMVS** is to be designed to provide for 360° cylindrical horizontal view and 2 numbers of floor views as shown in Fig 1. The scope of work includes supply, installation assistance, testing, commissioning and training of all the equipment and **IPBVS** with onsite warranty support and maintenance. The successful bidder shall depute their technical team to be present at the time of integration with IGS and resolve all the teething problem without claiming any extra cost and their quoted price is deemed to cover these costs.

The entire work related to creating the desired **IPBVS** is turnkey and includes but not limited, supply of equipment (such as projectors, projector lenses, firmware, accessories, cables such as high-speed HDMI cables, any other related software, etc.) and the allied works such as placement and installation of equipment.

The projection system should be designed within the available area as per drawing in Fig.2. There is no scope for any alteration of floor, ceiling, wall etc. of the hall.

The bidder is also responsible for supply and installation of the projectors supplied and mapping of projection on the given area and ensure best results.

Proper isolation of power and data cabling for all systems and devices so as not to cause interference with video signals and data networks shall be ensured by the successful bidder and shall also be included in the scope of work.

GPU/Graphic computing Specifications are:

The bidder should ensure **IPBVS** compatibility with

- NVIDIA Quadro series P4000 or equivalent,

- Windows 10 Professional 64bit English,

*IGS Specifications are:

- The IGS will provide up to eighteen (18) nos. HDMI outputs for the IPBVS
- Each output will cover thirty (30) deg. Of horizontal field of view (HFOV) and about twenty (25) deg. Vertical field of view (VFOV)
- Based on the scene complexity, the refresh rates will vary from 20 Hz ~ 120 Hz
- The IGS will provide scene visualisation across various weather and illumination (Day & Night etc.)

3.1.3 Major Components and Associated Services

3.1.3.1. The major components covered under this tender include the following.

- Projectors and associated mounting arrangements
- Projection screen.
- Setting up of projection screen (as per diameter shown in Fig.1, including 2 doors for entry to and exit from the cylindrical projection. The setup should be modular to facilitate shifting of the cylinder to a permanent location after approx.1 year. The screen should be high gain material and fit for purpose.
- Projector Mounting, Projector Universal Ceiling Mount Kit adjustable. It should be able to be rotated from at least 0 ° to 40 ° and 20 ° in horizontal and vertical angle of inclination respectively.

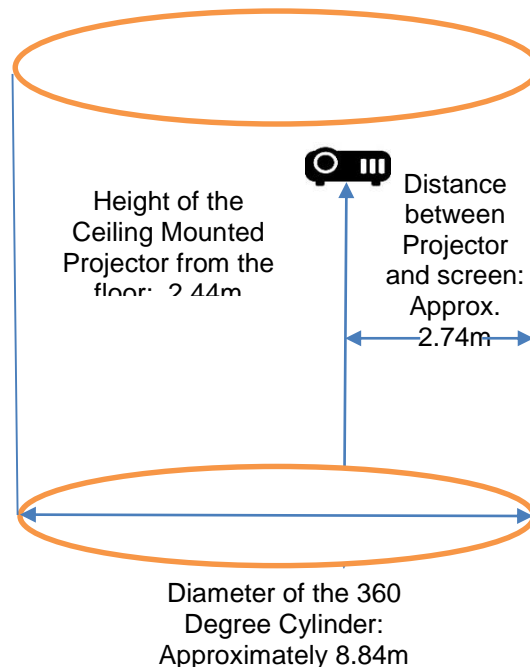


Fig.1. Schematic of cylindrical projection system (IITM has frozen 12 no. of horizontal projectors for cylindrical projection & 6 no. of downward projectors for floor projections).

3.1.3.2. The projected image will have the following components

- Horizontal continuous cylindrical projection with an approximate projection area (internal surface area) of approx. 70 sq. m.
- Floor projection with the help of vertically mounted projectors with an approximate projected area of approx. 2 x 20 sq. m each.

- c) Within a period of 1 year, the simulator is likely to be shifted to another premises where these facilities shall be provided on permanent basis (As per layout shown in Fig.3). Hence the system offered by the bidder shall have the flexibility for decommissioning and reinstallation another location and also have seamless functioning. The bidder to design and install the IPBVS in a manner such that the decommissioning and reinstallation at the permanent facility (layout given in Fig.3) is completed in a seamless manner. The bidder shall quote a separate rate under the relevant item of the BOQ for decommissioning and reinstallation. The bidder to provide the technical drawings of the IPBVS for the temporary and permanent facility. The BOQ format is detailed in Annexure 1 below.

