

REQUEST FOR EXPRESSIONS OF INTEREST

For

Name of Work : Installing, Commissioning and Operation of Intelligent Track Condition Monitoring System for DFCCIL (TCMS)

Reference No. : HQ-ENWC0MMS(TMMS)/1/2022/GM/Tech/DFCC/12527R dated 09.11.2022

1. The Dedicated Freight Corridor Corporation of India Limited (**DFCCIL**) intends to put in place an efficient and dynamic Track Condition Monitoring System (**TCMS**). Track being one of the most important infrastructure assets, DFCCIL intends to have for deploying a state-of-the-art TCMS to maintain the assets in an effective manner requiring least dependence on manual and subjective assessment and intends to appoint specialized agencies for the captioned work.
2. The DFCCIL now invites Expression of Interest (EOI) in sealed cover from specialized agencies/eligible consultants to indicate their interest in "Installing, Commissioning and Operation of Intelligent TCMS on DFCCIL". Draft TOR is attached as **Annexure-I**. The aim of calling EOI is detailed in enclosed **Annexure-II**. The Criteria for shortlisting is detailed in **Annexure-III**. Interested Parties/Firms should provide information demonstrating their proposal for the subject work/services. The Interested firms should provide required information as required in enclosed **Annexure-IV**.
3. Consultant shall submit the EOI Application, duly signed color scan (PDF format) copy through email, bearing firms Authorized Representative signatures (copy of Authorization letter also to be enclosed), EOI Notification No., Details of EOI Assignment Title, Name of the EOI Submitting consultant firm and date of EOI application submission on address mentioned at item No. 6 of this NIT. Consultant shall submit their EOI Application no later than / up to **15:00 hrs 13th Dec' 2022**.
4. Interested firms shall visit DFCCIL website (www.dfccil.com) on regular basis for any amendment of EOI.
5. Further information can be obtained at the below mentioned address during 10.00 hrs to 17.00 hrs on any working day:

Arun Kumar Tiwari

General Manager/Technical, Room No. 324, DFCCIL Corporate Office

Supreme Court Metro Station Building Complex, New Delhi-110001

Mb. No-9717636957, email ID: aktiwari@dfcc.co.in

6. Information to be submitted along with Expression of interest

- a) Company Brochures & Profile (not more than two-page note including year of establishment, type of business of the company, experience of consultancy works etc.)
 - b) All details as per enclosed **Annexure-IV** and all details required as per item No.2 of enclosed **Annexure-II**.
 - c) Any other information applicant may like to submit to indicate that they are qualified for the said project.
7. All interest parties participating in EOI has to present their complete Proposal as detailed in item No.2 of enclosed **Annexure-II** and item No.1 and 2 of enclosed **Annexure-I**. DFCCIL/HQ at New Delhi to DFCCIL within 3rd weeks after EOI submission closing date. The exact date for same will be intimated to participated firms in due course.



Draft Terms of References

The scope of this Project is for implementation of the Intelligent Track Condition Management System (TCMS) on DFCCIL to monitor the condition of track by capturing condition of track, recording of such data, its analysis, providing solution for maintenance strategy for normal/planned (predictive)/ urgent (reactive) attention. TCMS will have two components, visual data capturing through Track Condition Monitoring vehicle (TCM Vehicle) and Track Condition Monitoring Software (TCM Software). Proposed routes to be covered on WDFC between New Dadri to JNPT of Approx. 1506 .Km and on EDFC between Ludhiana to Sonnagar of Approx. 1323 Km . The scope of work is as under:

1. **Track Condition Monitoring Vehicle (TCM Vehicle):** with the provision of capturing the condition of track components and video recording of full DFCCIL ROW view at not less than 100 Kmph speed.
 - (a) System for rear Window video recording of DFCCIL track covering DFCCIL ROW (Video surveillance)
 - (b) Portable Vision Devices for capturing the visual condition of rails, sleepers, missing fittings, mud pumping and trespassing locations and analyse the data by Artificial Intelligence for giving input to TCMS.
2. **TCM Software:** Development of TCMS-Software for integration of all track inspections, Analyse the inspection data and issue of Maintenance work orders on Daily Basis. It will include following activities:
 - (a) Development of digital library for DFCCIL track defects and identification of defects through use of AI technique.
 - (b) Complete mapping of DFCCIL track through RDBMS before commissioning of TCMS.
 - (c) **Development of software for storing the data captured for item No.1 and analyse the data/parameters recorded by measuring equipment as mentioned above. The Software shall be capable of picking the location of defects from the track data seeded through RDBMS.**
 - (d) Categorizing the analysed data and giving outputs for planned predictive and preventive/ immediate maintenance need giving alert for immediate attention Generating Track health Card (IMSD wise)
 - (e) The Immediate maintenance attention needs should also be provided to users through SMS.
 - (f) Software shall be compatible with hand held devices like tabs/mobiles etc for measurement/ online recording of required parameters at Field level including “in the field” data entry of track inspections, defects and repairs, for its implementation of TCMS as per suggested yardsticks with due approval by DFCCIL.
 - (g) Facility for feeding compliance of maintenance work orders by Field officials responsible for maintenance to be provided in TCMS software with hand held devices like tabs/mobiles etc.
3. Training to DFCCIL maintenance staff for using the TCMS system.
4. **Technical & Functional Requirements of software**
 - a. The Software shall be capable of storing raw data (Transducer/Sensor signals) ASCII/Binary and processed data in ASCII/Database format in separate files of 3 months duration. An additional mirror image disk of the same capacity shall also be provided to guard against possible loss of data in case of hard disk crash.. All recorded data should be available in the system (including cloud) for at least 3 months and need to transfer the data to separate computer or system should arise only after 3 months. Data older than 3 months period is to be transferred to DFCCIL.
 - b. Software shall have the capability for real time reporting of the defects to concerned officials through cellular communication network/ Wireless Broadband or Satellite communication.
 - c. The System shall be capable of real time (during recording) processing of data , analysing the captured data and reporting the defects found.



- d. System shall be such that results are not affected by electronic noise, spikes, surges of the generator, power line and Electromagnetic Interference (EMI) generated by over-head electric traction lines, return current & track circuiting currents in the rails etc. Adequate shielding, line filters with surge suppressors etc. shall be provided.
- e. **Route Feature Information and Synchronisation:** System shall have a separate Route Feature location data file for each route. This file may be in ASCII format containing the location of various route features viz. turnout, level crossing, bridges, station etc. in terms of distance from the previous km post along with latitude and longitude of the route feature. System shall be capable to record route features with its distance from previous chainage post accurately using previously prepared route feature location file & manually entered route. Capable to record features by event marker key pad using navigation system and incorporate the same in the exception and analogue reports along with storing the same in data files.

Km post	Bridges (others) (Start)	Tunnel in
TP/OHE mast	Bridges (others) (end)	Tunnel out
P & Xings	Cutting (start)	Gradient in
Level Crossing	Cutting (end)	Gradient out
SEJs	Siding/loop (In)	Speed restriction in
ROBs	Siding/loop (out)	Speed restriction out
Bridges with channel sleepers (start)	Curve (in)	
Bridges with channel sleepers (end)	Curve (out)	

5. Following features of physical track Conditions through Vision Device are to be captured and recorded:

SN	Item	Physical condition	Output requirements	Output presentation	Limits for alerts
1	Rail	Corrugation	Digital	Location, Length in mm Maximum width mm	NBL
		Plastic Flow	Digital	Location , Length in mm	UML
		Shelling	Digital	Location, Length in mm	UML
		GC Cracks	Digital	Location , Length in mm	UML
		Flaking	Digital	Location , Length in mm	UML
		Squat	Digital	Location , Length in mm Maximum width mm	UML
		Visible Crack	Digital	Location Length in mm	UML
2	Sleepers	Visible crack	Digital	Location Length in mm	UML
3	Missing Fittings	ERC	Digital	Location numbers	NBL
		Liner	Digital	Location numbers	NBL
		Rubber Pad	Digital	Location numbers	NBL

6. The Self Propelled/Portable Track Condition Monitoring as required in item No.1 and TCM Software as required in item 2 of this TOR are to be Managed and Maintained by Service provider for 5 years and extendable for next 2 years.

