

## **Request for Proposal (RFP)**

RFP Number	<b>CMD/KIIFB/CS-05/2018</b>
Name of the work	Empanelment of Consulting Firms for Providing Technical Assistance for Design Upgradation of Roads & Highway Projects executed under KIIFB
Date & Time of Prebid Meeting	23-11-2018 at 03.00 pm at Centre for Management Development Thycaud, Thiruvananthapuram, Kerala
Last date and time of submission	28-11-2018 at 05.00 pm
Date of Opening	29-11-2018 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
Bid Cover to be superscribed as	Cover I- Technical Bid Cover II- Price Bid  To be enclosed in a third cover superscribed as "RFP NO. CMD/KIIFB/CS-05/2018" 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 providing technical assistance to KIIFB for performing design upgradation of roads & highway projects and preparation of project execution drawings 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 in highways sector with the following eligibility criteria as mentioned in the Table 1 & 2 below.

**Details of the Applicant**

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

**Eligibility Criteria:**

**Table - 1**

<b>Sl. No.</b>	<b>Qualification</b>	<b>Documents Required</b>
1	<p>The firm should be a proprietorship firm or partnership firm under registrar of firms or a company incorporated under the Indian Companies Act 1956/2013.</p> <p>The Applicant must have a valid GST registration in India.</p>	<p>The Applicant shall be required to submit a true copy of its Registration / Incorporation Certificate as applicable and valid tax document along with the Proposal.</p>
2	<p>The firm should have minimum 2 years' experience working in the highways design sector and preparation of DPRs for highway projects satisfying the following criteria.</p> <p>a) The firm should have prepared and successfully completed preparation of Detailed Project Report in highways design for at least (25kms in a single stretch or 100kms in total) of minimum two-lane road including delivery of alignment plans, plan and profile, strip plans etc with all features as mentioned in the terms of reference of this RFP, with NHAI or any State Governments / National or State PSU's.</p>	<ol style="list-style-type: none"><li>1. Copy of the valid work orders should be submitted with technical bid submissions specifying the date of award of contract.</li><li>2. Copies of the satisfactory work completion certificates from the client as applicable</li></ol>
3	<p>The firm should have received at least Rs. 25 Lakhs in consulting fees (from infrastructure consulting) in average during the last two preceding financial years (2016-17 and 2017-18). (Proposals without appropriate financial statements and not meeting the eligibility criteria shall be disqualified.)</p>	<p>The Applicants shall submit audited financial statements for each of the preceding financial year to support the eligibility claim.</p>

The bidder shall have sufficient number of members with the sectors mentioned in Table 2 in the team for providing technical assistance to KIIFB for design upgradation and shall be available for meetings and discussions, as and when required by KIIFB or various other stakeholders. The CV of the team members of the bidder shall be submitted as per the format shown in Appendix 1

**Table -2  
Requirements of Team Members**

<b>Sl. No</b>	<b>Position</b>	<b>Minimum Qualification</b>	<b>Minimum Relevant Experience related to the position in a senior level</b>
1	Senior Highway Engineer	B. Tech in Civil Engineering or M. Tech in Highway Engineering/Transportation Engineering	>10 yrs
2	Pavements cum Geotechnical Engineer	B.Tech in Civil Engineering / M.Tech in Transportation/Geotechnical Engineering	>10yrs
3	Road Safety Engineer	B.Tech in Civil Engineering / M.Tech in Transportation Engineering	>5 yrs

**TERMS OF REFERENCE**

The design upgradation process shall focus on the following areas and the consultant firm shall provide the technical documentation support to KIIFB and associated stakeholders to conform to the functional design of the roads & highways developed under KIIFB, as per the planning and design guidelines issued.

**Standards and Codes of Practices**

1. All activities related to field studies, design and documentation shall be done as per the latest guidelines/ circulars of MoRT&H and relevant publications of the Indian Roads Congress (IRC) and Bureau of Indian Standards (BIS). For aspects not covered by IRC and BIS, international standard practices, such as, British and American Standards may be adopted. The Consultants, upon award of the Contract, may finalise this in consultation with KIIFB officials and reflect the same in the inception report. Consultant should also look at international best practices and try to adopt them wherever there is scope for value addition.
2. All notations, abbreviations and symbols used in the reports, documents and drawings shall be as per IRC:71-1977.