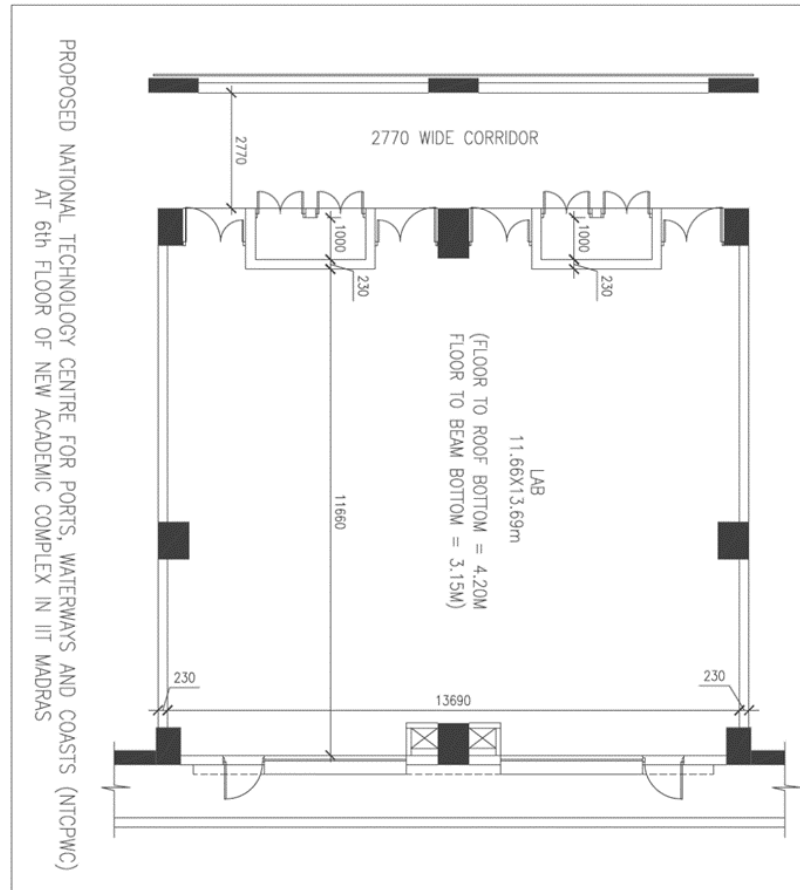


Fig 2. Interim facility for installation.

The permanent facility is shown in the image (Fig 3) below.