Annexure-II**AiM of EoI**

1. The basic aim of this EoI is replace daily keyman inspection activities.
2. This EoI is for accessing the technical expertise available for development of TCMS for DFCCIL and accordingly framing the TOR and costing for this work. The purpose of which is to replace the Keyman job. The vehicle for installation of TCMS shall be supplied by DFCCIL
3. Shortlisting of suitable Firms as per criteria mentioned in enclosed **Annexure-III**.
4. Interested Consultants/ Bidders are requested to give following details duly supported by documents:
 - i) The Scheme for rear Window video recording (location and Nos.) on DFCCIL vehicle along with specification and features of each video camara and its peripherals and its costing.
 - ii) The Scheme for **Vision Devices** for capturing the visual conditions of rails, sleepers, missing fittings, mud pumping locations on DFCCIL vehicle (location & nos) of sensors/camara along with specification and features of each sensors/camara and its peripherals and its costing.
 - iii) Specification/features of TCMS software
 - iv) Cost of developing TCMS software (capital cost) and its installation, testing O & M cost annually
 - v) Cost of Seeding Track data through RDBMS (unit cost for 1 Km) along with scheme for seeding the track data in proposed software.



Annexure-III**Criteria For Short Listing**

1. Maximum 6 (six) firms will be shortlisted on the basis of following criteria:

- a) Experience of completed/Work in progress works of development of Software for Railway System Health Management in India or abroad
and/or

Experience of completed/Work in progress works of Installation of system for capturing various Railway track conditions/parameters through self-propelled system at speed of 100 Kmph or more.

- b) Having minimum contractual annual turnover for Development & Commissioning software related to monitoring health of Railway System and/or Supply and installation of Hardware for monitoring the track health parameters of Railway System) in the last 3 FY of Rs.2.5 Cr.

Note :-

1. The Credentials of existing firms will be taken as per completion/part completion certificate issued by clients.
2. In case of Proposed JV firms, the credential of only those partners who have equity share of more than 25% in proposed JV will be taken for which interested bidders have to submit MoU for JV duly signed by all members of JV
3. In case of JV firms, the Lead partner must be Indian Firm as this proposed work has to executed through domestic tender.
4. Only those credentials will be considered for which interest parties have submitted the documents duly certified from clients for whom work has been executed/work has been awarded.
5. Interested parties are requested to submit details of maximum nos of works as far as possible mentioned in item No.1(a) as it is one of qualifying criteria for shortlisting of EOI.
6. The experience credential mentioned at item No.1(a) may be as of the firm to whom work was awarded or as Indian associate of the main firm to whom work has been awarded or as constituents of the main firm to whom work has been awarded. But the extent of value of credential for purpose of item No.1(a) above will be as per actual payment received by EOI interested parties.



Annexure-IV**A. Company/Consultant Details**

Company Name:	
Type of Firm: (Corporate or company / Subsidiary / Division / Proprietor / Partnership.)	
Registered With & Registration No.:	
Date of Incorporation:	
Statutory Details GSTIN: PF No.: PAN No.:	
Address:	
Telephone:	
Website:	
Name of the Contact person:	
E-mail of the contact person:	
No. of years of relevant experience:	

B. Details of Relevant Work Performed in the last 7 FY and current FY: *(attach completion certificates / references/ recommendations)*

Name of Client, Client's representative & contact details	Project Description	Contract Values (in Rs.)	Start Date	Completion Date

C. Details Substantially completed in last 7 FY and current FY [75% completed]: *(attach part completion certificates / references /recommendations)*

Name of Client, Client's representative & contact details	Project Description	Contract Values (In Rs)	Start Date	Payment Received (In Rs.)

D. Details of Current Works in Hand: *(attach additional sheets if necessary)*

Name of Client, Client's representative & contact details	Project Description	Contract Value (in Rs)	Start Date	Completion Date

E. Total Financial turnover for the last 3 FY and current FY (Duly certified by CA/Auditor):

Year	Location	Total Value of Works completed (Rs.)
Current Year		
FY 21-22		
FY 20-21		
FY 19-20		

F. Client references

Name of Client along with details of consultancy provided	Name and Designation of Contact Person of client	Contact Number of client	Email Address of client