

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

GLOBAL NOTICE

(Notice No. CT/EF/Global RFP/ Modern Fastening dated 24.07.2018)

for

'REQUEST FOR PROPOSAL'

Ministry of Railways, Research Designs and Standards Organisation (R.D.S.O.), Lucknow is inviting the proposal from the firms/JV whose *Modern Rail Fastening System for ballasted track fit for 25t axle load* qualifies the technical criteria given in Annexure-C for short-listing the product for considering for 'Field Trial on Indian Railways". After successful field trial of the *Modern rail Fastening System for ballasted track fit for 25t axle load*, the adoption of this new product will be dealt as per Railway Board letter no. 2013/Tk-II/22/7/4(General Policy) dated 08.03.2016 regarding "New Policy on development and adoption of new product / technologies for track/bridge related items".

Firms who can supply the Modern Rail Fastening System for ballasted track fit for 25t axle load meeting the technical criteria i.e. generic specification & performance parameters of Modern Rail Fastening System as given in Annexure-C of this document are requested to see the complete details and RFP 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 the proposal and requisite details in the prescribed format to Director/Track-IV, Anusandhan Bhawan, Track Design Directorate, RDSO, Manak Nagar, Lucknow -226011 (INDIA) up to 26.09.2018.

Firms submitting proposals shall note that:

1. This 'RFP is only for the purpose of short-listing the Modern Rail Fastening System meeting the stipulated 'Generic Specification/Performance parameters of 'Modern Rail Fastening System' as given in Annexure-C of this document for considering for undertaking field trial of Modern Fastening System in the Indian Railways. There will be separate tender for supplying the shortlisted fastening system.
2. The relevant values/properties of the proposed Modern Rail Fastening System meeting the technical requirements as given in Annexure-C needs to be provided.

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

Instructions/ Guidelines for the firms submitting proposals against this Global 'Request for Proposal' (RFP)

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 submitting the proposal. This RFP shall not be considered in any way a proposal for procurement of Modern Rail Fastening System but only for short- listing of Modern Rail Fastening System for ballasted track fit for 25t axle load meeting the technical requirements i.e. generic specifications & performance parameters of Modern Rail Fastening System given in Annexure-C, considering for undertaking only field trial. The intending participants will furnish proposals at their own cost and no claims, whatsoever; in this reference will be entertained by the Railways.

2. PURPOSE OF INVITING RFP:

The purpose of this RFP is to short-list the Modern Rail Fastening System for ballasted track fit for 25t axle, for undertaking field trial and invites the proposals from firms/JV who can supply the Modern Rail Fastening System meeting technical & performance parameters as per Annexure-C.

With above objective, Indian Railways seeks to establish proveness of proposed Modern Rail Fastening System for ballasted track fit for 25t axle load through field trial over Indian Railway conditions, meeting the technical requirements i.e. generic specifications & performance parameters of Modern Rail Fastening System for their possible use in future in Indian Railways. The generic specifications / performance parameters of Modern Rail Fastening System is given in this document as **Annexure- 'C'**.

3. GENERAL INSTRUCTIONS FOR SUBMITTING PROPOSALS to the RFP:

3.1 Eligibility criteria for applying in this RFP

- i) Applying firms should be following either of:
 - a) Existing manufacturer of ERC Mk-III/V, or any GFN/Metal Liner or GRSP/CGRSP of Indian Railways appearing in vendor directory issued by QA/Civil Directorate on the date of opening of RFP or RDSO validated PSC Sleeper manufacturer for Indian Railways.
 - b) Manufacturer / Supplier of Modern Rail Fastening System to any world railway system having Collaboration Agreement or Joint Venture partnership with any Indian firm appearing in vendor directory issued by QA/Civil Directorate and /or RDSO validated PSC Sleeper manufacturer for Indian Railways on the date of opening of RFP.
However, the firm/JV who have past experience in use of Modern rail Fastening System and have done R&D on this subject will be preferred.
- ii) The Modern Rail Fastening System offered by the Firm should meet the generic specifications & performance parameters mentioned in this document (Annexure – 'C').

3.2 The proposals of Modern Rail Fastening System for ballasted track fit for 25t axle load not meeting the technical requirements given in Annexure-C shall be summarily rejected without further consideration and decision of RDSO will be final in this case.

- 3.3 The Firm/JV shall provide the details of supply & its performance of the offered Modern Rail Fastening System for ballasted track fit for 25t axle load as per Para 4 of **Annexure-C**.
- 3.4 Specification / performance parameters of offered Modern Rail Fastening System for ballasted track fit for 25t axle load supplied earlier to any world railway system as per Para 3.3 to be attached as separate document while submitting the RFP proposal.
- 3.5 Technical details to be provided by firm/JV: Technical details such as relevant values/properties of the Modern Rail Fastening System purposed as per the technical requirements given in **Annexure - C**, shall be submitted by the firm along with their proposals. The firm will be required to furnish supporting documents along with lab reports and field reports etc. to establish that they are meeting the laid down requirements.
- 3.6 The details submitted by the firm/JV shall be scrutinized by RDSO. The deficiency as observed in the proposal during technical scrutiny or additional information as considered necessary will be advised to the firm/JV. The additional information must be made available by firm/JV within one month of intimation.
- 3.7 Submission by firms/JV: The firm/JV shall ensure the submission in the format given in **Annexure - B**.
- 3.8 The submission by the firms/JV shall be made to Director/Track-IV, RDSO, Anusandhan Bhawan, Manak Nagar, Lucknow- 226011 in the enclosed Format for “Letter of Response at Annexure B”. In the proposal submitted, the firms/JV should mention RDSO’s Notice No. CT/EF/Global RFP/Modern Fastening dated 24.07.2018.
- 3.9 The firms/JV 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.
- 3.10 In case the offered fastening system is claimed to be patented one already, the firms/JV will submit the patent registration details and documents/drawings in the support of the same.
- 3.11 In case the offered fastening system is claimed to be non-patented or free from any IPR, the firms/JV will submit undertaking (notarized affidavit) that the same has been developed by them and not copied from an existing product/design/drawing. It does not violate any valid/live patent and the same is not patented/developed by any other firms/JV. In addition the firms/JV will also required to indemnify IR/RDSO as per proforma given in **Annexure-D** against any possible dispute/litigation in feature pertaining to IPR infringement of any product/technology/design. It shall also be incorporated in such an undertaking that the firm/JV is fully aware of the fact that patented product/technology shall not be entitled for any incentive or preferred treatment in case of its adoption by IR.

