

Request for Proposal (RFP)

| | |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RFP Number | CMD/KIIFB/CS-03/2018 |
| Name of the work | Selection of Consultants for implementation of BIM and Virtual Design & Construction for projects (Buildings) executed under KIIFB |
| Last date and time of submission | 03-12-2018 at 05.00 pm |
| Date of Opening | 04-12-2018 at 11.00 am at the Office of CMD |
| Designation and Address of the Tender Inviting Authority /Quotation to be addressed to | The Director Centre for Management Development Thycaud, Thiruvananthapuram, Kerala PIN- 695014 |
| Earnest Money Deposit (EMD) | Rs. 10,000/- to be submitted as a demand draft drawn in favour of "Centre for Management Development" payable at Thiruvananthapuram |
| Validity of Bid | 30 days from the date of opening |
| Letter of Award | Within 14 (fourteen) days of opening of financial bid |
| Commencement of work | Within 7(seven) days of the Letter of Award |
| Sealed Bid Cover to be superscribed as | Cover I- Technical Bid Cover II- Price Bid To be enclosed in a third cover superscribed as " CMD/KIIFB/CS-03/2018 " bearing the Name and Full Address of the Bidder on the outside of the cover. |

The Centre for Management Development (CMD) invites proposal in two cover system from infrastructure consulting firms for delivering Building Information Modelling (BIM) and Virtual Design and Construction (VDC) for select projects. The Cover I shall contain Technical details as in Part I and Cover II shall contain the price bid as in Part II. Cover I & II shall be enclosed in a separate cover.

Part – I: Technical Bid

The applicant firm shall be an infrastructure consulting firm, with experience in BIM modelling and consulting with the following eligibility criteria as mentioned in the Table 1 below.

Details of the Applicant

| | |
|----------------------------------------------------------------------|--|
| Name of Applicant | |
| Authorised Contact Person with Telephone Number and Email ID | |
| Registered Office Address | |
| Proposed Address of the firm in Kerala for local coordination | |
| Firm Registration Number (CIN / MSME Registration etc) | |
| GST Identification Number | |
| PAN No. of the firm | |

Eligibility Criteria:

Table - 1

| Sl. No. | Qualification | Documents Required |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | The firm should be partnership firm under registrar of firms or a company incorporated under the Indian Companies Act 1956/2013. The Applicant must have a valid GST registration in India. | The Applicant shall be required to submit a true copy of its Incorporation Certificate and valid tax registration document along with the Proposal. |
| 2 | The firm should have minimum 3years experience working in the BIM modelling and implementation satisfying one of the following criteria: a) The firm should have completed at least one work in BIM modelling (with LOD 300 model, 4D & 5D simulation/ VDC simulation) in building project, with receipt of consulting value of more than Rs. 1 Crore, in a single work order b) The firm should have completed at least two works in BIM modelling (with LOD 300 model, 4D | 1. Copy of the valid work orders should be submitted with technical bid submissions specifying the date of award of contract. 2. Copies of the satisfactory work completion certificates from the client as applicable |

| | | |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| | <p>& 5D simulation/ VDC simulation) in building project, with receipt of consulting value of more than Rs. 75 Lakhs</p> <p>c) The firm should have completed at least three works in BIM modelling (with LOD 300 model, 4D & 5D simulation/ VDC simulation) in building project, with receipt of consulting value of more than Rs. 50 Lakhs</p> | |
| 3 | The firm should have received at least Rs. 1 Croreas BIM consulting fees in average during the last three preceding financial years (2015-16, 2016-17 or 2017-18). Proposals without appropriate financial statements and not meeting the eligibility criteria shall be disqualified. | The Applicants shall submit audited financial statements for each of the preceding financial year to support the eligibility claim. |

The financial bids of only those firms who have qualified in the eligibility criteria will only be considered for financial bid opening.

Terms of Reference

The client wishes to develop infrastructure model projects in BIM for process of managing projects in execution and monitoring of the construction activity. BIM is a process of creating and managing a digital data of a project in an accurate parametric and 3D geometrical representation. Traditional building design was largely reliant upon two-dimensional technical drawings (plans, elevations, sections, etc.). BIM extends this beyond 3D, augmenting the three primary spatial dimensions (width, height and depth) with time as the fourth dimension (4D) and cost as the fifth (5D). BIM therefore covers more than just geometry and could be used to simulate a **VIRTUAL CONSTRUCTION**. It also covers spatial relationships, light analysis, geographic information, and quantities and properties of building components (for example, manufacturers' details and warranty information).

The processes envisaged are briefly iterated below:

| Stage | BIM Process | Activity |
|-------|-------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Conversion of 2D drawings to 3D etc. | Conversion of 2D drawings into 3D - Level of detailing (LOD) 300 Modelling + Rebar Detailing- good enough for estimation, execution, progress monitoring & Billing |
| 2 | Quantity estimation & revalidation | Reconciliation of outputs from model with standard practices and manual provisions applicable for public work systems and mode of measurement. |
| 3 | Clash Detection & generation of Execution/ Working Drawings | Automated process of integration of all services and facilities prior to start of execution in order to enable a hindrance and dispute free construction process |
| 4 | LOD 400 - Optional | Detailing of services like MEP, HVAC & fire fighting to minute levels- optional and not required if LOD 500 considered |
| 5 | 4D & 5D - Virtual Construction Sequencing & Costing | Integration of cost& time schedules developed in packages like MSP etc |
| 6 | Progress Monitoring | a. Bi-weekly updates |

| | | |
|---|------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| | | b. Through Photogrammetry/ Cloud point mapping / LIDAR |
| 7 | Revision of 3D + 4D + 5D (at any stages) | Due to changes in site conditions, scope, spec and standards |
| 8 | LOD 500 Model - Optional | As a Asset/Facility management tool applicable for building like major hospitals, indoor stadiums, IT buildings etc |

The work shall be executed as per the brief mentioned below and as per the items specified in the tender schedule. The applicant is free to visit the office of Centre for Management Development (CMD) to view the documents related to the projects. The applicant shall provide a brief methodology of execution for each of the assignment mentioned below, including the software & hardware to be used and the output deliverable corresponding to each stage shall be provided in its native format. The total anticipated time of completion is 4 months and each stage is mentioned below, where “D” is the date of commencement. All fees shall be quoted excluding GST and shall be inclusive of all rates for local coordination, travel related expenses, discussions with various stakeholders, making presentation to client and related stakeholders etc.

Project Details

The details of the five projects included in the proposal are as follows:

- i. Development of Malabar Cancer Centre as Post-Graduate Institute of Oncology Sciences and Research-Phase I
- ii. Construction of Cancer Hospital & Research centre at Govt. Medical college campus, Kochi
- iii. Development of Government Medical College, Ernakulam – Super Specialty Block
- iv. I M Vijayan Indoor Stadium & Sports Complex Thrissur
- v. Civil & Electrical works for developing CUSAT as International centre of Excellence in Academics & Research

Project 1. Development of Malabar Cancer Centre as Post-Graduate Institute of Oncology Sciences and Research-Phase I

- Construction of new Radio Therapy Block, Vertical Extension to IP Block, Treatment Block, Nursing College, Renovation of Administrative Block (Main Building) and Site Development Works.
- The new Radio Therapy having G+3 floors with a total floor area of 8678 sqm. The facilities provided in various floors are as follows:

| Floor | Area (in sqm) | Facilities Provided |
|--------------|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ground Floor | 2283.00 | Radio Therapy Department: 4 nos of classroom, Seminar Hall, Waiting Area, Doctor’s Room, Console Room, Nursing Station, Cafeteria, MRI & CT scan, Toilets etc. |
| First Floor | 2054.00 | Hametology Department: 2 classrooms, Day Care Chemotherapy Ward, Chemo preparation room, Store Room, Change Room, Seminar Room, Library, PICC Dressing Room, PG Room etc. |

| | | |
|---------------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Second Floor | 2054.00 | Surgical Oncology & Dept. of Rehabilitation: 2 classrooms, Research Lab, Computer Lab, Surgical Training Lab, Endoscopy, Consulting, Rehabilitation, Clinical Research Room, PG Room etc. |
| Third Floor | 2054.00 | Medical Oncology (Solid Tumor): Day Care Chemotherapy Ward, Chemo preparation room, PG Room, Clinical Research Room, PICC Dressing Room, Insertion Room etc. |
| Terrace Floor | 233.00 | Mumpty, Machine Room, Solar Panel, RCC OHT 100 KLD- 2 nos |

- Vertical Expansion is proposed for the following blocks:

Vertical Extension to IP Block

- The existing building is a framed structure and has 2 Basement and Ground Floor. The existing floors has an approximate floor area of 2464 sqm for each floor. Construction of FF, SF, TF having floor area each of 2464 Sqm and Terrace floor with an area of 326 Sqm is proposed as Vertical Extension ; Only outer frame needs to be modelled for existing floors.