The design upgradation processes are detailed as below:

**1. Inception Report**

The consultant shall be provided with the Detailed Project Report (DPR) which was submitted for fund sanction by KIIFB. They will also be provided with Aerial Photogrammetry/Drone survey, including LIDAR survey inputs, wherever required inputs shall be provided for the projects along with CAD drawings compatible to be imported to road design software viz., MX Roads, OpenRoads, Civil3d etc.

The consultant shall initially prepare an inception report including gap assessment highlighting the differences between the existing DPR and the standards and guidelines issued by KIIFB from time to time. The report shall typically include the gaps such as:

- corrections to the RoW guidelines as specified in the KIIFB Manual
- smoothing of curves required

- extra widening to be provided for curves
- any realignment if needed
- any shift in centre line to reduce land acquisition
- gaps in the existing documentation viz., strip plans, plan & profile etc.

## **2. Conducting Topographic Survey, if required.**

For such projects which require additional topographic surveys to be conducted, the consultant shall conduct topographic surveys or develop topographic surveys of the road corridor as per the specifications mentioned in IRC: SP:19-2001 and as per the requirements mentioned in the “Guidelines for planning and design for roads & highway projects funded by KIIFB”.

## **3. Investigations for pavement condition**

Once the alignment and the modifications in the project alignment is finalised, the pavement design aspects as per KIIFB Planning and Design Manual for Roads shall be adhered to. Road Inventory shall be conducted to assess the existing site conditions and the mandatory data required for pavement design shall be obtained

**The following investigations may be conducted, based on the unavailability of such data from the existing reports provided by the SPV.**

- a) BBD Test
- b) One-day axle load survey should be conducted, for road improvement projects, as per IRC:37-2012 / IRC: SP:19. For all roads that are expected to carry design traffic more than 5 msa, axle load survey shall mandatorily be conducted. For low volume roads, indicative VDF values as per IRC:37-2012 may be considered.
  - i. Axle load surveys in both directions shall be carried out at suitable location(s) in the project road stretch on a random sample basis normally for trucks only (both empty and loaded trucks) for 2 normal days - (24 hours) at special count stations to be finalised in consultation with KIIFB. However, a few buses may be weighed to get an idea about their loading behaviour. While selecting the location(s) of axle load survey station(s), the locations of existing bridges with load restrictions, if any, should be considered and such sites should be avoided.

The axle load surveys shall normally be done using axle load pads or other sophisticated instruments. The location(s) of count station(s) and the survey methodology including the data formats and the instrument type to be used shall be finalised before taking up the axle load surveys.

The axle load data should be collected axle configuration-wise. The number of equivalent standard axles per truck shall be calculated based on results obtained. The results of the survey should bring out the VDF for each truck type (axle configuration, if the calculated VDF is found to be below the national average, then national average shall be used. Furthermore, the data from axle load surveys should be analysed to bring out the Gross Vehicle Weight (GVW) and Single Axle Load (SAL) Distributions by truck type (axle configuration).
- c) CBR Test: field CBR using DCP at each test pit, laboratory CBR (unsoaked and 4-day soak compacted at three energy levels) and swell

- d) Revalidation of traffic volume for CVPD calculation shall be done by conducting 3-day traffic survey at select survey stations. All results shall be presented in tabular and graphical form. The survey data shall be analysed to bring out the hourly and daily variations. The following generalised classification system is suggested in view of the requirements:

Motorised Traffic		Non-Motorised Traffic
2-Wheeler		Bi-Cycle
3-Wheeler		Cycle-Rickshaw
Passenger Car		Animal Drawn Vehicle (ADV)
Utility Vehicle (Jeep, Van etc.)		Hand Cart
		Other Non-Motorised Vehicle
Bus	Mini Bus Standard Bus	
LCV	LCV-Passenger LCV-Freight	
Truck	MCV : 2-Axle Rigid Chassis	
	HCV : 3-Axle Rigid Chassis	
	MAV	
	Semi Articulated	
	Articulated	

- e) Traffic growth rate for the traffic projection to be followed as per IRC: 108.
- f) One day turning movement surveys for estimation of peak hour traffic for the design of major and minor intersections shall be carried out for the Study. The details regarding composition and directional movement of traffic shall be furnished by the Consultant. The methodology for the surveys shall be as per IRC: SP: 41-1994.
- g) Benkelman Beam Deflection surveys shall be carried out at every 100m interval in both directions.
- a) Soil Investigations shall include:
- The Subgrade soil is to be tested for its properties @ 1 trial pit/km and as per IRC:37-2012,
  - The testing for subgrade soil shall include:
    - i. in-situ density and moisture content at each test pit
    - ii. characterisation (grain size and Atterberg limits) at each test pit and,
    - iii. laboratory moisture-density characteristics (modified AASHTO compaction);

