

Request for Proposal (RFP)

RFP Number	CMD/KIIFB/CS-02/2019
Name of the work	Selection of Consultants for implementation of BIM and Virtual Design & Construction for Infrastructure projects (Bridges & Highways) executed under KIIFB
Period of downloading of Quotation Documents from CMD website	From 25.01.2019 to 10.02.2019.
Date of pre-bid meeting	04.02.2019, 2.00 pm at the office of CMD
Last date and Time of submission	11.02.2019, 5.00 pm
Date of Opening	12.02.2019, 11.30 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
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-02/2019" 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	

Table I: Eligibility Criteria of the Firm

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 3 years of 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 infrastructure projects (bridges and highways) with receipt of consulting fee of Rs. 50 Lakhs or more, in a single work order during the last three years b) The firm should have completed at least two	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

	works in BIM modelling (with LOD 300 model, 4D & 5D simulation/ VDC simulation) in infrastructure projects, with receipt of consulting fee of Rs. 25 Lakhs or above during the last three years	
3	The firm should have received at least Rs. 50 Lakhs (as total turnover) in average during the last three preceding financial years (2015-16, 2016-17 and 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.

Only the bids of those firms who have qualified in the technical evaluation will 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 infrastructure 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. The model shall include, for highways, all RoW components such as carriageway, shoulders, median, footpath, drains, utility ducts, road furnishings & markings, avenue plantation, bus bays, traffic signals, junctions etc as applicable. The model for bridges shall include all structural components, road furnishing etc.
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	4D & 5D – Virtual Construction Sequencing & Costing	Integration of cost & time schedules developed in packages like MSP etc
5	Progress Monitoring	a. Bi-weekly updates b. Through Photogrammetry / Cloud point mapping / LIDAR
6	Revision of 3D + 4D + 5D (at any stages)	Due to changes in site conditions, scope, spec and standards

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 expenses, making presentation to client and related stakeholders etc. The consultants’ representative shall be present for all meetings as and when required by the client.

Projects Selected

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

- i. Construction of District Court Bridge, Alappuzha
- ii. Development of Hill Highway in Kollam District - Punalur KSRTC Junction – Agasthyakode Alencherry Kulathupuzha - Madathara – Kollayi
- iii. Construction of Hill Highway from Kodanchery to Kakkadampoyil in Kozhikode District
- iv. Construction of railway over bridge at Kuruppanthara
- v. Construction of Bypass at Perumbavoor

Project 1. Construction of District Court Bridge, Alappuzha

Project includes	A new elevated bridge having rotary exchange at centre and having a set of underpasses and ramp roads and flyovers on either side of the Vada canal.
Total length of Bridge	45.60m
Length of flyover at YMCA side	228.40m (excluding approach embankment)
Length of Ramp road at YMCA side	248.50m
Length of Underpass at YMCA side	92.05m
Length of flyover at Court side	236.90m (excluding approach embankment)
Length of Underpass at Court side	91.10m
Length of Ramp road at Court side	114.60m
Dimensions of central span	91.05m X 49.85m
Overall width of flyovers	7.10m
Overall width of ramp roads	8.30m
Carriageway width of flyover	5.50m
Carriageway width of ramp	5.50m
Carriageway width of underpass	7.50m
Footpath details of the flyovers	No footpath
Footpath details of the ramp roads	2.00m wide on one side only

Project 2. Development of Hill Highway in Kollam District - Punalur KSRTC Jn - Agasthyakode Alencherry Kulathupuzha - Madathara - Kollayi

- The proposed hill highway of length of 48.10km has a carriageway width of 7m, 1.5 m paved shoulder on both sides and 1 m wide Irish drains or 0.9 m wide drain or 1.4m wide drain or 1.65 m wide drain and duct on both sides of the road (as applicable) with average/minimum RoW of 12m.

Project 3. Construction of Hill Highway from Kodanchery to Kakkadampoyil in Kozhikode District

The proposed two lane hill highway from chainage 83/900 to 119/250 of length of 35.35km has a carriageway width of 7m, 1.5 m paved shoulder on both sides and 1 m wide Irish drains or 0.9 m wide drain or 1.4m wide drain or 1.65 m wide drain and duct on both sides of the road (as applicable) with average/minimum RoW of 12m.

Project 4. Construction of Railway Over Bridge at Kuruppanthara

Project includes	Construction of ROB and approaches
Total length of ROB	393.76m
Length of railway span	33.93m
The overall width of ROB	10.15m
Carriageway details of ROB	7.50m undivided two-lane carriageway
Footpath of ROB	1.50m width footpath provided on one side only
Details of the bridge portion of ROB	PSC girders and RCC slabs
Span configuration	Neendoor side – 35.00m X 3 numbers Kuruppamthara junction side – 35.00m x 2
Gradient of ROB	1 in 20
Length of approach embankments	Neendoor side – 113.75m Kuruppamthara junction side – 71.08m
Carriageway details of approach road	7.50m width
Footpath details of the approach road	1.50m width footpath provided on one side
Details of service roads	4.00m service road on either side

Project 5. Construction of Bypass at Perumbavoor

- The proposed bypass of length 3.76km has a four-lane carriageway of 15.0m wide separated by 3 m wide median and 1.5m paved shoulder and 1.5 m footpath cum drain on both sides with an average/minimum RoW of 30m

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 as mentioned above:

Format for Price Bid

Name of the Project:.....

Sl. No.	Description	Price in Rs. excluding GST
Modelling		
1	Preparation of LOD 300 Linear Infrastructure BIM Model	
Considering the model being developed from 2D Drawings received in CAD Format.		
Completion - D+2 Months		
2	Preparation of LOD 300 Rebar BIM Model (for features)	
Considering the model being developed from 2D Drawings received in CAD Format.		
Completion - D+2 Months		
3	Quantity Estimation of Modelled Items (in DSR Format)	
Extraction of Quantities from the BIM Model		
Completion - D+3 Months		
Virtual Simulation and Progress modelling		
Preparing a time based sequence through construction tracking to obtain a planned vs actual status.		
1	Preparation of 4D/5D Model (MS Project Integration) & Virtual Simulation of Construction (Based on the Schedule submitted by the SPV)	
Completion - D+4 Months		
2	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
3	Module and training (25 Hours) for Progress monitoring (from MS project inputs)	
4	Module and training (25 Hours) for Progress Monitoring (Through Photogrammetry/Cloud point mapping/LIDAR) Note: Related Surveying cost is not included.	

Note: Drone / LIDAR surveys shall be provided as inputs for modelling.