डेडीकेटेड फ्रेट कोरीडोर कार्पोरेशन ऑफ़ इंडिया लि.
Dedicated Freight Corridor Corporation of India Limited
(भारत सरकार का उपक्रम) (A Govt. of India Enterprises)
5th Floor, Supreme Court Metro Station Building Complex, New Delhi -110001

डेडीकेटेड फ्रेट कोरीडोर

REQUEST FOR EXPRESSIONS OF INTEREST

For

Name of Work : Comprehensive Study on **suitability of 60 Kg, 90 UTS Rails on EDFC and 60 E1 1080 HH rails on WDFC for 25 T Axle load operation at 100 kmph on DFCCIL Routes**

Reference No. : HQ-ENWC0MMS(MISC)/1/2021/GGM/WC-I/DFCC/14040R dated 3.6.22

1. The Dedicated Freight Corridor Corporation of India Limited has decided to conduct a **Comprehensive Study on suitability of 60 Kg, 90 UTS Rails on EDFC and 60 E1 1080 HH rails on WDFC for 25 T Axle load operation at 100 kmph on DFCCIL routes** and intends to appoint specialized agencies for the captioned work.

2. The Dedicated Freight Corporation of India Limited (DFCCIL) now invites Expression of Interest (EOI) in sealed cover from specialized agencies / eligible consultants to indicate their interest in **"Comprehensive Study on suitability of 60 Kg, 90 UTS Rails on EDFC and 60 E1 1080 HH rails on WDFC for 25 T Axle load operation at 100 kmph on DFCCIL routes"**. Draft TOR is attached as **Annexure-I.** Interested Parties/Firms should provide information demonstrating that they have the required qualifications and relevant experience to perform the services. The shortlisting will be done based on criteria included in **Annexure-II .**
3. Consultant should provide required information as required in **Annexure-III.**

4. Consultant shall submit the EOI Application, duly signed color scan (PDF format) copy through email or hard copy duly sealed, bearing Consultant/Consultants 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 30th Jun, 2022.

5. Interested Consultant shall visit DFCCIL website (www.dfccil/com) on regular basis for any amendment of EOI.

6. 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 Manger/Civil/A&C
   Room No. 324, DFCCIL Corporate Office
   Supreme Court Metro Station Building Complex, New Delhi-110001
   Mb. No-9717636957, email ID: aktiwari@dfcc.co.in

7. **Information to be submitted along with Expression of interest**
   a) Company Brochures & Profile of the Company (please provide 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 Annexure-III
   c) Any other information applicant may like to submit to indicate that they are qualified to perform the services.

Annexure-I

Draft Terms of References

The scope of this contract is to conduct detailed studies (theoretical & field experimental/trials) to ascertain suitability of 60 Kg, 90 UTS Rails on EDFC and 60 E1 1080 HH rails on WDFC for 25 T Axle load operation at 100 kmph on DFCCIL routes. The aspects to be covered in the study are given here under:

Item-1: Conducting theoretical studies required for finalizing criteria to be followed for selection of rail for operation of 25 T Axle load at 100 kmph on DFCCIL routes, which should include the following considerations:

1.1 Theoretical rail stress calculations based on yield /allowable stress criteria, for

a) Estimation of bending stress in rail due to wheel loading at critical locations of rail cross section, using Indian Railway method and comparable calculations based on international practices of any one advance Railway System.

b) Estimation of total stress in the rail, which includes bending stress due to wheel loading duly accounting affect due to Gradient in the track, due to Braking forces on rising and falling gradient, thermal stress, residual stress, stress in rail for un-foreseen factors & any other stress especially due to curvature etc. using Indian Railway method (RDSO) and comparable calculations based on international practices of any one advance Railway System. .

c) Estimation of various parameters required in rail stress calculations e.g. value of track modulus, Dynamic augment etc. for various speeds for freight stock DFC conditions based on international practices of any one advance Railway System.

1.2 Fatigue analysis of rail due to bending loads in absence of any defects based on international practices of any one advance railway system.

1.3 Contact stress considerations (allowable shear stress, Yield and shake down limit) using Indian Railway method wherever available, and based on international practices of any one advance Railway System.

