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

Global Notice for Expression of Interest
Notice No. CT/PTX/SNX/EOI dated 31.03.2015

Ministry of Railways, Research Designs & Standards Organization (R.D.S.O.), Lucknow is interested in development of specifications for procurement of '**Canted Turnout with Swing Nose Crossing and their operating mechanism'** for Indian Railways as per Functional Requirement Specification available on RDSO's website. Firms who have experience and capability in designing and manufacturing of Canted Turnout with Swing Nose Crossing and are having ISO certificate, are requested to see the details on RDSO's website www.rdso.indianrailways.gov.in→Tenders → EOI or contact Director/Track-III, RDSO, Lucknow on Telephone No. 91-522-2465768/ email: dtd3rdso@gmail.com on any working day for further details. The firms are requested to submit details in the prescribed format in duplicate by **26.05.2015 (1500 hrs)** in the office of Director/Track-III, Anusandhan Bhawan , Track Design Directorate, RDSO, Manak Nagar, Lucknow –226011 (INDIA).

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

ANNEXURE-A

Instructions/ Guidelines for the firms expressing their interest against Expression of Interest (EOI) Notice No. CT/PTX/SNX/EOI dated 31.03.2015

1. DISCLAIMER

Ministry of Railways, Research, Designs & Standards Organization (RDSO) has prepared this document to give interested parties background information of the product/ system for application in Indian Railways. While RDSO has taken due care in preparation of information contained herein and believes it to be accurate, neither RDSO nor any of its officers, employees gives any warranty or makes any representations, expresses or implies as to the completeness or accuracy of the information contained in this document or any information which may be provided in association with it. The information is not intended to be exhaustive. Interested parties are required to make their own inquiries and respondents will be required to confirm in writing that they have done so. The information is provided on the basis that it is non-binding on RDSO or any of its officers, employees or advisors.

RDSO reserves the right not to proceed with the project, at a later stage or to change the process or procedure to take the project forward. In such eventualities, RDSO will not be held responsible. It also reserves the right to decline to discuss the project further with any party expressing interest. No reimbursement of cost of any type will be paid to persons, or entities, expressing interest.

2. PURPOSE OF INVITING EOI

Modern Turnouts for high speed using canted laying of rails throughout the turnout and Swing Nose Crossing are under consideration for laying on Indian Railways. With the use of Swing Nose Crossing, the gap to be negotiated by wheel is eliminated which ensures safety at high speed. In addition, the impact force due to gap at fixed nose crossing is eliminated resulting in significant improvement in service life of track components and vehicle besides riding comfort. There is a likelihood of availability of different technologies for design and manufacturing of Swing Nose Crossing across the advanced railway systems. At present, such turnouts are not available in Indian Railways nor are the specifications of the same available for its procurement.

The purpose of inviting global EOI is to explore the technology for '**Canted Turnout with Swing Nose Crossing and their operating mechanism**' and to shortlist the firms for finalizing the technical specifications which can be used for procurement of such system for application on Indian Railway system. The broad functional requirement specification for such a system is given in this document as Annexure 'D'.

3. GENERAL INSTRUCTIONS FOR SUBMITTING RESPONSE TO EOI:

3.1 **Eligibility Criteria**: The eligibility criteria for firms for consideration of offers for short listing shall be as per Para 3.0 of the Functional Requirement Specification (FRS) (Annexure 'D'). The firm will be required to furnish supporting documents to establish that they are meeting the laid down eligibility criteria.

3.2 General & Technical details to be provided by firm: General & technical details as per Para 4 of FRS shall be submitted by the firm with their offer.

3.3 The details submitted by the firm shall be scrutinized by a nominated committee at RDSO. The deficiency as observed during technical scrutiny or additional information as considered necessary will be advised to the firm. The information must be made available by firm within two weeks of advice. In case the additional Information is not received within stipulated period, the evaluation will be done based on information made available originally.

3.4 The firm will have to arrange detailed technical presentation at RDSO, Lucknow/ Railway Board about the working procedure and performance details of the offered system, if required by the committee.

3.5 The discussions shall be held with the shortlisted firms for finalizing the specification/Schedule of Technical Requirement (STR) for the item under EOI based on FRS. This being a new area of technology for Indian Railway, variations in FRS may be considered while finalizing specifications.