3.12 RDSO reserves all the right of this exercise. In case of any doubt/dispute, decision of RDSO shall be final.

4. SELECTION CRITERIA:

The product meeting the eligibility criteria will be shortlisted by RDSO for considering for undertaking field trial on Indian Railways, broadly based on the following criteria:

S. No.	Item
1	Technical suitability of proposed Modern Rail Fastening System for ballasted track fit for 25t axle load as per the generic specification & performance parameters given in Annexure-C
2	Experience and expertise in the field of Modern Rail Fastening System

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 – GLOBAL RFP FOR PARTICIPATION

1. We, the undersigned, offer the following information in response to the 'Request for Proposals' sought by you vide your Notification No. CT/EF/Global RFP/Modern Fastening dated 24.07.2018.
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 RFP 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 The RFP is only for short-listing of the products i.e. for considering for undertaking field trial of Modern Rail Fastening System and the firms who can supply the Modern Rail Fastening System meeting generic specification & performance parameters for carrying out field trial by Zonal Railways of Indian Railway and suitable for use on IR network under operating conditions for 25T axle load and not for its procurement.
 - 6.2 Information furnished in response to RFP shall be used confidentially by RDSO as required. Confidentiality of the information furnished by the firm in this RFP will be maintained by RDSO.
 - 6.3 RDSO reserves the right to consider or not to consider any or all applications, cancel the RFP without any obligation to inform the respondent about the grounds of same.
7. In response to the RFP, 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 Modern Rail Fastening System for ballasted track fit for 25t axle load have been supplied by the firm including quantity and performance as per Para 4 of **Annexure-C**.
 - 7.3 Specification/Performance Parameters of supplied Modern Rail Fastening System for ballasted track fit for 25t axle load or for other reasons as per para 3.3 of **Annexure-A**.
 - 7.4 Budgetary cost of Modern Rail Fastening System with cost of alteration in existing design of PSC sleeper RDSO/T-2496 & RDSO/T-8527 separately.
 - 7.5 Complete details of the Modern Rail Fastening System with drawing and specification as per **Annexure-C** of this RFP.
 - 7.6 Details of Intellectual Property Rights (IPR) held, patent filed/held and MoU/ agreement signed.
 - 7.7 Details of ISO/equivalent certification, if any.
 - 7.8 Documents in proof of Eligibility criteria
 - 7.9 Para-wise compliance of Requirements as per **Annexure-C** and supporting documents.
 - 7.10 Undertaking/ indemnification as per **Annexure-D**.
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,

(Signature)

Name:

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

Date:

**PERFORMANCE PARAMETERS & BROAD GENERIC SPECIFICATION OF
MODERN RAIL FASTENING SYSTEM FOR BALLASTED TRACK
FIT FOR 25t AXLE LOAD ON INDIAN RAILWAYS**

1. Purpose:

Indian Railway is contemplating to explore Modern Fastening System for ballasted track as a whole. The performance parameters & broad generic specifications of Modern Fastening System for Ballasted Track given in this document are intended to meet the functional, technical and performance requirements / parameters, suitable for use on Indian Railway Network under prevailing and envisaged operating conditions for maximum 25T axle load at 100 kmph & speed of passenger train upto 200 kmph.

This generic specification is for short listing of the product over Indian Railway meeting technical requirement of this document.

Onus of demonstrating the offered fastening system as per technical requirement of this document shall lie on the offerer firm.

2. 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 300mm / 350 mm on important Broad Gauge routes.

The offered rail fastening system shall be suitable on existing PSC sleeper of RDSO design (for 25t axle load) to drawing no. RDSO/T-7008 and Wider PSC sleeper of RDSO design (for 25t axle load) to drawing no. RDSO/T-8527 with or without change in design of rail seat, while keeping the sleeper dimensions same.

Presently, Indian Railways is having design of both the above PSC sleepers (RDSO/T-7008 & RDSO/T-8527) for 136 RE rail (rail foot width 152.4 mm) and 60kg UIC section (rail foot width 150 mm).

Accordingly, rail seat dimension on both the PSC sleepers (insert to insert at one rail seat) has been kept as 170.4mm, using insulating liners of same thickness at gauge face & non-gauge face side for 136 RE rail. However, for accommodating 60 kg UIC rail (rail foot width 150mm) on same sleeper, combination liners have been used for gauge face & non-gauge face side for 60 kg UIC rail.

A copy of drawing no RDSO/T-7008, RDSO design PSC sleeper (for 25t axle load) and drawing no. RDSO/T-8527 RDSO design Wider PSC sleeper of (for 25t axle load) and SGCI insert drawing RDSO/T-6901 are attached for guidance purpose as **Annexure '1', Annexure '2' & Annexure '3'**. The rail seat assembly drawings for the above sleepers i.e. RT-7009 & RT-8529 are also attached for guidance purpose as **Annexure '4' & Annexure '5'**. It is to mention that, insert to insert dimensions, liners etc. are to be designed by the participating firms keeping rail foot dimension

as 152.4 mm for 136 RE rail for both the sleeper & with such provision that same rail seat can also be used for 60 kg UIC rail with different set of liners or other fastening components. The fastening system shall be suitable for mixed traffic conditions defined in para below.

3. Operating conditions of IR:

Fastening system should be able to perform satisfactory under the following conditions:

i) Axle load and Speed :

Traffic Type	Axle Load	Speed
Goods	25t	100 kmph
Passenger	22t	160 Kmph (Existing) 200 kmph (Proposed)

- ii) Traffic Density, GMT(on A Route) : 7.0 to 130
- iii) Electric Traction (Minimum) : 25 KV AC.
- iv) Track Circuits : DC.
- v) Gauge : Broad Gauge, Nominal (1673 mm)
- vi) Ambient Temperature : (-) 5⁰C to 50⁰C.
- vii) Rail Temperature : (-) 15⁰C to (+) 76⁰C.
- viii) Humidity : Max. 100%
- ix) Rail section : 60kg(UIC), 90 UTS/110 UTS
- x) Rail seat inclination (slope) : 1 in 20
- xi) Minimum Radius of Curves : 175 m
- xii) Gauge widening in tight curves : up to 1696mm for sleepers and not for fastenings, (1686mm for sleeper on curves < 350m & remaining 10mm to be taken for rail wear consideration).The firm has to submit proposed rail seat drawing with nominal gauge (1673mm) and 1683mm for sleeper on curves < 350m.The sleeper for such locations should have provision of check rail arrangement on both rails also.

4. Performance Requirements of the offered Fastening System:

- a) The fastening system shall be designed to hold the two rails of the track strongly in upright position by resisting the vertical, lateral and longitudinal forces (including thermal forces) and vibrations.
- b) The participating companies shall be a legal business entity as per the extant norms of India Companies Act. Necessary documents showing registration of company as per above Act shall be submitted. The foreign participant companies shall have also the option of forming a Joint venture Company with an Indian individual or company. All such participating companies have been herein under deemed as suppliers.

The fastenings shall be with a proven track record. The supplier of the new fastening system being proposed should also be the original designer as well as manufacturer i.e. one who holds the design & first patent or valid legal license of at least one of the critical components of the fastening system. The fastening system as a whole should have satisfactory performance record of minimum two

years in service in regular revenue operation on EN Cat-‘C’ ballasted tracks on any established railway system operational on mixed traffic line (where freight tracks are not exclusively operated), for a length of at least 15km, having speed potential of at least 160 kmph & design axle load 22T for passenger traffic & at least 100 kmph & design axle load 25T for goods traffic, irrespective of rail seat profile, wheel profile and rail section. In this regard, supplier should submit certificate of performance from user railways administration /operator including proof of use of the fastening system. Further, documentary proof should also be attached in respect of following:

- a) Name of the railway where fastening system have been supplied and used.
- b) Number of such supplied fastening system.
- c) Location where such fastening system have been used.
- d) Year of supply / putting in track.
- e) Performance of the fastening system (certificate from the user Railways to be attached)

The supplier shall also submit a certificate that the components of fastening assembly are having same material and specification in case the proven system is having different rail seat, rail section and wheel profile along with details of test results with proposed system as per test plan of Table 1 & 2 given in this document.

- c) Any RDSO approved firm of ERC Mk-III/V or any GFN/Metal Liners or any GRSP/CGRSP of Indian Railways appearing in the vendor directory issued by QA/Civil Directorate or any RDSO validated mainline PSC sleeper manufacturer on date of opening of RFP can also submit the proposal of Modern Fastening System with stricter manufacturing tolerances in already existing track components viz ERC Mk-V, GFN/Metal Liners, GRSP/CGRSP by tie-up with any concrete sleeper manufacturers and track fastening manufacturers in this proposal. The participating firm had to submit tie-up arrangement certificate in the form attached with Annexure ‘8’. The participating firm has to submit tie-up arrangement with all fastening components suppliers and PSC sleeper manufacturers.

In above case, proveness and testing requirement of fastening system with already existing track components on Indian Railway is not required except for establishing the required tolerances as stipulated in Para-9.

5. Technical Requirements of the offered Fastening System:

- a) The rail fastening system with all components shall comply with the requirements of EN 13481 Part-2:2012 Category (C) meeting Indian Railway operating conditions given in above Para 3. In case, the rail seat of PSC sleeper (RT-7008) is considered narrow for EN test due to the small surface area of the pad, the fastening designer shall have option to demonstrate RDSO that the pad design is clearly fit for purpose based on proven experience.
- b) For all the fastening components as per offered assembly, the supplier shall furnish detailed assembly drawings of the rail fastening system & components indicating all dimensions and tolerances, specifications, material type, coating description & heat treatment etc.

- c) The manufacturers shall supply detailed drawings for carrying out required changes in the concrete sleeper design for 25t axle load being used on Indian Railways presently to RDSO Drg. No. RT-7008 & RT-8527 with or without change in design of rail seat, while keeping the sleeper dimensions same.

The fastening system design shall be such that it should require minimum changes in concrete sleeper moulds presently used on Indian Railways.

Cost of the above changes shall be included in the budgetary price quoted along with their proposal. Modification in the concrete sleeper moulds and the production thereof as per modified moulds will have to be initially got done by the supplier under their supervision and they will, therefore be responsible for performance of the concrete sleeper as also the fastening systems as per modifications. The firm has to ensure that the sleepers manufactured for use of their inserts have the tolerances in the range required by them so that overall performance of the fastening is not affected by the inaccuracies in the manufacture of sleepers.

- d) The manufacturer shall submit rail seat design for 136 RE rail with foot width of 152.4mm, however the proposed rail seat should also be able to use 60 kg UIC rail(foot width 150mm) with different combination liners or other proposed components. Indian Railways is planning to use offered fastening system primarily with 60 kg UIC rail, however rail seat design should be able to use with 68 kg rail also in future if need arises. For this purpose different set of liner/combination liners or other components can be designed so as to maintain nominal gauge of 1673 mm.
- e) All non-metallic parts shall be suitable for hot and humid tropical climate where ambient temperature is in the range of -5° C to 50°C and high corrosion conditions exist. Polyamide parts can be reinforced with glass fiber to prevent degradation of mechanical properties. All plastics and elastomers to be UV and ozone resistant while rubber pads to be mineral oil resistant. The inspection and acceptance of rail fastening system shall be performed by the authorized representative of the purchaser.
- f) The fastening system should be such that it should be possible to install and remove it by unskilled labour using simple tools under minimum technical supervision. At the same time, it should incorporate anti sabotage feature as well.

In order to facilitate distressing, process, change of rail etc., the fastening should be capable of being removed and installed in a short time with no reduction in toe load. There should, in fact, be a balance between features of ease of removal of fastening and its anti sabotage property.

- g) It should be possible to use the same fastening system (or with minimum changes) in location like level crossing (with check rails), bridges (with guard rails), sharp curves (with check rails / with a facility of gauge adjustment, if any), points and crossings etc.

- h) The fastening system should have insulating components/ alternative arrangements, to make for use in track circuited area.
- i) The fastening system including clip should not be prone to corrosion leading to its substantial degradation affecting its service life and should not attribute to corrosion in rail foot also. Fastening system can be offered with two types of corrosion protection, one for mild / moderate corrosive conditions and other for severe corrosive conditions i.e. coastal and yard areas. In case, fastening system proposed for such specific locations is different in way or the other, details along with its additional cost implication shall be submitted.
- j) The fastening system should have minimum number of components. Individual components of fastening system should be replaceable during the entire service life. The components of the assembly should have matching life and the desirable service life for the complete fastening system should not be less than 15 years or life of rail whichever is earlier. Full service life is to be attained under the following conditions:
- i) Atmospheric ultra violet radiation.
 - ii) Contact with oil, grease or distillate dropped from track vehicles.
- k) The supplier shall also furnish sufficient copies of the '*Detailed Operations, Installation and Maintenance Manual*' of their fastening system.
- l) Permit the attainment of the following tolerances when installed and later during service on plain track as per **EN13231-1**:
- i) On new lines and on lines where complete renewal or through sleeper renewal is carried out, the track should be laid to the following standards:

SN	Speed range (Km/h)	120 < V ≤ 160
	Acceptance parameters	Value
1.	Track gauge (designed/measured value)	±2
2.	Cross level (mm) (designed/measured value)	±2
3.	Longitudinal Level (mm) chord 10m (peak to peak value)	4
4.	Alignment (mm) chord 10m (peak to peak value)	4
5.	Twist (mm/m) (variable baseline to peak calculated in a 3m basis)	1

- ii) While it is desirable to maintain correct gauge, it may not be possible to maintain correct gauge due to age and condition of the sleeper. Following tolerances of gauge shall be maintained as a good practice, provided generally uniform gauge can be maintained over long lengths:

SN	Speed range (Km/h)	120 < V ≤ 160
	Acceptance parameters	Value
1.	Track gauge (designed/measured value)	+4, -3
2.	Cross level (mm) (designed/measured value)	±3
3.	Longitudinal Level (mm) chord 10m (peak to peak value)	8
4.	Alignment (mm) chord 10m (peak to peak value)	8
5.	Twist (mm/m) (variable baseline to peak calculated in a 3m basis)	1.5

The following tolerances are expected to be maintained during trial period.

- m) In case of firm having been considered prima-facie suitable for the fastening system based upon documents submitted, the firm shall have to submit samples of fastening system for at least six rail seats immediately. The firm may be asked to submit samples earlier also, if required so.

6. Testing/Inspection Plan for offered fastening system:

- a) The rail fastening system tests for offered fastening system/component for Indian Railways shall be accomplished according to EN 13146 Parts 1-9 except Part 8. However, in case of conflict between EN & IR Codes, provisions of IR/RDSO will prevail. Test report of the offered fastening system / components from any internationally recognized university /independent institute / Independent laboratory for all tests as detailed in Table 1 & 2 will have to be submitted.

The fastening system has to be qualified based on the complete system as per EN 13481-2. The complete system testing shall be done as a part of initial product qualification.

Factory acceptance testing: Factory acceptance test shall be ensured by the firm based on Internal Test Procedure proposed by the fastening system provider to ensure quality of this fastening system. These tests shall be done as per conditions of the inspection & test para of the tender which will be called subsequently.

- b) Tests procedure shall be applied to a complete fastening assembly as well as to individual components according to the relevant EN standards, wherever applicable.