#### 4. Value Engineering Options - Pavement Redesign

For the design of pavement, each set of design input shall be decided based on rigorous testing and evaluation of its suitability and relevance in respect of performance of the pavement. The design of pavement structure should take due account of the type, characteristics of materials used in the respective courses, variability of their properties and the reliability of traffic predictions. Furthermore, the methodology adopted for the design of pavement shall be complete with flow charts indicating the various steps in the design process, their interaction with one another and the input parameter required at each step.

For the design of overlays for the existing 2-lane pavement, the strengthening requirement shall duly consider the strength of the existing pavement with respect to the remaining life. The overlay thickness requirements shall be worked out for each road segment homogenous with respect to condition, strength and sub-grade characteristics. The rehabilitation provisions should also include the provision of

regulating layer. For existing pavement with acceptable levels of cracking, provision of a crack inhibiting layer should also be included.

#### **5. Value Engineering Options -Technical support for Evaluation of Alternate Technologies**

The pavement design prepared shall be explored for value engineering / alternate technologies. The proposals submitted shall include detailed evaluation of alternatives and shall arrive at the most optimal design in context of road development in Kerala.

Certain alternatives for design of pavements are:

- a) Full Depth Reclamation
  - i. Helps in reducing the consumption of construction materials in the wake of shortage of the same in the state
  - ii. Serves as an environment-friendly and sustainable construction method.
- b) Alternate modes of subgrade improvement
  - i. Geotextiles/geogrids which can substantially reduce the pavement thickness
  - ii. Composite layers
- c) Cold Recycling
- d) Microsurfacing
- e) Use of geotextile in pavements and associated works.
- f) Use of binders for bituminous layers
- g) Use of Segmental Block Reinforced Earthen Wall Using Geogrids
- h) Use of Soil nailing techniques
- i) Detailed design methodology along with the analysis should be submitted with the design.

#### **6. Value Engineering Options - Geometric Redesign**

Consultant shall prepare the detail design of the road alignment with the help of highways design software, based on the drone/LIDAR survey inputs, incorporating all necessary features as per the manual and IRC guidelines. Based on the data collected from reconnaissance and topographic surveys, the sections with geometric deficiencies, if any, should be identified and suitable measures for improvement should be suggested for implementation. The geometric design shall comply with the relevant IRC provisions such as:

- a. Minimum Design Speed requirements for different classification of roads
- b. Extra width provisions corresponding to radius of curve
- c. Safe stopping site distance considerations
- d. Ruling, limiting and exceptional gradients to be incorporated while design of vertical profile
- e. Minimum length of vertical curves
- f. Camber/Cross fall slope
- g. Adequate Super elevation required

#### **7. Preparation and Submission of report and including Project Execution Drawings**

The Drawings Volume covering the following aspects shall be prepared and submitted. The volume shall be 'good-for-construction' drawings. All plan and profile drawings shall be prepared in scale 1:100 (V) and 1:1000 (H) scale. The following drawings shall be provided, but not limited to:

- Key map of the project
- Horizontal Alignment showing existing tar edge, proposed C/W, ROW, existing and proposed culverts, retaining structures, cross ducts and bus bays and

- Longitudinal Profile including existing and proposed culverts, by-roads
- Cross Section @25m interval along the alignment within the RoW with details of protection works if provided
- Typical cross-sections of all features in the entire RoW including pavement layers
- Detailed Working Drawings for individual culverts and Cross drainage structures.
- Detailed Working Drawings for individual Bridges and Structures.
- Detailed Drawings for at-grade and grade-separated Intersections and interchanges.
- Drawings for Road Sign, Markings

This will include:

- 1) Schematic Diagrams (Linear chart) indicating but be not limited to the following:
  - Alignment, Existing RoW and Proposed ROW. Locations of median openings, intersections, interchanges, underpasses, overpasses, bypasses.
  - Location of traffic signals, traffic signs, road markings, safety features; and
  - Locations of bus bays, bus stops, parking areas, street lighting etc.
  - All drawings shall be prepared preferably in A3 size sheets. The drawings shall include details of all Benchmarks and reference pillars, control points, Horizontal & Vertical
  - Intersection Points The coordinates of all points should be referenced to a common datum, preferably, WGS 84 referencing system.
  - The drawings shall also include the locations of all traffic safety features including traffic signals, signs, markings, crash barriers, delineator and rest areas, bus bays, parking areas, street lighting requirements etc.
  - The typical cross-section drawings should indicate the scheme for future widening of the carriageway. The proposed cross-sections of road segment passing through urban areas should indicate provisions for pedestrian movements and suitable measures surface and sub-surface drainage and lighting, as required.
  
- 2) The Strip plans shall be prepared on the basis of data from reconnaissance and detailed topographic surveys covering the following details
  - Details of the centre line of the proposed road along with the proposed right-of-way limits to appreciate the requirements.
  - The details captured in the land acquisition plan should be such that the concerned authorities could readily initiate the proceedings of acquisition
  - Strip plans showing the position of existing utilities and services indicating clearly the position of their relocation
  - Separate strip plan showing shifting / relocation of each utility services in consultation with the concerned local authorities
  - Strip plan shall indicate the proposed retaining walls & slope protection adopted
  - The utility relocation plans should clearly 'show proposed right-of-way and pertinent topographic details including buildings, major trees, fences and other installations such as water-mains, telephone and electricity poles, and suggest relocation of the services along with their crossings the highway at designated locations as required and prepare necessary details for submission to the Service Departments;

The strip plans shall clearly indicate the scheme for widening. The views and suggestions of the department should be duly considered while working out the widening scheme (left, right or symmetrical) and the widening scheme shall be finalised in consultation with KIIFB



**PART II- PRICE BID**

The price bid shall be submitted by the bidder separately in the following format (Table 1 & Table 2) and the bidder shall mention the rate against all items. Work orders shall be provided against items as required against each project. Under Table 2 the bidder may quote rates only.

**Table -1**

No	Description	Rate/km (For every 10km or parts there off)	Amount (Rs.)
1	Topographic Survey using total station		
2	Sub grade Investigations		
3	BBD Test and Pavement Evaluation		
4	Value Engineering Options -Pavement Redesign		
5	Value Engineering Options - Technical support for evaluation of alternate technologies		
6	Value Engineering Options - Geometric Redesign & Strip Plans		
7	Material Survey & Investigation		
8	Utility relocation and road furniture plan		
	<b>Total</b>		

**Table 2**

Sl. No.	Description	Rate per unit (Rs.)
1	Axle Load Survey	
2	1-day Turning movement Survey a) 3 road Junction b) 4 road junction c) Junctions with more than 4 roads	
3	3-day Traffic volume survey	
4	Subsoil Investigation (Boring) and recommendations thereon (Rate/metre) for: a) Boring in all types of soil other than hard rock b) Extra for Boring in hard rock	
	<b>Total</b>	

**Payment Terms**

- Submission and Approval of Inception Report - 10% of total amount discovered following the submission
- Submission of draft report as per the work order - 30%
- Submission of Final report and its approval - 30%
- Support during Technical Sanction - 30%

It may be noted that the lowest bidder's rate will be the final rate for the work. The work will be awarded to all empanelled consultants who is ready to work for the lowest bidder's rate in a prorate basis of volume of work. The consultant shall deliver and submit all documents and design reports as in pdf / word / native file formats (including any excel sheets, CIVIL3D/MX Road design files, AutoCAD dwg drawings etc).

**APPENDIX 1 :CURRICULUM VITAE (CV) OF KEY PERSONNEL**

- 1. **Proposed Designation:**
- 2. **Name:**
- 3. **Date of Birth:**
- 4. **Nationality:**
- 5. **Years of Relevant Experience:**
- 6. **Educational Qualifications (with Year of Completion):**
- 7. **Employment Record:**

Sl No.	Organisation	Designation	Period starting from	Ending date	Duration of Experience
1.					
2.					
3.					
4.					

- 8. **List of representative projects showcasing the above-mentioned qualification (with name of project & role):**

Certification:

- 1. I am willing to work on the Project and I will be available for duration of the Project assignment as required.
- 2. I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes me, my qualifications and my experience.

(Signature and name of the Key Personnel)

(Signature and name of the authorized signatory of the Applicant)

Place:

Date: