

Government of India
Ministry of Railways
Research Designs and Standards Organisation (RDSO)
Manak Nagar, Lucknow (INDIA) -226011

Notice for Expression of Interest

Notice No. CT/SRC/EOI/ HTS dated 08.08.2016

Ministry of Railways, Research Designs and Standards Organisation (R.D.S.O.), Lucknow is interested in **‘Exploring the availability of High tensile strands with indentation and/or low relaxation with indigenous firms for use in manufacturing of pre-stressed concrete sleepers for Indian Railways’**

Indigenous Firms who have experience/capability in manufacturing and supplying such products viz. indented and / or low relaxation HTS strands, use of which can enable substantial reduction in prestress loss and enhancement of bond strength and anchorage in PSC sleepers, are requested to see the complete details and document on RDSO's website www.rdso.indianrailways.gov.in→Tenders →EoI. For any clarification, Firms may contact Director/Track-IV, RDSO, Lucknow on Telephone No. +91-522-2452796 or/and email: dtd5rdso@gmail.com on any working day for further details.

The firms are requested to submit details in the prescribed format latest by **23.09.2016** (15:00 hrs) to Director/Track-IV, Anusandhan Bhawan, Track Design Directorate, RDSO, Manak Nagar, Lucknow –226011 (INDIA).

Director/Track-IV
for Director General (Track)
RDSO, Lucknow
(for & on behalf of President of India)

भारत सरकार –रेल मंत्रालय
अनुसंधान अभिकल्प और मानक संगठन (अ.अ.मा.सं)
मानक नगर, लखनऊ – 226011 (भारत)
रुचि की अभिव्यक्ति के लिए सूचना

सूचना सं: सीटी/एस आर सी/ई ओ आई/एच.टी.एस दिनांक 08.08.2016

अनुसंधान अभिकल्प और मानक संगठन (अ.अ.मा.सं), मानक नगर, लखनऊ, भारतीय रेल में प्रयोग हेतु पूर्व-प्रबलित कंक्रीट स्लीपर के उत्पादन में प्रयुक्त कम शिथिलन वाले एवं/अथवा दाँतेदार उच्च तननशील इस्पात वाले स्ट्रैंड की उपलब्धता को खोजने के लिए इच्छुक है।

ऐसी स्वदेशी कंपनियाँ (फर्म) जिनके पास इस प्रकार के उत्पाद जैसे दाँतेदार एवं/अथवा कम शिथिलन वाले उच्च तननशील इस्पात वाले स्ट्रैंड, जिसके प्रयोग से पूर्व-प्रबलित कंक्रीट स्लीपर में प्रिस्ट्रेस हानि में कमी एवं बंधन सामर्थ्य व जकड़न में वृद्धि में सक्षम हो, के निर्माण एवं आपूर्ति का सामर्थ्य एवं अनुभव है। उनसे निवेदन है कि अ.अ.मा.सं की वेब साइट www.rdsi.indianrailways.gov.in → Tenders →EOI पर विस्तृत विवरण का अवलोकन करें। किसी भी अन्य स्पष्टीकरण के लिये फर्म, निदेशक/रेलपथ-IV अनुसंधान अभिकल्प और मानक संगठन (अ.अ.मा.सं), मानक नगर, लखनऊ के फोन संख्या +91-522-2452796 अथवा ईमेल: dttd5rdsi@gmail.com पर किसी भी कार्य दिवस में अन्य जानकारी हेतु संपर्क कर सकते हैं।

इच्छुक कंपनियों (फर्मों) से अनुरोध है कि वे अपना निर्धारित प्रोफॉर्मा में निदेशक/रेलपथ-IV, अनुसंधान भवन, रेलपथ अभिकल्प निदेशालय, अनुसंधान अभिकल्प और मानक संगठन (अ.अ.मा.सं), मानक नगर, लखनऊ- 226011 (भारत) को दिनांक 23.09.2016 (15.00) बजे तक प्रस्तुत कर दें।

निदेशक/ रेलपथ-IV
कृते महानिदेशक/रेलपथ
अ.अ.मा.सं., मानक नगर, लखनऊ
(भारत सरकार के राष्ट्रपति की ओर से)

Instructions/ Guidelines for the firms expressing their interest against Expression of Interest (Eoi) Notice No. CT/SRC/ Eoi/ HTS dated 08.08.2016

1. DISCLAIMER:

Indian Railways reserves the right not to proceed with the process or at a later stage to change the process as per the requirements of Indian Railways. It also reserves the right to decline to discuss the process further with any party expressing interest. This Eoi shall not be considered in any way a proposal for procurement of low relaxation and / or indented HTS strands. The intending participants will furnish offer at their own cost and no claims, whatsoever, in this reference will be entertained by the Railways.

2. PURPOSE OF INVITING Eoi:

The purpose of this Eoi is to explore the availability of High tensile strands with indentation and/or low relaxation with indigenous firms for use in manufacturing of pre-stressed concrete sleepers for Indian Railways'. Use of indented and/or low relaxation HTS strands can enable substantial reduction pre-stress loss and enhancement of bond strength and anchorage in PSC sleepers.

With above objective, Indian Railways seeks to explore availability of indented and / or low relaxation HTS strands which can be used in manufacturing of PSC sleepers in replacement of normal HTS strands conforming to IS:6006. for their possible use in future.

The broad functional requirement for this item is given in this document as **Annexure 'C' or the offer for this item can** be submitted as per **relevant IS Codes or any International Standards**, giving details of material specification and international standards followed worldwide.

3. GENERAL INSTRUCTIONS FOR SUBMITTING RESPONSE TO EOI:

3.1 Eligibility criteria

- i) Firm should be indigenous with manufacturing unit situated in India and an existing manufacturer / supplier of HTS strands preferably with low relaxation and indentation for manufacture of PSC sleepers or in any other industry.
- ii) The low relaxation and / or indented HTS strands of 3 ply x 3mm by the Firm should meet the functional requirements mentioned in this document (**Annexure – 'C'**) or it should be as per relevant BIS codes or as per any International Standards.

- 3.2** i) The Firm shall provide the details of supply of offered HTS strands with low relaxation and /or indentation & its performance (if available) on any of the Railway or Industry in last three years in the following format.

| Year of supply | Low relaxation & indented HTS strands preferably of size 3 ply x 3mm or of any other size | Low relaxation HTS strands preferably of size 3 ply x 3mm or of any other size | Indented HTS strands preferably of size 3 ply x 3mm or of any other size | Performance Guarantee Given (if any) |
|------------------------------|-------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|--------------------------------------------------------------------------|--------------------------------------|
| 2012-13 | | | | |
| 2013-14 | | | | |
| 2014-15 | | | | |
| 2015-16 (till current month) | | | | |

- ii) Budgetary estimate of approximate cost for supply of indented and / or low relaxation HTS stands to be submitted.

- 3.3** General & Technical details to be provided by firm: General & technical details as per **Annexure-C** shall be submitted by the firm with their offer. The firm will be required to furnish supporting documents (such as lab test reports, performance reports etc.) to establish that they are meeting the laid down requirements.
- 3.4** The details submitted by the firm shall be scrutinized by RDSO. The deficiency as observed in the offer during technical scrutiny or additional information as considered necessary will be advised to the firm. The additional information must be made available by firm within two weeks of advice.
- 3.5 Submission by firms:** The intending firm shall ensure the submission in the format given in **Annexure - B**.
- 3.6** The submission by Interested firms shall be made to Director/Track-IV, RDSO, Anusandhan Bhawan, Manak Nagar, Lucknow- 226011 by **23.09.2016** (15:00 Hrs) in the enclosed Format for “**Letter of Response at Annexure B**”. In the EoI, the firms should mention RDSO’s Notice No.CT/SRC/EOI/ HTS dated 08.08.2016.
- 3.7** The respondents must furnish the application form & details in **duplicate** as required in the enclosed “**Format for Letter of Response**” at **Annexure-B** and details stipulated in **Annexure-C**. All pages of the documents should be signed with stamp.
- 3.8** The firm shall legally indemnify Ministry of Railways against any possible claims/legal/other disputes at present or which may arise in future from any other party in connection with the intellectual property rights of the drawings and design or any other documents submitted by the firm or any other patent rights.
- 3.9** RDSO reserves all the right of this exercise. In case of any doubt/dispute, decision of RDSO shall be final.

Director/Track-IV,
For Director General (Track)
RDSO, Lucknow.