3.6 **Submission of offers:** The intending firm/ organization shall submit their offer in the format given in Annexure – 'B' and undertaking as Annexure – 'C'. Apart from this, the requisite documents in proof of meeting the eligibility criteria and Para-wise compliance of items of FRS shall also be submitted.

3.7 The firm shall also submit the budgetary quotation for 60 kg 1:12 layout with detailed breakup of various components for the system(s) offered for item under EOI. The variation in cost for other layouts e.g. 60 kg 1:8.5, 60 kg 1: 16 & 60 kg 1:20 shall also be indicated.

3.8 The offers received against EOI shall be considered for short-listing the firms for development of specifications for the item under EOI.

4. SELECTION CRITERIA:

The firms meeting the eligibility criteria will be shortlisted broadly based on the following criteria by a nominated committee of RDSO.

S. No.	Item
1	Turn-over of the firm during last 3 years
2	Details of supplies made in the field of item under EOI
3	Experience and expertise for item under EOI
4	Manpower & their qualification
5	Details of patent held and MOU/agreement with OEM
6	Technical suitability of the system offered to suit Indian Conditions as per FRS

Note: In case, the proposal is submitted on behalf of 2 or more partner firms due to expertise of its partners in different fields, such proposal will be shortlisted based on above criteria for all such partner firms.

5. SUBMISSION OF OFFERS:

Interested firms are requested to submit their EOI in the office of Director/Track-III, RDSO, Anusandhan Bhawan, Manak Nagar, Lucknow- 226011 by **26.05.2015 (1500 hrs)** in the enclosed "Format for Letter of Response" at Annexure B. In the EOI, the firms should mention RDSO's Notice No. CT/PTX/SNX/EOI dated 31.03.2015. In the EOI, the respondents must furnish the details **in duplicate** as required in the enclosed "Format for Letter of Response" at Annexure B, the undertaking in format given at Annexure C and details stipulated in Functional Requirement Specification at Annexure D.

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

ANNEXURE - B

FORMAT FOR LETTER OF RESPONSE

Respondents Ref No.:
Date:

Director/Track-III
Room No: 16
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/PTX/SNX/EOI dated 31.03.2015.

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 project 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 Information furnished in response to EOI shall be used confidentially by RDSO for the purpose of development of specifications for the item under EOI

6.2 RDSO reserves the right to reject or accept any or all applications, cancel the EOI and subsequent bidding process without any obligation to inform the respondent about the grounds of same

6.3 We confirm that we are interested in participating discussion for finalization of the specification for the item under EOI

7. We certify that our turnover and net worth in the last three years is as under:

Financial Year	Turn over	Net worth

8. In response to the EOI we hereby submit the following additional details annexed to this application.

8.1 Turn-over of the firm during the last three financial years with the copies of annual report

8.2 Details of various items being manufactured/consultancy undertaken.

8.3 Details of customer(s) and supplies made in the field of item under EOI.

8.4 Experience and expertise for the items proposed in EOI.

8.5 Details of man-power with their qualification and experience.

8.6 Complete technical details of the product as per functional requirements under this EOI.

8.7 Details of Intellectual Property Rights (IPR) held, patent filed/held and MoU/ agreement signed.

8.8 Details of ISO certification

8.9 Undertaking as per Annexure- C

8.10 Documents in proof of Eligibility criteria

8.11 Para-wise compliance of Functional Requirement Specification

8.12 Technical Details as per Functional Requirement Specification

8.13 Budgetary quotation with detailed breakup of various components for the system(s) offered.

9. The undersigned declare that the statements made and the information provided in the duly completed application are complete, true, and correct in every detail. We also understand that in the event of any information furnished by us being found later on to be incorrect or any material information having been suppressed, RDSO may delete our name from the list of qualified Respondents. We further understand that RDSO will give first preference to the applicants considered relevant for the purpose.