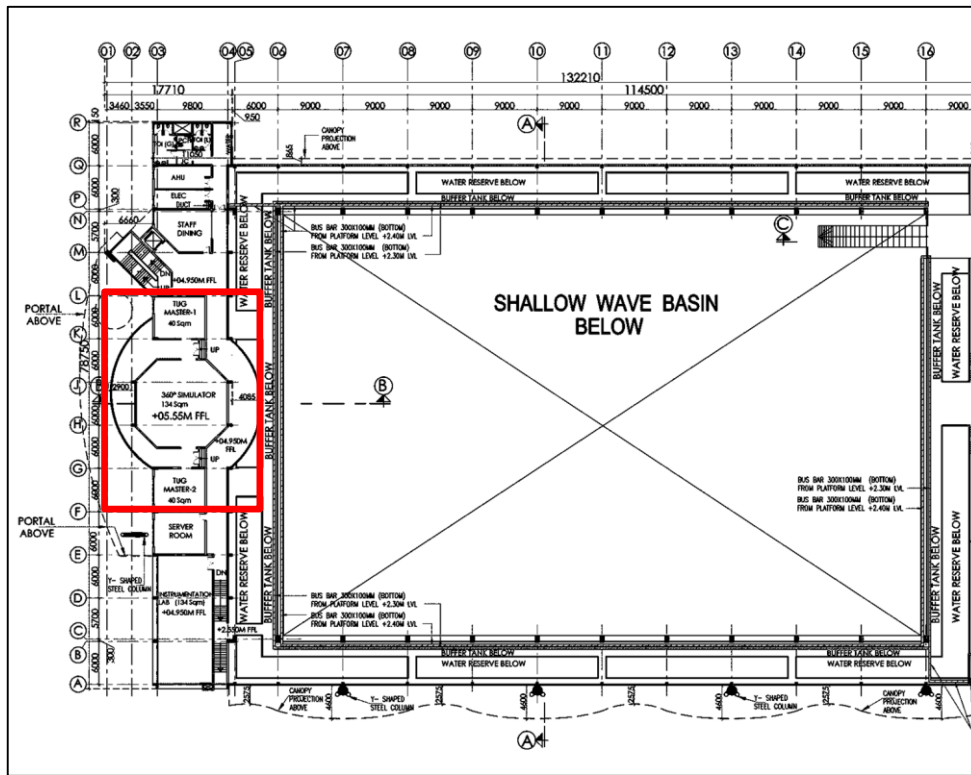


Fig 3. Layout of permanent facility for installation

3.1.3.4 IPBVS Solution, Design and Setup

As part of this process, the bidders are required to provide a solution overview that details the layout design of the **IPBVS**. It must include the engineering drawings with 3-D renditions of the **IPBVS** layout as installed in the room.

The technical details provided in support of the system shall therefore include:

- Details and design of the projection mounting arrangements and the screen arrangement
- Details and design of the projection for the floor area
- Engineering drawings, 3-D renditions and video walkthroughs of the **IPBVS** layout as installed in the room.

These are to be submitted along with the technical submissions in response to the RFP.

The above will be evaluated for:

- technical correctness (including technical specification & design criteria)
- overall design and approach of the solution & project
- level of detail provided
- ergonomics and aesthetics

3.1.4 IPBVS Projector Specifications

3.1.4.1. Needless to point out that there is a correlation between the projector specification, number of projectors, throw distances to screens and lens combinations. Keeping in view the above requirement the bidders are free to suggest an approach based on the given physical layout (room), and the integration requirements for the purpose to be achieved.

3.1.4.2. The threshold criteria for acceptance of the projector is listed below:

- Image brightness: > 6000 Lumens
- Contrast Ratio: > 50,000:1 Laser technology
- Resolution: WUXGA (1920 X 1200)
- Remote Control for Brightness, Contrast, Colour Adjustment, Control of offset for horizontal and vertical lens (Motorized), Control of zoom and focus adjustment (Motorized)
- Use case: UHD 3D visualization in a cylindrical projection environment
- Lens Type: as required
- No. of projectors: As per Fig.1.
- Details of mounting arrangements
- Remote control: the projection system should be able to be controlled by a remote control.

3.1.4.3. The bidders can offer are free to offer their own design of equivalent or higher configuration subject to its compatibility to the main system. Offers not meeting the threshold criteria shall be rejected while no extra weightage shall be given for higher hardware configurations. Accordingly, the evaluation will be on the overall approach and solution.

3.1.4.4. Bidders need to indicate the details of power consumption, heat dissipation, temperature requirements and weight.

3.1.4.5. Bidders shall also specify the make, model and number of projectors and lenses basis Fig 1, Fig. 2 and Fig 3.

3.2 IPBVS Projector Control

3.2.1. The visual content shall need to be seamlessly synchronized over multiple display channels. The refresh rates of the display system need to display the visual content with the required fidelity taking into consideration movement of simulation entities and reducing perceptible image smearing due to image retention and eye motion.

3.2.2 Screen transition: For the purposes of simulation, there should be no loss of content across the display channels. The visual transition from the human perspective should give the perception of “visual continuity” of what is being seen. For these to be achieved the bidder will need to assure that physical mounting and installation is optimized.

3.2.3. Physical mounting and installation: The displays and screens not only need to be orthogonal to shifted lens normal but also need to cater for the human/ operator view area.

3.2.4. The bidder to ensure that the Geometry correction for the transformation on the rectilinear render surface to the final target cylindrical surface should be accurate.

3.2.5. The **IPBVS** should be capable of colour matching across display channels so that the perceptible differences are minimized by calibration of colour wise settings including the saturation, hue and gain settings.

3.2.6. The **IPBVS** should provide the capability wherein Illumination, Brightness and Contrast will need to be set very precisely, not only across the principal display area, but also across the overlap zones that need to be manipulated to minimize the aberrations that may be perceived by the human eye.