Vertical Extension of Treatment Block

- The existing treatment block is G+1 framed structure has an approximate floor area of 4159 Sqm for each floor. Construction of SF have an area of 4159 Sqm, Third Floor with an area of 895 Sqm and Terrace Floor of an area 150sqm is proposed as Vertical Extension. Partial Vertical Expansion of TF is carried out in this phase.

Vertical Extension to Nursing College

- The existing building is G+1 framed structure with a floor area of 1929 Sqm approximately for each floor. Construction of SF to an area of 1929 sqm, partial extension of TF to an area of 1038 sqm and Terrace Floor

- Renovation works is proposed for existing OP Blocks in the GF and FF of main building (Administrative Block)

Project 2. Construction of Cancer Hospital & Research centre at Govt. Medical college campus, Kochi

The proposal consists of construction Hospital Block (2LG+G+5 floors), Services Block (2LG+G+3 levels), Administration Block (2LG+G+4 floors) Pain & Palliative care Block (2LG+G+2 floors). The current development shall be of 5.3 lakh sq. ft. approximately.

| Floor | Medical Block | Services Block | Administration Block | Pain & Palliative Care Block | Area (sq m) |
|----------------|----------------------------------------|-------------------------------------------------------------|----------------------|------------------------------|-------------|
| Lower Ground 3 | Pump Room, Water Tanks | - | - | - | 565 |
| Lower Ground 2 | CSSD, Bulk Stores, Mortuary | Laundry & Trolley Wash, Electrical Transformers & HT Panels | Kitchen | OP Rooms, Department Rooms | 3614 |
| Lower Ground 1 | Linac, Brachy therapy, CT Sim, Nuclear | AC Plant Room, Medical Gas | Staff Dining | Wards, Isolation | 7508 |

| | Medicine (PET CT & SPECT CT, Iodine Treatment) | Room, Electrical Panel Room etc | | Beds | |
|--------------|---------------------------------------------------------------------------------------------------------------------|---------------------------------|---------------------------------|---------------------|---------------|
| Ground Floor | Casualty, Reception, OP Rooms, Pharmacy, Radio diagnosis incl. X-ray, CT, MRI, Ultrasound, Mammography, Fluoroscopy | MRD, Department Rooms | Public Dining | Yoga, Prayer Room | 6801 |
| First Floor | OP Rooms, Other Procedure Rooms | Department Rooms | Community Oncology, Data Centre | Integrated Medicine | 6801 |
| Second Floor | Lab, Blood Bank | Department Rooms | Administrative Office | VIP Rooms | 6801 |
| Third Floor | Paediatric OP, Wards, ICUs, Daycare Chemo, General Ward | Future Auditorium | Cancer Registry, Library | - | 5775 |
| Fourth Floor | General Ward, Payward | - | Guest Rooms | - | 5622 |
| Fifth Floor | Operation Theatres, ICU/HDU, General Ward, Interventional Radiology | - | - | - | 5124 |
| | Total | | | | 48,611 |
| | TOTAL (incl. terrace floor of 1285 sqm) | | | | 49,896 |

Project 3. Development of Government Medical College, Ernakulam – Super specialty Block

A new multistoried RCC framed super-specialty hospital block with 3LG+G+4 and a built-up area of 76,900 sqm. The key elements include Civil Works, Plumbing and sanitary work, External Water Supply, Electrical Works, Fire Fighting and Fire Alarm System, HVAC, Lifts, Medical Gas ,ELV, Pneumatic Tube Transport System&Solar System

Project 4. I M Vijayan Indoor Stadium & Sports Complex Thrissur

The following are the major components

- Synthetic football court (100 X 65 m)
- Masonry Gallery, RCC Gallery & Pavilion for Court
- Synthetic Hockey Turf (Play area: 91.6m X55m, Synthetic area 96.4m X 60m) & Pavilion
- Swimming Pool (25 X 12.50 m) with Filtration system
- Synthetic Tennis Court (45 X20m) with Gallery (2 Nos)

- Administrative Office Complex
- Multipurpose Indoor Stadium (65 X 40 m) & Convention Center

Common facilities like OH tank & water distribution system, internal roads, parking area, green belt, yard lighting, land development work & compound wall etc.