FORMAT FOR LETTER OF RESPONSE

Respondents Ref No.:

Date:

Director/Track-IV
Building: Anusandhan Bhawan,
Research Designs & Standards Organization (RDSO)
Ministry of Railways, Manak Nagar
Lucknow (INDIA), Pin - 226011

Dear Sir,

Subject: RESPONSE TO – EOI FOR PARTICIPATION

1. We, the undersigned, offer the following information in response to the Expression of Interest sought by you vide your Notification No. CT/SRC/ EoI/ HTS dated 08.08.2016.
2. We are duly authorized to represent and act on behalf of _____ (hereinafter the “respondent”)
3. We have examined and have no reservations to the EoI Document including Addenda No(s)_____.
4. We are attaching with this letter, the copies of original documents defining: -
 - 4.1 The Respondent’s legal status;
 - 4.2 Its principal place of business;
 - 4.3 Its place of incorporation (if respondents are corporations); or its place of registration (if respondents are cooperative institutions, partnerships or individually owned firms);
 - 4.4 Self certified financial statements of last three years, clearly indicating the financial turn over and net worth.
 - 4.5 Copies of any market research, business studies, feasibility reports etc sponsored by the respondent, relevant to the items under consideration
5. We shall assist Ministry of Railways (MoR) and/or its authorized representatives to obtain further clarification from us, if needed.
 - 5.1 RDSO and/or its authorized representatives may contact the following nodal persons for further information on any aspects of the Response:

| S. No. | Contact Name | Address | Telephone | E Mail |
|--------|--------------|---------|-----------|--------|
| | | | | |
| | | | | |

6. This application is made in the full understanding that:
- 6.1 The EoI is only for 'Exploring availability of High tensile strands with indentation and/or low relaxation for use in manufacturing of pre-stressed concrete sleepers for Indian Railways'
- 6.2 Information furnished in response to EoI shall be used confidentially by RDSO as required. Confidentiality of the information furnished by the firm in this EoI will be maintained by RDSO.
- 6.3 RDSO reserves the right to consider or not to consider any or all applications, cancel the EoI without any obligation to inform the respondent about the grounds of same.
7. In response to the EoI, we hereby submit the following details annexed to this application -
- 7.1 Turn-over of the firm during the last three financial years with the copies of annual report.
- 7.2 Details of customer(s)/Railways where low relaxation and / or indented HTS strands have been supplied by the firm including quantity during last 3 years.(Para 3.2(i))
- 7.3 Experience and expertise for low relaxation and / or indented HTS strand proposed in EoI.
- 7.4 Complete details of low relaxation and / or indented HTS strands and specification as per **Annexure-C** to this EoI.
- 7.5 Details of Intellectual Property Rights (IPR) held, patent filed/held and MoU/ agreement signed.
- 7.6 Details of ISO/equivalent certification, if any.
- 7.7 Documents in proof of Eligibility criteria
- 7.8 Para-wise compliance of Requirements as per Annexure-C and supporting documents.
8. The undersigned declare that the statements made and the information provided in the duly completed application are complete, true, and correct in every detail.

Yours sincerely,

(Sign)

NAME:

In the Capacity of
duly authorized to sign the
response for and on behalf of

Date:

ANNEXURE - C

SALIENT TECHNICAL AND FUNCTIONAL REQUIREMENTS FOR LOW RELAXATION AND / OR HTS STRANDS

A. GENERAL

1. Existing Track Structure on Indian Railways:

UIC 60 grade-880 Rails laid on Pre-stressed Concrete Sleepers at sleeper density 1540/1660 nos. per km with elastic fastenings and ballast cushion of 300/350 on important Broad Gauge routes.

About 10 to 11 millions of PSC sleepers are manufacture every year in India. Each PSC sleeper has 18 HTS strands of 3ply x 3mm of length 2.75m. Apart from this, HTS strands are also used in turnout sleepers and other special location sleepers. Drawing for most commonly used Broad Gauge (1676mm) line Sleeper in Indian Railway is given at Annexure-D for reference.

Indian Railways desires to explore availability of High tensile strands with indentation and/or low relaxation for use in manufacturing of pre-stressed concrete sleepers for Indian Railways in India and to explore indigenous firms, which can take up production of HTS strands with indentation and / or low relaxation properties and supply to sleeper plants on Indian railways for manufacturing of concrete sleepers.

2. Operating conditions of IR:

i) Axle load and Speed

| Traffic Type | Axle Load | Speed |
|--------------|-----------|-------------------------------------------|
| Goods | 25T | 100 kmph |
| Passenger | 22.9T | 160 KMPH (Existing) 200 kmph(Proposed) |

- ii) Traffic Density, GMT(A Route) : 7.0 to 130
- iii) Electric Traction (Minimum) : 25 KV AC.
- iv) Track Circuits : DC.
- v) Gauge: : Broad Gauge,
Nominal (1676 mm).
- vi) Ambient Temperature : (-) 5⁰C to 50⁰C.
- vii) Rail Temperature : (-) 15⁰C to (+) 76⁰C.
- viii) Humidity : 100%

B. Background

1. Presently, on Indian Railways 3 ply x 3mm strands are being used for manufacturing of PSC sleepers complying to IS:6006-2014. The 3mm plain wires are used to make 3 ply x 3mm strand. Use of strands of indented wires

will increase bond strength and anchorage and thus less chance of slippage of strand and reduction in loss of pre-stress. The specification of indented wires is available in form of IS:6003-2010 hence, there is possibility to make as 3 plyx3mm strands using 3mm indented wires which can be used for manufacturing of PSC sleepers.

2. Presently, prestress loss is taken as 30% over initial prestress force which is provided at 75% of ultimate tensile strength of stand. Thus, only 52.5% of UTS is used as prestress force in design of concrete sleeper. World over, prestress loss is taken in range of 20-25% with use of indented strand with low relaxation steel. In India, low relaxation strand is available as per IS 14268-1995 with minimum diameter of 9.5mm of 7 ply. This indicates that 3mm x 3 ply strand of low relaxation probably may not be available presently in India. In low relaxation wires, loss of pre-stress due to relaxation is 2.5% against 5% in normal HTS after a duration of 1000 Hrs/41.7 days. With use of indented and low relaxation steel, prestress loss can safely be taken as 25% which will result in higher sleeper capacity (higher factor of safety) or scope for reducing the HTS strands keeping the existing sleeper capacity/factor of safety.

C. Technical requirements for HTS stands with low relaxation and / or HTS strands

1. HTS strand should comply the requirements of IS:6003 in respect of indentation along with other properties and IS:14268 for low relaxation but of 3ply x 3mm size preferably or as per relevant international standards. HTS stands preferably be a combination of indented and low relaxation or separately as indented or low relaxation.
2. Following data/information are to submitted in respect of low relaxation and / or indented HTS strands-
 - (i) Availability of low relaxation HTS strands in combination of indented strands preferably of 3 ply x 3mm or HTS strands of indented or low relaxation separately.
 - (ii) Minimum diameter of indented wire available from which there is possible to make/supply indented strand in India
 - (iii) Minimum diameter/size of low relaxation HTS strands available
 - (iv) Lab test report of relaxation test and other tests as mentioned in IS:14268 or as per relevant international standards
 - (v) Lab test report of tensile strength & elongation tests and other tests as mentioned in IS:6003 or as per relevant international standards
 - (vi) Detail specification /applicable 'Standards' for low relaxation and/or indented HTS strands along with copy of the Standards.

- (vii) Study on the expected gain in terms of sleeper strength or HTS expected saving in the sleeper design due to use of low relaxation and/or indented strands.
- (viii) Study on total pre-stress loss with use of low relaxation and / or indented strands including all other type of losses in pre-stress
- (ix) Cost implication whether the indented and low relaxation strands can be available without much higher extra cost over normal HTS strand which are available and being used presently. This require cost of low relaxation & indented HTS strands (in combination or separately) per meter:

| S. No. | Size of HTS strand | Cost of indented & low relaxation HTS strand per m or per Kg/tons | Cost of indented HTS strand per m or Kg/tons | Cost of Low relaxation HTS strand per m or per Kg/tons |
|--------|--------------------|-------------------------------------------------------------------|----------------------------------------------|--------------------------------------------------------|
| | | | | |
| | | | | |
| | | | | |

D. LIST OF DOCUMENTS TO BE SUBMITTED

Following documents are required to be submitted in the EoI:

- (i) Details properties of low relaxation and/or indented HTS strands along with specification
- (ii) Supply made of this item in last 3 years and in current year in the format given at 3.2 (i) of **Annexure-A**.
- (iii) Specification, name of railway/industry where supply of this item has been made, year of supply, quantity of supply
- (iv) Test results as prescribed by the relevant specifications / international standards
- (v) Estimated cost of indented and / or low relaxation HTS strands 3ply 3mm (separately or in combination)
- (vi) All the details stipulated under Para A&B of Annexure "C".
- (vii) ISO/ equivalent Certificate, if any.

Annexure – D