3.2.7. The Display device (i.e. Projector/ Screen) firmware including updates, must be able to be controlled by an API, to allow for initial and in-use calibration and in cases run time too.

The Scope of work also to cover Supply, Erection & Commissioning of Cylindrical Projection Screen for Simulation Room as per Fig 2, which can be accommodated at the new permanent location as per Fig 3, without involving any major modifications.

3.3 GPU/Graphic computing Specifications

The bidder should ensure **IPBVS** compatibility with

- NVIDIA Quadro series P4000 or equivalent,
- Windows 10 Professional 64bit English,

EVALUATION PROCESS:

NTPCWC will follow a Quality Cum Cost Based system for evaluation of the bids as per Table 2.

3.4 QCBS METHODOLOGY SUMMARY

This is a QCBS (Quality cum cost-based selection) tender. The Technical Proposal (TP) has a weightage of 70% while the Financial Proposal (FP) has a weightage of 30%. TP is evaluated as per the details furnished in the table-1 provided hereunder. The FP is evaluated on the basis of financial bid.

The weightages for the technical evaluation are as listed in the Table 2 below:

S.No.	COMPONENT AS PER FIG. 1	WEIGHTAGE (Points)
1	IPBVS Solution and Design	30 Points Documentation Submission to evaluate parameters that will include: <ul style="list-style-type: none">• IPBVS Solution and Setup• IPBVS Projector Specifications• IPBVS Projector Control• Screens Specifications
2	Implementation Methodology	40 Points Evaluated parameters will include: <ul style="list-style-type: none">• Technical Presentation & Demonstration with Q&A (please see the note below)
3	Track Record (basis for award of points to be discussed and decided)	25 Points Documentary proof to ascertain past experience as per Table 2. Highest Weightage will be given to Marine/Sea based real time simulation installation types in India and their duration of Service.
4	Service Support in India (basis for award of points to be discussed and decided)	5 Points Documentary evidence to establish the bidder can support the scope of work at IITM location. This maybe in the form of an approach document and/or a list of existing customers and sites in Chennai.
	TOTAL	100 Points

Note: Technical Presentation & Demonstration with Q&A will Include the following:

- Introduction & relevant background
- Presentation on the solution & design

- Demonstration by the bidder of clear understanding of the underlying technologies and engineering required for the solution (Bidders are free to demonstrate the solution with 2 or 3 projector set-up on a temporary screen setup which may be on a smaller scale & the necessary GPU etc.). IITM will provide the space and power.
- Future scalability of the solution
- Q&A

3.5 Techno-commercial Selection

3.5.1. The bids which does not meet the minimum threshold requirements or are technically flawed in approach/ solutioning will be rejected at the first stage itself. Only those bidders who score a minimum score of 50 Points on items 1,3 and 4 as evaluated by the documentation will be considered for item 2 i.e. Implementation Methodology, Technical Presentation & Demonstration with Q&A etc.

3.5.2. The individual Bidder's commercial scores (CS) are normalized as per the formula

$$\text{Composite Score, CS} = \text{TP} * 0.7 + \text{Fn} * 0.3.$$

TP = Technical Proposal, $\text{Fn} = 100 * \text{Fmin} / \text{Fb}$ (rounded off to 2 decimal places), where Fn=Normalized commercial score for the bidder under consideration; Fb=Absolute price quoted by the bidder under consideration & Fmin=Minimum absolute financial quote.

The bidder with the highest composite score, CS, would be awarded the contract normally.

Sample Template for the Technical Proposal

The bidder can prepare their own template. However, all items in section 4 should be included under the proposal for evaluation purpose. The bidder is free to provide any other additional information as appropriate.

- IPBVS Solution and Design
- Track Record
- Service Support in India
- **BOQ format without price to be submitted along with the Technical bid**

Table 3: BOQ without price

S No.	Item	Quantity	Cost (INR)	Applicable Taxes (INR)
1	Projectors (complete with lenses all accessories)	18	NA	NA
2	Projection Screen (with all fit out and accessories) as per Section 3.2	1	NA	NA
3	Services for installation and commissioning at temporary site	1	NA	NA
4	Shifting and reinstallation at permanent site	1	NA	NA
	Total			

NA- Not applicable

Declaration

I hereby certify that we can supply above item and I agreed tender terms and conditions

COMPANY SEAL

SIGNATURE :

DESIGNATION

Annexure - I

BILL OF QUANTITY (PRICE BID) (COVER -3)

Tenderer shall quote FIRM Price only, to be quoted in Indian Rupees. For pricing structure, kindly see the Annexure-I. Unit rates for individual items and Taxes should be quoted separately. Total price of the work shall also be filled in at the appropriate place.