Yours sincerely,

(Sign)
NAME
In the Capacity of
Duly authorized to sign the
response for and on behalf
of
Date

ANNEXURE-C

(To be submitted on non-judicial stamp paper of appropriate value as applicable in the respective state and dully notarized and witnessed)

UNDERTAKING

I, son of _____ aged about_____Years, resident of _____do hereby solemnly affirm as under:

1. That the deponent is the Authorized signatory of (Name of the Sole Proprietorship Concern/Partnership Firm Registered Company/Joint Venture).

2. That the deponent declares on behalf of (Name of the Sole Proprietorship Concern/Partnership Firm Registered Company/Joint Venture) that:

   a) In regard to matters relating to the security and integrity of the country, no charge sheet has been filed by an agency of the Government/conviction by a Court of Law for an offence committed by the_____(name of the entity) or by any sister concern of the _____ (name of the entity) would result in disqualification.

   b) In regard to matters other than the security and integrity of the country_____(name of the entity) has not been convicted by a Court of Law or indicated/passed any adverse order by a regulatory authority against it or it's any sister concern which relates to a grave offence, or would constitute disqualification. Grave offence is defined to be of such a nature that it outrages the moral sense of the community.

DEPONENT

VERIFICATION

I declare that the contents of para 1 to 2 above are true as per my knowledge and nothing has been hidden.

DEPONENT

ANNEXURE-D

FUNCTIONAL REQUIREMENT SPECIFICATION FOR CANTED TURNOUT WITH SWING NOSE CROSSING AND THEIR OPERATING MECHANISM

1. SCOPE

1.1 This functional requirement specification (FRS) covers the broad track and signaling requirements for '**Canted Turnout with Swing Nose Crossing and their Operating mechanism**' for application on Indian Railway system. Variations in FRS, if required, may be considered while finalizing technical specifications of the product.

1.2 Indian Railway network is mostly Broad Gauge (1676 mm) with track structure as UIC 60kg/IRS 52kg long/continuous welded rails formed by welding of rail panel by using Flash butt welds or Alumino-thermic welds laid on pre-stressed mono-block concrete (PSC) sleepers on stone crushed ballast. Majority of Turnouts in Indian Railways comprise of Over-riding switch/Thick Web Switch and fixed nose Cast Manganese Steel (CMS) Crossing over fan shaped PSC sleeper layout. The rails on the approach track are provided with 1:20 inward cross-slope (i.e. cant), whereas rails are kept vertical on turnout portion.

1.3 Most of the turnouts on Main line are laid with 1:12 crossing. Turnouts with 1:8.5 crossing are common in loop lines and station yard lines. In some of the cases Turnouts with 1:8.5 crossing have been laid on Main line on emergency cross-overs. In addition, there is limited number of 1:16 and 1:20 turnouts too on Indian Railways system.

1.4 This specification covers the track structure and key plans of Turnouts under use in India for designing and manufacturing canted turnout with Swing Nose Crossing customized for Indian Railways complete in all respect i.e. including switch, lead, crossing, PSC sleepers, fastening system as well as operating, locking and detection system of switch & swing nose crossing and required changes (if any) in signaling arrangement. The design under use in foreign railway systems may need customization based on the layouts of Indian Railways so that the overall length of turnouts is not changed.

1.5 The system shall be easily maintainable with minimum maintenance efforts. The system shall not interfere with or get damaged by maintenance operations by track machines or manual track maintenance operations, if required so.

2. FUNCTIONAL REQUIREMENTS:

2.1 General Requirements:

2.1.1 As Indian Railways Track carries both passenger and goods traffic, the turnout should allow following combination of axle load and speed on Main Line:

Axle Load	**Maximum Speed on Main Line**
25 ton (Goods traffic)	100 Kmph
20 ton (Passenger traffic)	200 Kmph

2.1.2 The turnout should allow the following minimum speed on Diverging Line:

Type of Turnout	**Minimum Speed on Diverging Line**
1:8.5	35 Kmph
1:12	50 Kmph
1:16	65 Kmph
1:20	85 Kmph

The speed on diverging line is based on cant deficiency of 75mm.

2.1.3 The overall length of new offered turnout i.e. from Stock Rail Joint (SRJ) to end of Swing Nose Crossing should be such that existing turnout with CMS crossing can be replaced with new offered turnout without need for any modification in yard layout. The key plan of the layout of turnouts existing on Indian Railways is enclosed at Annexure-E. For the purpose of familiarization with existing layouts in India, prospective applicants may contact RDSO for arrangement of visit.

2.1.4 There shall be no or minimal requirement for change in alignment of OHE wire on turnout side with the turnout with Swing Nose Crossing in electric traction (25KV AC) sections.

2.1.5 It should be feasible to provide track detection system using existing methods like DC Track circuit, AFTC & Axle counter through the turnout and the swing nose crossing.

2.1.6 The technology for turnout along with the proposed operating mechanism should be proven one and should be in use on regular basis (not on trial basis) for passenger traffic. The technology for turnout along with the proposed operating mechanism must have satisfactory performance in any of the reputed world Railway system.

2.2 **Track Requirements**

2.2.1 Desired characteristics

Gauge: 1673 mm
Rail: 60 Kg UIC

Sleeper: Pre-stressed Concrete (PSC)

Canted laying 1/20 throughout the Turnout
Continuous Welded Rail (CWR) through Turnout

2.2.2 **Switch:**

Tongue (i.e. Switch) Rail profile: 60E1A1 (Zu-1-60) or 60E1A4

Stock Rail Profile: 60 Kg UIC, canted laying 1/20

Elastic Fastening system to hold stock rail from both sides

Use of corrosion resistant material for Slide chairs, Bearing plates, Anti creep device etc.

2.2.3 **Lead:**

Rail Profile: 60 Kg UIC, canted laying 1/20

Suitable Fastening system for provision of 1/20 cant

2.2.4 **Swing Nose Crossing:**

Check Rail: Optional as per design requirement

Arrangement of the system should be capable to arrest thermal forces of continuous welded rail within it.

2.2.5 The turnout should allow continuation of Long Welded Rail (LWR) through it. The ambient temperature may be considered to be varying from 0° C to 50° C. The rail temperature may vary from (-) 10° C to (+) 70° C.

2.2.6 The turnout should be easy to maintain with minimum maintenance requirements/ efforts. Preferably, no greasing should be required in any component of the proposed turnout assembly. The maintenance of turnout with track machines such as tamping machine, Ballast cleaning machine etc should be feasible without any requirement of opening of any of the components including signaling arrangements. The track machine operation should not affect the integrity and performance of turnout.

2.2.7 Present Indian Railway Standard Design of Pre-stressed Concrete (PSC) sleeper for turnout is suitable for 25 ton axle load. The same design should preferably be used in the proposed technology.

2.3 Signaling Requirements

2.3.1 The operation of the turnout and the swing nose crossing shall be through a suitable machine which should be capable of providing the required thrust under all operating conditions. The machine should require minimal efforts in installation and maintenance. The maintenance should be possible easily with minimum effect on traffic.

2.3.2 Provision for multiple drives with cranks and rods should be available as an option.

2.3.3 External clamp locking mechanism which is non-trailable should be available. It should prevent unexpected unlocking in the event of breakage or loosening of drive rods.

2.3.4 Locking detectors to ensure proper positioning and lock detection for each position of the switch/ crossing.

2.3.5 Least interference due to external factors like vandalism, weather etc. is desirable. Machine tamping without affecting any connection or adjustment of the machine should be possible. In-sleeper type point machines would be preferred in view of these requirements.

2.3.6 IP-65 level of the housing of point machine and detectors is desirable.

2.3.7 Operable from 110 V DC source

2.3.8 Range of operation: 2 km (approx.)

2.3.9 AC immunity- 400 V

2.3.10 It should require least changes in existing signalling arrangements.

3. Eligibility Criteria

3.1 The firm shall either be a manufacturer of offered turnout with swing nose crossing as well as the point machine for it. Alternatively, firms which are manufacturer in one field e.g. track components only may also be considered if they have a tie up/ joint venture with another firm (s) having expertise in another field e.g. signaling systems. In such case, such a tie up/joint venture shall clearly be worded with rights and liabilities of both the partner firms and both the tied-up partner firms shall submit proposal jointly through their authorized lead partner. The firm should have necessary design/ development capability either in house or should have tie-up with such firm.