1.4 Wear and hardness requirement of Rail for 25 T Axle load operation at 100 kmph, as prescribed by at least two advance Railway Systems.

1.5 Effect of small wheel diameter on strength requirement of rail (1000 mm wheel diameter vis-à-vis 840 mm new wheel diameter).

<u>The above theoretical rail stress studies (para 1.1 to 1.5 above) should facilitate to decide:</u>

a) Minimum technical requirements for 60 kg rail section, in terms of steel grade (UTS), proof stress, max value of permitted residual stress etc for 25 T Axle load operation at 100 Kmph on DFCCIL routes

b) To ascertain suitability of existing 60 Kg - 90 UTS rail used in EDFC track and 60 E1 1080 HH rail used in WDFC for 25 T axle load operation at 100 Kmph on DFCCIL routes

The report on the above studies should cover detailed analysis and design calculations duly examined and certified by the technical expert having similar experience of conducting studies on advance railway system and who has published Technical Books/ Reports/ papers on international journals on the subject of rail stresses or rail related issues.

Item-2: Carrying out field instrumentation, conducting test & trials on DFCCIL track to estimate by field measurements, the following parameters:

2.1 Measurement of following track parameters required in rail stress calculations. Each reading of measurements shall be done by 2 separate sets of equipment for reliability of observations :

a) Value of track modulus (initial & elastic track modulus) for 3 track foundation conditions namely:
   i) Track having good formation with 300/350 mm clean ballast cushion.
   ii) Track having bad formation with 300/350mm clean ballast cushion.
   iii) Track laid on rocky strata with 250/350 mm ballast cushion.

b) Value of Dynamic augment on DFCCIL routes, for following conditions:

   i) No. of rolling stock : Five Rolling Stock, type to be decided by DFCCIL.
   ii) Speeds: At two different speeds (75 Kmph and 100 Kmph or the maximum speed at which Rolling stock is fit).

Note: For measurement of dynamic augment, the compiled result for each stock should be based on measurements taken for at least 7 days (to have minimum 30000 data per speed per rolling stock with known static wheel load on straight and curve track) in case of trials based on rail instrumentation or based on sufficient large data (minimum 150 Km length data) to carry out statistical analysis in case instrumented wheel or any other internationally accepted method is adopted.

2.2 Field measurement of actual rail Stress on critical points of rail section (rail foot Centre, rail foot corner (GF & NG), Rail head (GF, NG) under no train-load condition i.e. mainly due to residual & thermal stress in rail, to be measured @ two different rail temperatures, at three locations i.e. two in central portion of CWR/LWR & one in breathing length for each rail temperature condition of both rails in straight and 2.5 – 3.0 Degree curve track location for all 3 type of track formation conditions.

2.3 Field measurement of actual rail stress on critical points of rail section (rail foot Centre, rail foot corner (GF & NG), Rail head (GF[if feasible], NG) for Five rolling stocks (type to be decided by DFCCIL) and for each rolling stock two different speeds (75 Kmph and 100 Kmph or the maximum speed at which Rolling stock is fit) of both rails in straight and 2.5 – 3.0 Degree curve track location for all 3 type of track formation conditions.

2.4 Measurements of Stress free temperature of LWR track by adopting non-destructive technique, be measured at two different rail temperatures, at three locations i.e. two in central portion of LWR & one in breathing length of both rails in straight and sharpest curve track of all three type of track formation conditions.

Note: The actual measured rail stresses (Para-2.3 above) to be compared with theoretical calculations based on Indian railway and based on international practices of any one advance Railway System. 10(ten) such calculations involving all 5(five) rolling stock at two different trial speed for three type of rails to be compiled & submitted in detailed report.

Annexure-II

Criteria for short listing

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

2. Criteria for short listing is given as under:

   a) Experience of completed/[Substantially completed (75% completed)] any study on Theoretical/Experimental Rail Stress Analysis (of any type) and/or Dynamic Augmentation based on Field trails, and/or Estimation/Measurement of Track Modulus, Estimation of Derailment forces during last 07 FY and current FY.

   b) Financial turnover for the last 3 FY and current FY.

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