Table 4: BOQ with price

S No.	Item	Quantity	Cost (INR)	Applicable Taxes (INR)
1	Projectors (complete with lenses all accessories)	18		
2	Projection Screen (with all fit out and accessories) as per Section 3.2	1		
3	Services for installation and commissioning at temporary site	1		
4	Shifting and reinstallation at permanent site	1		
	Total			

DECLARATION

I hereby certify that the price quoted above are firm and correct

COMPANY SEAL

SIGNATURE :

DESIGNATION

ANNEXURE-III

FORM OF PERFORMANCE GUARANTEE

(To be Typed on Non-Judicial Stamp paper Value not less than ₹100)

In consideration of the Indian Institute of Technology Chennai-36 (hereinafter called "IITM") having offered to accept the terms and conditions of the proposed agreement between IITM and (hereinafter called "the said contractor(s)" for the Supply and commissioning of projector- based visualisation system" (hereinafter called "the said agreement")having agreed to production of an irrevocable Bank Guarantee for Rs.....(Rupees..... only @10% of the value of the contract) as a security/guarantee from the contractor(s) for compliance of his obligations in accordance with the terms and conditions in the said agreement.

1. We.....(Indicate The name of bank) (hereinafter referred to as the "Bank") hereby undertake to pay to the Government an amount not exceeding Rs (Rupees.....only @5% of the value of contract) on demand by the IITM

2. We do hereby undertake to pay the amounts due and payable (indicate the name of the Bank) under this Guarantee without any demur, merely on a demand from IITM stating that the amount claimed is required to meet the recoveries due or likely to be due from the said contractor(s). Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this Guarantee. However, our liability under this Guarantee shall be restricted to an amount not exceeding Rs..... (Rupees.....only @10% of the value of contract)

3. We, the said Bank, further undertake to pay to the IITM any money so demanded notwithstanding any dispute or disputes raised by the contractor(s) in any suit or proceeding pending before any Court or Tribunal relating thereto, our liability under this present being absolute and unequivocal. The payment so made by us under this bond shall be a valid discharge of our liability for payment thereunder, and the contractor(s) shall have no claim against us for making such payment.

4. We (Indicate the Name of Bank) further agree that the Guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said agreement, and it shall continue to be enforceable till all the dues of the IITM under or by virtue of the said agreement have been fully paid, and its claims satisfied or discharged, or till the Engineer-in-charge, on behalf of

the IITM, certifies that the terms and conditions of the said agreement have been fully and properly carried out by the said contractor(s), and accordingly discharges this guarantee.

5. We (indicate the name of the Bank) further agree with the IITM that the IITM shall have the fullest liberty without our consent, and without affecting in any manner our obligations hereunder, to vary any of the terms and conditions of the said agreement or to extend time of performance by the said contractor(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the IITM against the said contractor(s), and to forbear or enforce any of the terms and conditions relating to the said agreement, and we shall not be relieved from our liability by reason of any such variation or extension being granted to the said contractor(s) or for any forbearance, act of omission on the part of the IITM or any indulgence by the IITM to the said contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.

6. This Guarantee will not be discharged due to the change in the constitution of the Bank or the contractor(s).

7. We (Indicate the name of the Bank).lastly undertake not to revoke this Guarantee except with (indicate the name of the Bank) the previous consent of the IITM in writing.

8. This Guarantee shall be valid up to one month from the scheduled submission date of the Final Report unless extended on demand by the Government. Notwithstanding anything mentioned above, our liability against this Guarantee is restricted to Rs (Rupeesonly @10% of the value of contract) , and unless a claim in writing is lodged with us within six months of the date of expiry or extended date of expiry of this Guarantee all our liabilities under this Guarantee shall stand discharged.

Dated theday of.....

For

Tender Inviting Authority:

The Project Coordinator,
NTCPWC, IIT Madras,
Chennai – 600036.