3.2 The technology offered by the firm should be proven one. The technology offered to Indian Railway should be working satisfactorily in at least any one reputed Railway system in the world for minimum three years. Certificates in this regard from relevant Railway system shall be furnished.

3.3 The firm shall possess necessary infrastructure namely manpower, machinery for undertaking execution of work of installation and commissioning of offered turnout on Indian Railway network. The firm shall also possess adequate manpower and infrastructure for maintenance of commissioned system on Indian Railways.

3.4 The firm shall possess sound technical and R&D credentials.

3.5 Firms shall submit documents in support of fulfillment of above mentioned eligibility criteria along with EOI offer. The decision of Railways for adequacy of furnished documents for fulfillment of eligibility criteria will be final.

4 Details to be submitted:

The following technical details shall be submitted by the firm:

4.1 General Details

(i) Turn-over of the firm during the last three financial years with the copies of annual report

(ii) Details of various items being manufactured/consultancy undertaken

(iii) Details of customer(s) and supplies made in the field of item under EOI

(iv) Experience and expertise for the items proposed in EOI

(v) Details of man-power with their qualification and experience

(vi) Detailed proposal for item proposed in EOI including alternative proposal, if any.

(vii) Details of Intellectual Property Rights (IPR) held, patent filed/held and MoU/ agreement signed.

(viii) Details of ISO certification.

4.2 **Technical Details**

(i) Technical literature, drawing and specification of each unit of the equipment along with details of relevant standards and codes, if applicable.

(ii) Detailed description, function and weight of each component

(iii) Inspection/Test Plan of components during manufacturing – Quality control requirements, acceptance sampling and acceptance criteria etc including details of reference codes/ specifications

(iv) Safety audit report based on standards as applicable and other related documents

(v) Environmental/climatic considerations and requirements of the system and sub-system

(vi) Inspection and maintenance requirement in field

(vii) Training requirement for operating and maintenance personnel

(viii) Expected service life of components

(ix) Requirement of spare parts for operation and maintenance.

4.3 In case, the proposal is submitted on behalf of 2 or more partner firms due to expertise of its partners in different fields, e.g., track and signalling, the above document shall be submitted by authorized lead partner for all the partner firms.

ANNEXURE-E

LAYOUT OF TURNOUT ON INDIAN RAILWAYS

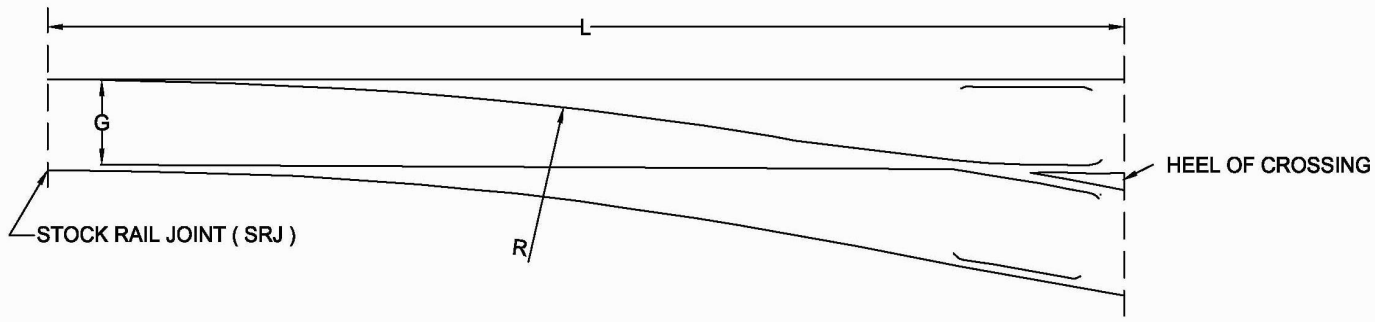

TABLE OF DIMENSIONS

ANGLE OF CROSSING	GAUGE (G)	RADIUS (R)	OVERALL LENGTH (L) (SRJ TO HEEL OF CROSSING)
1 IN 12	1673	441360	39903
1 IN 8.5	1673	232260	28511
1 IN 16	1673	784993	51528
1 IN 20	1673	1283100	63381

ALL DIMENSIONS ARE IN MM.