Project 5. Civil & Electrical works for developing CUSAT as International centre of Excellence in Academics & Research

The proposal is for the construction of following buildings

- Academic Building – The academic block is divided into three – parking Block, Placement & lab block and Lab & academic block. The parking block has three floors, placement & lab block consisting of 4 floors and lab & academic block consisting of 5 floors which is constructed considering the contoured site to accommodate the three different blocks in levels. The built-up area of the proposed block is 13,220.00 sqm approximately
- International Guest House – The building is an RCC framed structure which is a double storied building with 12 double rooms and 3 suite rooms with a built-up area of 1460.00 sqm.
- Engineering Department - The building is an RCC framed double storied structure with a built-up area of 1200.00 sqm approximately.
- Facilitation Center – The building is a single storied structure with an approximate built-up area of 180.00 sqm approximately.
- A swimming pool building which is a double storied structure with an approximate built-up area of 1630.00 sqm, accommodating the change rooms in ground floor and pool in first floor.
- Lakes Side Campus – Vertical addition of four floors an existing building with G+3 to a G+7 structure. The building is an RCC framed structure with an existing approximate area of 2400.00 sqm. The proposed vertical addition of four floors is for an area of 2450.00 sqm approximately.

Part-II : Price Bid

The Price Bid format is as provided below and separate quote has to be provided against each of the five projects listed below:

- i. Development of Malabar Cancer Centre as Post-Graduate Institute of Oncology Sciences and Research-Phase I
- ii. Development of District Hospital at Kannur
- iii. Construction of Cancer Hospital & Research centre at Govt. Medical college campus, Kochi
- iv. Development of Government Medical College, Ernakulam – Super Specialty Block
- v. I M Vijayan Indoor Stadium & Sports Complex Thrissur
- vi. Civil & Electrical works for developing CUSAT as International centre of Excellence in Academics & Research

Format for Price Bid

Project Name:.....

| Sl. No. | Description | Total Price in Rs.(excluding GST) |
|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| 1 | Preparation of LOD 300 Architecture, Structure, Mechanical, Electrical, Plumbing, Firefighting BIM Model and all other elements as mentioned in the project details below. | |
| Considering the model being developed from 2D Drawings received in CAD Format. | | |
| Completion – D+2 Months | | |
| 2 | Preparation of LOD 300 Rebar BIM Model | |
| Considering the model being developed from 2D Drawings received in CAD Format. | | |
| Completion – D+3 Months | | |
| 3 | Clash Detection and Coordination of BIM Model | |
| Completion – D+3 Months | | |
| 4 | Quantity Estimation of Modelled Items (in DSR Format) | |
| Extraction of Quantities from the BIM Model | | |
| Completion – D+3 Months | | |
| 5 | LOD 400 Model Architecture, Structure, Mechanical, Electrical, Plumbing and Firefighting BIM Model (Optional) | |
| Duration - As per project's duration | | |
| 6 | Project Management Services | |
| 6.1 | 4D Simulation (One Time): 4D Sequencing as per the planned construction schedule and revised baseline schedules. | |
| 6.2 | 5D Production (One Time): The generation of time/sequence/cost based studies (5D) are priced as the provision of one submission in | |

| | | |
|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| | accordance with the baseline program of works. | |
| | Completion - D+4 Months | |
| 6.3 | Updation of 4D & 5D Models: Where there is a requirement for the 4D & 5D sequence/costs to be revised, in coordination with program revisions.(To quote per update) | |
| 7 | Module and training (25 Hours) for Progress monitoring (from MS project inputs) | |
| 8 | Module and training (25 Hours) for Progress Monitoring Note: Related Surveying cost is not included. | |
| 9 | LOD 500: (Optional) : Preparation of LOD 500 Architecture, Structure, Mechanical, Electrical, Plumbing and Firefighting BIM Model | |
| Duration - Last 3 Months of the Project. | | |