7. (a) Functional Requirements of the offered Fastening System:

The testing of rail fastening system shall be done for Cat. 'C' as specified in EN-13481-1:2012 & EN-13481-2:2012 with 60kg(UIC) rail section for different technical parameters and should meet the acceptance criteria as mentioned in the following Table 1 & 2:

Table-1
Test Plan for Fastening system for Ballasted Track
 (As per provisions of latest EN 13481-1:2012 & EN 13481-2:2012)

S.N.	Technical Parameters	Test Method	Acceptance criteria	Remarks
1	Longitudinal rail restraint	EN-13146-1-2012	7kN (min)	This has to be tested before repeated load test
2	Vertical static stiffness of complete fastening assembly *	EN-13146-4-2012	280 kN/mm (max)	No sliding, yield or cracking is allowed for the fastener parts.
3	Dynamic/static stiffness ratio	EN 13481-5-2012	1.4 (max)	Ratio is calculated by dividing the dynamic stiffness to static vertical stiffness.
4	Clamping force	EN-13146-7-2012	18kN (min) Per rail seat	This has to be tested before repeated load test
5	Effect of repeated loading	EN-13146-4- 2012	No wear or deformation	-
5A	On Longitudinal rail restraint	EN-13146-1- 2012	Variation \leq 20% of the initial value	Except the rail and fastener, no sliding, yield or cracking is allowed for parts. Longitudinal load/ deformation curve shall fall in the envelope of upper and lower limit which is to be submitted along with the report of fastener
5B	On Vertical static stiffness	EN-13146-4- 2012	Variation \leq 25% of the initial value	No sign of bond failure / fracture / slippage
5C	On Clamping force	EN-13146-7-2012	Variation \leq 20% of the initial value	
6	Electrical resistance **	EN-13146-5-2012	5k Ω (min)	-
7	Effect of severe environmental conditions	EN-13146-6-2012 & EN ISO 9227 Corrosion tests in artificial atmospheres – Salt Spray Tests		The fastening assembly shall be capable of being dismantled, without failure of any component & reassembled using manual tools provided for this purpose after exposure to the neutral salt spray test.

* Indian Railways is having mixed traffic as detailed in Para 3. The static stiffness of rail pads being used over Indian Railways is varying from 100 KN/mm to 250 KN/mm to cater for varying design of rolling stocks & locomotives at various locations. Therefore, the static secant stiffness value of the proposed pad may be suitably kept by the supplier for their proposed assembly for Indian Railways.

** On Indian Railways, for PSC sleeper, minimum electrical ballast resistance per km. of track should not be less than 2 ohms per km in station yard and 4 ohms per km. in the block section.

In addition to above, following tests as given in Table-2 shall be carried out as per relevant EN code / method:

Table-2

SN	Test
1.	Attenuation of Impact Load as per EN 13146-3:2012
2.	Assembly Dynamic Stiffness as per EN13146-9+A1: 2011
3.	Torsion Test as per EN 13146-2:2012
4.	Dimension Check as per EN 13481-2:2012
5.	Effect of fastening system tolerance on the track gauge as per EN 13481-2:2012

7. (b) On satisfactory submission of above documents & samples, if railway consider fit the fastening system for trial in Indian Railway, the following laboratory tests may be carried out in RDSO or Government laboratory or from lab accredited by Accreditation agency as per extant guideline issued by RDSO or National Test House or Regional Test Centre (RTC) or IIS Bangalore. There will be no testing charges for test conducted in RDSO, however the test which will be conducted outside RDSO, then the testing charges will be borne by the offerer firms. Necessary samples for following tests shall be provided by the offerer firms. RDSO's decision in this regard shall be final.

- i) Toe load test
- ii) Fatigue test
- iii) Corrosion test
- iv) Any other tests consider useful at later stage

The scheme for fatigue test of the fastening system shall be as under:

- i) **Stage-I** 2 million cycles at frequency of 300/minute (**L/V ratio = 0.4**)
 Vertical load between (V) = 9.375t (max) – 0.5t (min)
 Lateral load between (L) = 3.75t (max) - 0.2t (min)
- ii) **Stage-II** 0.5 million cycles at frequency of 300/minute (**L/V ratio = 0.62**)
 Vertical load between (V) = 9.375t (max) – 0.5t (min)
 Lateral load between (L) = 5.81t (max) - 0.31t (min)

In addition to above, for conducting toe load test or other tests in RDSO, necessary arrangement and transportation for conducting such tests shall be provided by the offerer firm.

8. Type of rail fastening system & component requirements:

The Rail Fastening System for above mentioned PSC Sleepers shall be either with 'wedge type' or with 'screw type' tension clamp and other main components **to comply** as under:

8.1 Elastic rail clips / Tension clamps:

- a) The minimum toe load of elastic rail clip should not be less than 900 kg.
- b) **Raw Material:** The raw material shall be an alloy spring steel to EN / IS code & suitable Grade or an IS/BIS equivalent.

- c) **Extra elastic margin:** When the elastic rail clip is installed in 25t assembly on IR, the minimum extra elastic margin shall not be less than 3mm over the design / specified deflection so that there is no permanent set in the clips upto 3mm from the design / specified deflection. For this purpose, load deflection curve is drawn to establish that the designated toe load imparted by the clip in 25t assembly is within limit of proportionality with either minimum **3mm** margin or having 1mm extra margin above the cumulative tolerances of all the offered fastening components. The basic concept is a system designed that maintains a consistent elastic (spring) resistance without permanent deformation, preferably over as large a service load range is practicable. RDSO may ask to verify testing of extra margin claimed for the offered fastening system.
- e) **Corrosion protection:** Clip will be supplied with a firm approved anti-corrosive protective coating suitable for mild / moderate corrosive conditions and /or for severe corrosive conditions.

8.2 Cast Shoulders / Insert

- a) **Material Specification:** Cast Shoulders manufactured in spheroidal graphite cast iron as per National Standards and firms approved material code or equivalent.
- b) **Hardness:** Cast Shoulder hardness shall be 170 to 240 Brinell. The method of hardness testing shall be in accordance BS EN ISO 6506-1 or as per equivalent international standards.

8.3 Toe Insulator / Insulating Liner

Material Specification: Raw material shall be a supplier approved grade of heat stabilized, unfilled Nylon 66.

8.4 Insulator / Angle guide Plate:

Material Specification: Raw material shall be to PA6 or PA66 Glass Reinforced 30%, density 1.30-1.45 gm/cm³ to DIN EN ISO 1183-1, moisture content 1.02 - 2.5% and impact strength 40kJ/m² min to DIN EN ISO 179-1. The material shall be resistant to ultra violet radiation heat and humidity under extreme typical conditions.

8.5 Sleeper Screw:

- a) Grade 5, 6
- b) Conforming to UIC 864-1
- c) Corrosion protection according to DIN EN ISO10684/ISO 1461 or ISO 10683

8.6 Sleeper Insert /dowel:

- a) Material to be PA6 or PA66
- b) Density 1.12-1.14 gm/cm³ conforming to DIN EN ISO 1183-1
- c) Vertical load capacity 60 KN min to EN 13481-2

8.7 Rail Pad:

- a) Rail pads are used between rails and sleepers to provide a bearing surface and an electrically insulating layer.
- b) Capable of avoiding contact areas of high pressure
- c) Reduce vibration, noise and impact transmission from rail to sleeper.
- d) Raw material: The pad material needs to be an elastomer for providing the necessary friction for longitudinal creep over the life of the pad and to attenuate the impact loads arising out factors such as irregularities in wheel/rail profiles, uneven stiffness of the ballast and sub grade layers joints, transition etc.
- e) Indian Railways is having mixed traffic as detailed in Para 3. The static stiffness of rail pads being used over Indian Railways is varying from 100 KN/mm to 250 KN/mm to cater for varying design of rolling stocks & locomotives at various locations. Therefore, the static secant stiffness value of the proposed pad may be suitably kept by the supplier for their proposed assembly for Indian Railways.

(The limiting characteristics / values of fastening components given above are only for reference purpose. Firms may have fastening components having separate characteristics / values specific for their proposed fastening system. In such cases, firms shall submit duly verified supportive documents shall be submitted to this office for reference.)

9. Effect of fastening system tolerances on track gauge:

Calculations shall be provided by the manufacturer to show the maximum variation in static track gauge which can arise from the offered fastening system. The firm will give clearly manufacturing tolerances of each component both on positive & negative side which should be maintained throughout the supply in case their system is finally selected for trial.

The calculations shall be based on the dimensions of the 60kg (UIC) rail section attached as **Annexure '6'** considering the tolerances on all components of the offered fastening system without considering the tolerances which arise from the position of concrete shoulder or cast-in SGCI inserts in the sleeper, as the case may be.

The variation in track gauge, calculated in this way shall not exceed +1 mm as per provisions contained in EN 13481-2:2012.

The manufacturer shall also provide a assembly drawing showing interface between the fastening system and the sleeper and effect of fastening system tolerances on track gauge.

The tolerances in sectional dimensions of 60 kg (UIC) rail to IRS Specification T-12 are as under:

Dimension	Tolerance	Remarks
Overall Height of Rails	+0.8 mm -0.4 mm	
Width of Head	± 0.5mm	This will be measured 14mm below the rails top
Width of flange	±1.0mm	For section less than 60Kg/m
	+1.2 mm	For sections 60kg and above
	-1.0 mm	
Thickness of web	+1.0 mm	This will be measured at the point of thickness minimum
	-0.5 mm	
Verticality/Asymmetry	± 1.2mm	Measured by gauge shown in Annexure-7 enclosed)
Flange	The base of the rail shall be true and flat, but a slight concavity not exceeding 0.40mm shall be permissible.	
Fishing surface	The standard template for rail fishing surface shall not stand away from the contour of web by more than 1.20mm and the clearance at the fishing surfaces shall not exceed 0.2mm at any point.	

The firm has to demonstrate the rail seat assembly tolerances of the offered fastening system in RDSO / their premises / or any laboratory in India using all components with representative sleeper before short listing of their fastening system for trial.

10. Short listing of Fastening System for limited field trials:

For the purpose of short listing of fastening system, offerer firms will have to comply the following requirements already laid down in this document so as to demonstrate their offered fastening system:

- i) The supplier of the fastening system should be the original designer & first patent or valid legal license holder of at least one of the critical fastening component of fastening system.
- ii) The supplier of the fastening system should manufacturer of at least one of the critical components of the fastening system.
- iii) The supplier of the fastening system should have their own lab for testing, development and quality control.
- iv) Varsity of the documents /test result shall be verified as deemed fit by RDSO.
- v) Indian fastening suppliers for item ERC Mk-III/V or any GFN/Metal Liners or any GRSP/CGRSP appearing in vendor directory of QA/Civil Directorate or any RDSO validated mainline sleeper manufacturer as stipulated Para 4 (c).
- vi) Full filling all other conditions in this document.

After satisfactory verification of the above, fastening system of the offering firms will be short listed for undertaking limited field trials for one year, if found suitable the trial may be extended by maximum 2-3 years duration. RDSO's decision in this regard shall be final & binding on the offering firms.

The firms will also be required to submit the budgetary quote along with cost of manufacturing PSC sleeper with modified design separately in a sealed cover for

the purpose of comparative analysis of their product vis-a-vis existing in-use alternatives.

The quantity and trial locations will be nominated after short listing of the fastening system by the Indian Railways.

11. Monitoring performance of fastening system during field trial:

The performance of fastening system during field trial shall be monitored for assessing the overall suitability of fastening system under Indian climatic conditions for a period of 12 months during limited field trial so that the performance is judged during all the seasons of the year. Trial period shall start from the date of initial machine packing. '0' month will be the date of first machine packing. The gauge / cross levels are to be measured immediately after machine packing is done during trial period as a special case. For the purpose of measuring toe load, gauge & cross level every seventh sleeper shall be paint marked along with ERC so that different parameter are measured at the same sleeper/ERC at different time.

- a) For the purpose of evaluation of offered fastening system, the following important parameters will be considered:-
 - i) Toe load of clip/clamps
 - ii) Retention of track geometry (Gauge /cross level) within laying tolerance and rate of degradation
 - iii) Creep
 - iv) Corrosion on rail foot below liner / contact point of the clip on rail.
 - v) Condition of fastening components
 - vi) Condition of Sleeper and its components
 - vii) General observation

- b) Toe load is to be measured every month for first three months then every three months for all clips at every seventh sleeper. The loss of Toe load after first 3 months and at the end of one year should not be more than 10%.The measurements are to be reported in the following format:-

Sleeper No.	Clip		Toe Load(Kg)at the end of						Remarks
			Initial laying	1 st month	2 nd month	3 rd month	6 th month	9 th month	
1.	L	GS							
		NGS							
	R	GS							
		NGS							
2.									
3.									

- c) Gauge and cross-levels are is to be measured every month for first three months then every three months at every seventh sleeper. The measurements are to be reported in the following format:-

Sleeper No.	Gauge (+)/Cross level at the end of														Remarks
	Initial laying		1 st month		2 nd month		3 rd month		6 th month		9 th month		12 th month		
	G	X _L	G	X _L	G	X _L	G	X _L	G	X _L	G	X _L	G	X _L	
1.															
2.															
3.															

d) Creep (to be measured every month at about highest and lowest temperature at various reference posts in CWR)

Reference post no.	Creep(mm) at the end of month													Remarks
	Initial laying	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th	9 th	10 th	11 th	12 th	
1.														
2.														
3.														

e) Corrosion:

- i) Corrosion of Rail foot below Liners/ at contact points of clip on rail: The corrosion of Rail foot below Liners/ at contact points of clip on rail is to be measured in 6/12 month period for 1 sleeper location in every 100m of track.

Item	Depth of Corrosion observed (in mm)			
	on Left Rail foot (after 6 months)		on Right Rail foot (after 6 months)	
	GS	NGS	GS	NGS
1	2	3	4	5
Total 10 nos. sleeper locations per Km				

Depth of Corrosion observed (in mm) on Left Rail foot (after 12 months)		Depth of Corrosion observed (in mm) on Right Rail foot (after 12 months)		Remarks
GS	NGS	GS	NGS	
6	7	8	9	

Note: Corrosion beyond 1.5mm in the rail flange of foot shall be taken as the criterion for wear due to corrosion, Wear shall be measured by callipers (8 no. calliper.). The wear is the difference between the thickness of the new rail flange and the thickness of the worn-out rail flange. An average of three measurements of rail flange thickness below the liner shall be reported.

- ii) Corrosion of rail clip: The corrosion on elastic rail clip is to be measured in 6/12 month period for 1 sleeper (all four clips) in every 100m of track

Total 10 nos. Sleeper locations (40 clips per Km)	Corrosion observed (Yes/No) on rail clips (after 6 months)			
	rail clip fixed on Left Rail		rail clip fixed on Right Rail	
	GS	NGS	GS	NGS
1	2	3	4	5

Corrosion observed (Yes/No) on rail clips (after 12 months)				Remarks
rail clip fixed on Left Rail		rail clip fixed on Right Rail		
GS	NGS	GS	NGS	
6	7	8	9	10

- f) Condition of fastening components – To be checked after every three months.
- i) Clips – To be checked visually during on foot inspection for all clips after every three months.

Clip No.	Condition of clips				Remarks
	Upto 3 months	between 3-6 months	between 6-9 months	between 9-12 months	
No of broken					
No of de-shaped					
No of worked out					
No of clips replaced					
No of clips seized					

- ii) Rubber pad – Total 20 nos rubber pads in one Km (taking one sleeper in each 100 meter) are to be taken out and checked for the following after every three months.

Rubber/ Rail pad .	Condition of Pads				Remarks
	Upto 3 months	between 3-6 months	between 6-9 months	between 9-12 months	
Thickness in mm					
No of pads crushed					
No of pads with distorted/ broken horns					
No of rail pads replaced					

- iii) Liners/ toe insulators/ guide plate :- Total 40 nos Liners/ toe insulators/ guide plate for the locations opened for rubber pad as above (taking one sleeper in each 100 meter) are to be taken out and checked for the following after every three months

Liners/ toe insulators/ guide plate	Condition of Liners/ toe insulators/ guide plate				Remarks
	Upto 3 months	between 3-6 months	between 6-9 months	between 9-12 months	
No of broken					
No with indentation marks					
No of worked out					
No of liners/ toe insulators/ guide plate replaced					

Unsatisfactory observation on other components of the fastening system, if any.

- g) **Condition of sleeper and its components:** All sleepers are to be checked visually during foot inspection after every three months.

Sleeper No.	Condition of sleeper & its components (Sleeper crack / breakage, Insert crack / breakage, dowel crack/breakage)At the end of					Remarks
	Initial laying	Upto 3months	between 3-6months	between 6-9months	between 9-12months	
No of cracked / notched sleepers						
No of cracked / corroded inserts / dowel						

- h) General Observations:-

- A) Shifting of rubber pads
- B) Anti sabotage property
- C) Any maintenance problem from P.Way point of view:
 - i) How convenient is opening/maintenance of track compared to the existing system?
(Worse/As good/Better)
 - ii) Promptness in block clearance compared to the existing system?
(Worse/As good/Better)
 - iii) Proneness to sabotage/Pilferage compared to the existing system?
(Worse/As good/Better)
 - iv) Suitability of the fastening system w.r.t the exiting in spl. locations like LC, T. Outs, Bridge Approaches etc.
(Worse/As good/Better)

12. Incident at Service:

Supplier of the Rail fastening system may be required to provide the following services. The details of above points will be part of supply tender which will be called separately:

- a) Providing facility of service engineer for initial installation of the fastening system and training of the Indian Railways Technical Staff for Installation and maintenance in service during the trial period subsequently for a total period of 10 weeks.
- b) Cost of the above shall be included in the price quoted.

HALF SECTIONAL ELEVATION

HALF SECTIONAL PLAN

END ELEVATION **SECTION ON YY** **SECTION ON XX**

ENLARGED VIEW OF DISPOSITION OF H. T. S. STRANDS.

DETAIL OF FIXING INSERT AT RAIL SEAT

QUANTITY SCHEDULE FOR SLEEPER

DESCRIPTION	DRG. NO.	MATERIAL	SPECIFICATION	NO. PER SLEEPER	VOLUME PER SLEEPER	APPROX. WEIGHT EACH IN Kg.	APPROX. TOTAL WEIGHT IN Kg.
SLEEPER	RDSO/T-7008	CONCRETE	IRB/T-39	1	108000 cm ³	287	287
REINFORCEMENT	RDSO/T-7008	H.T.S.	IS: 8008	20 NOS. 3φ13 mm STRAND	-	0.4566	9.13
INSERTS	RDSO/T-6901	SGCI	IRS/T-46	4	-	-	-

VALUES FOR STATIC BEND TEST

CRACKING LOAD (KN)			FAILURE LOAD AT RAILSEAT (KN)
CENTRE TOP	CENTRE BOTTOM	RAILSEAT	
85	90	270	490

QUANTITY SCHEDULE FOR RAILSEAT ASSEMBLY FOR 1673 mm GAUGE, 60 Kg. (UIC)

DESCRIPTION	DRG. NO.	MATERIAL	SPECIFICATION	NO. PER SLEEPER
GROOVED RUBBER SOLE PLATES	RDSO/T-7010	COMPOSITE RUBBER	RDSO/ M&C/ RP- 2002/2007	2
LINERS	RDSO/T-8608 RDSO/T-8607 RDSO/T-8609	GLASS FILLED NYLON-66	IRS/T- 44	2
ELASTIC RAIL CLIP MARK-V	RDSO/T-6919	-	IRS/T- 31	4

QUANTITY SCHEDULE FOR RAILSEAT ASSEMBLY FOR 1676 mm GAUGE, 60 Kg. (UIC)

DESCRIPTION	DRG. NO.	MATERIAL	SPECIFICATION	NO. PER SLEEPER
GROOVED RUBBER SOLE PLATES	RDSO/T-7010	COMPOSITE RUBBER	RDSO/ M&C/ RP- 2002/2007	2
LINERS	RDSO/T-8222 RDSO/T-8223	GLASS FILLED NYLON-66	IRS/T-44	2
ELASTIC RAIL CLIP MARK-V	RDSO/T-6919	-	IRS/T-31	4

NOTE

- ALL DIMENSIONS ARE IN MILLIMETRES.
- ALL CORNERS SHALL BE ROUNDED OFF TO A RADIUS OF 5 mm UNLESS OTHERWISE SPECIFIED.
- CONCRETE SHALL CONFORM TO IS: 4610, IRS/T-39, OF GRADE M40.
- EACH STRAND SHALL BE TENSIONED WITH AN INITIAL FORCE OF 29 KN.
- MARKINGS ON SLEEPERS SHALL BE TO DRG. NO. RDSO/T-2488.
- FOR ACHIEVING 1676 mm GAUGE ON THIS SLEEPER WITH 60 Kg. (UIC) RAIL TO DRG. NO. RDSO/T-7008 LINERS TO DRG. NO. RDSO/T-8222 & 8223 ARE TO BE USED.
- FOR 1673 mm GAUGE LINER TO DRG. NO. RDSO/T-8607 AND FOR NON TRACK CIRCUITED AREAS METAL LINERS TO DRG. NO. RDSO/T-8254 & 8255 ARE TO BE USED.
- PART SHOWN IN QUANTITY SCHEDULE SHALL BE TO LATEST SPECIFICATION & DRAWING.
- THE LATEST VERSION OF DRAWING TO BE CONFIRMED FROM RDSO BEFORE TENDERING.
- FOR USE OF 60 Kg RAIL ON THIS SLEEPER TO DRG. NO. RDSO/T-7008 REFER ASSEMBLY DETAIL NO. RDSO/T-7008 FOR RAIL SEAT ASSEMBLY REFER DRG. NO. RDSO/T-7008.
- THE ENGRAVED DRAWING NUMBER RT-7008 (AS DETAILED AT NOTE NO.5 BELOW) ON THE SLEEPER IS TO BE PAINTED WITH BLUE COLOUR AFTER WATER CURING AND BEFORE DESPATCH.

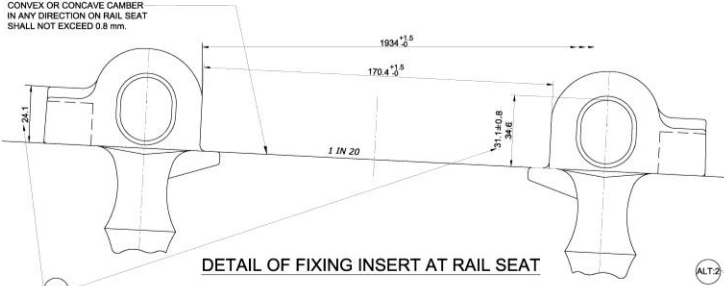
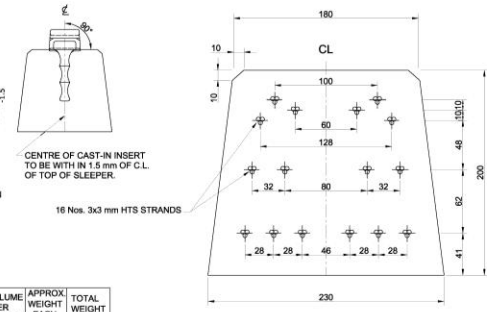
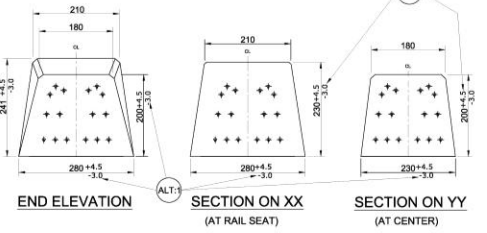
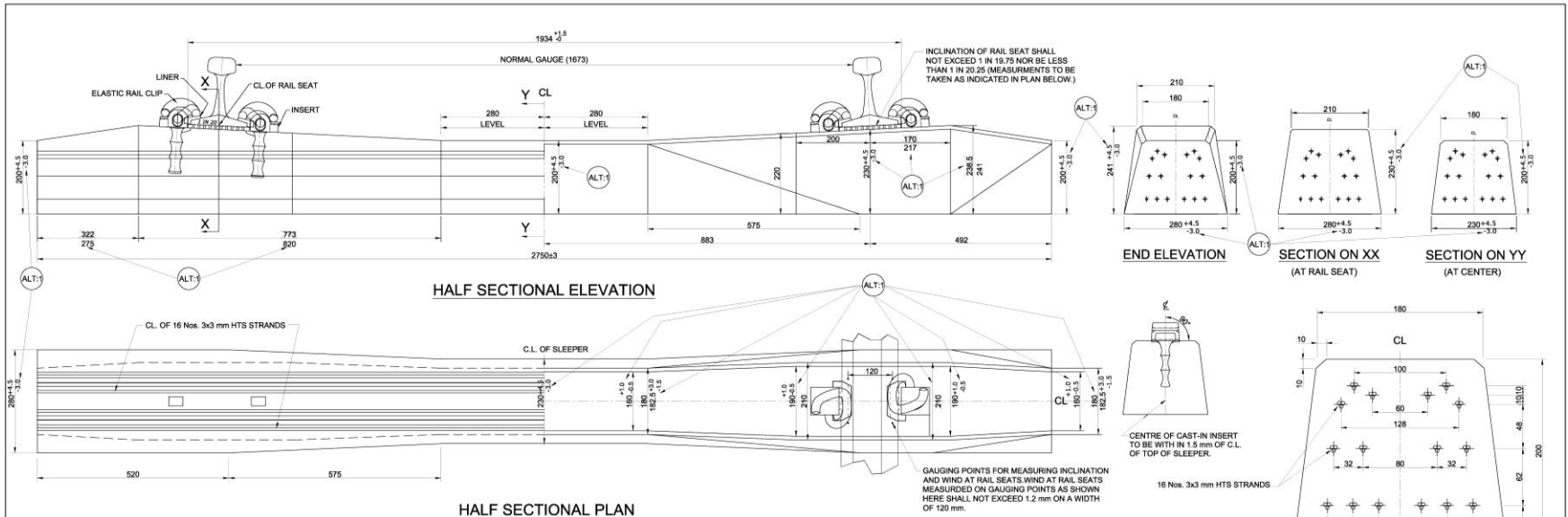
REVISION TABLE

NO.	DESCRIPTION	DATE
2.	LINER DRG. NO. AND NO. PER SLEEPER ALTERED AND NOTE NO. 8 ALTERED AND NOTE NO. 10 ADDED. TITLE OF DRAWING ALTERED.	05.06.16
1.	QUANTITY SCHEDULE FOR RAIL SEAT ASSEMBLY FOR 1676 mm. GAUGE & 1673mm GAUGE & NOTE NO. 8 ADDED AND NOTE NO.3 ALTERED.	18.12.11

SCALE **ALT:** **DESCRIPTION** **DATE**

IRTS/T-39 MILLIMETRES 10 0 10 20 30 40 20 0 20 40 60 80 50 0 50 100 150 200 **ADVANCE (T)** **RDSO/T-7008**

FILE C:\SR02\...
 PAGE 1 of 2
 C.F. No. ...
 1 1
 CALL: CH
 1 1
 DRG: K.J.SINGH
 CHD: R.L.WAGHARE
 TRC: COMPUTER AIDED
 DESIGNED BY: A.N.GUPTA
 CHECKED BY: J.D.SIVAKUMAR
 DRAWN BY: K.M.LESH/J.A.



QUANTITY SCHEDULE

DESCRIPTION	DRG NO	MATERIAL	SPECIFICATION	No. PER SLEEPER	VOLUME PER SLEEPER	APPROX WEIGHT EACH	TOTAL WEIGHT
SLEEPER	RDSO/T-8527	CONCRETE	IRS/T-39	1	136237.5	333.78	333.78
REINFORCEMENT	RDSO/T-8527	H.T.S.	IS: 6006-1983 (CLASS-2) AMENDMENT No. 3 JUNE 1983	16 NOS, 3x3 mm STRAND	-	0.4565	7.304
INSERTS	RDSO/T-6901	SGCI	IRS/T-46	4	-	-	-
13mm THICK COMPOSITE GROOVED RUBBER SOLE PLATES	RDSO/T-8528	COMPOSITE	RDSO/M&CRP-200/2007	2	-	1.447	5.788
LINERS	60 kg RAIL	RDSO/T-6937	GLASS FILLED NYLON-66	4	-	-	-
	60 kg RAIL	RDSO/T-6938 (GF)	GLASS FILLED NYLON-66	2	-	-	-
	60 kg RAIL	RDSO/T-6939 (NGF)	GLASS FILLED NYLON-66	2	-	-	-
	60 kg RAIL	RDSO/T-8618	METAL LINER	4	-	-	-
ELASTIC RAIL CLIP MARK-3(V)	RDSO/T-8616 (GF)	METAL LINER	IRS SPECIFICATION FOR METAL LINER FOR USE WITH ELASTIC RAIL CLIP (PROVISIONAL-2013)	2	-	-	-
	RDSO/T-8617 (NGF)	METAL LINER		2	-	-	-
ELASTIC RAIL CLIP MARK-3(V)	RDSO/T-3101	55 SI 7	IRS/T-31	4	-	-	-

ENLARGED VIEW OF DISPOSITION OF H.T.S. STRANDS.

VALUES FOR STATIC BEND TEST

CRACKING LOAD (KN)		FAILURE LOAD	
CENTRE TOP	CENTRE BOTTOM	RAILSEAT	AT RAILSEAT (KN)
68	60	280	535

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R. D. S. O.

WIDER PRESTRESSED CONCRETE SLEEPER FOR 25 t AXLE LOAD FOR 136 RE & 60 kg UIC RAILS.

STAN 8
DWG 88
REV 8

ADVANCE 16-03-2015

(T)

- NOTE
1. ALL DIMENSIONS ARE IN MILLIMETRES.
 2. ALL CORNERS SHALL BE ROUNDED OFF TO A RADIUS OF 5 mm UNLESS OTHERWISE SPECIFIED.
 3. CONCRETE SHALL CONFORM TO IRS/T-39. GRADE OF CONCRETE M-60.
 4. EACH STRAND SHALL BE TENSIONED WITH AN INITIAL FORCE OF 29 KN.
 5. MARKINGS ON SLEEPERS SHALL BE TO DRG. NO. RDSO/T-2466.
 6. FOR USE OF 60 kg RAIL ON THIS SLEEPER TO DRG. NO. RDSO/T-8527, REFER ASSEMBLY DRG. NO. RDSO/T-8529.
 7. PART SHOWN IN QUANTITY SCHEDULE SHALL BE TO LATEST SPECIFICATION & DRAWING.
 8. THE LATEST VERSION OF DRAWING TO BE CONFIRMED FROM RDSO BEFORE TENDERING.
 9. THIS SLEEPER IS TO BE USED UP TO 25T AXLE LOAD (FACTOR OF SAFETY-2.24) AT MAXIMUM SPEED OF 100KMPH AND FOR PASSENGER TRAFFIC UP TO FULL SECTIONAL SPEED.

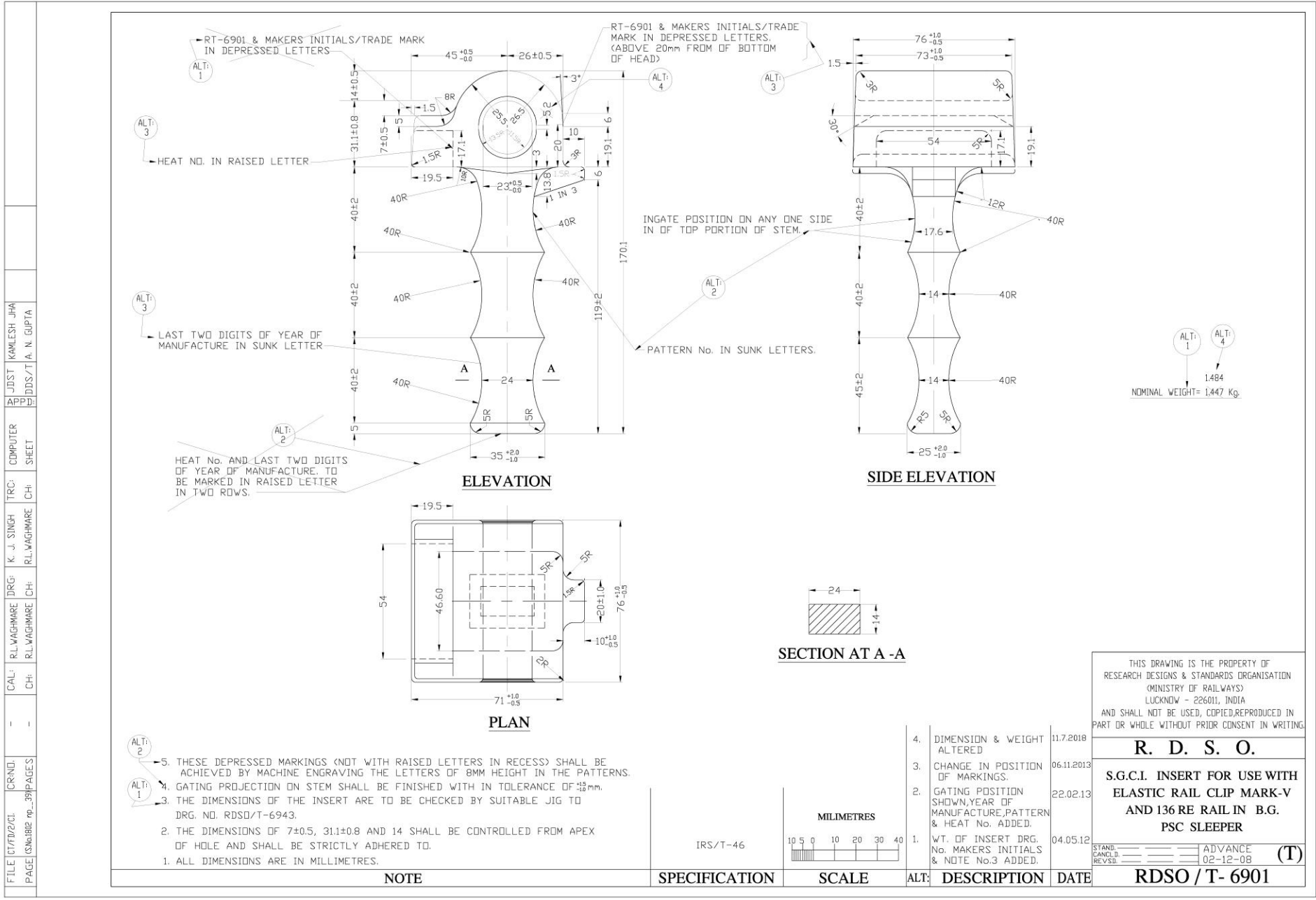
IRSI/T-39

MILLIMETRES

1. DIMENTION ALRERED & ADDED TOLERANCE ADDED.

2. NOTE ADDED & QUANTITY SCHEDULE ALTERED.

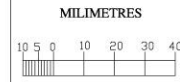
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CT/SR/02
CAL: M.SHIVANNA CH: M.SHIVANNA
DRG: M.S.SHARH CHD: M.SHIVANNA
4. ADET: S.KAWASTHI DST-IV PRANAV KUMAR
ED: N.P.L. KUMAR



NOMINAL WEIGHT = 1.447 Kg.

SECTION AT A - A

- 5. THESE DEPRESSED MARKINGS (NOT WITH RAISED LETTERS IN RECESS) SHALL BE ACHIEVED BY MACHINE ENGRAVING THE LETTERS OF 0.8MM HEIGHT IN THE PATTERNS.
- 4. GATING PROJECTION ON STEM SHALL BE FINISHED WITH IN TOLERANCE OF ± 0.13 mm.
- 3. THE DIMENSIONS OF THE INSERT ARE TO BE CHECKED BY SUITABLE JIG TO DRG. NO. RDSO/T-6943.
- 2. THE DIMENSIONS OF 7 ± 0.5 , 31.1 ± 0.8 AND 14 SHALL BE CONTROLLED FROM APEX OF HOLE AND SHALL BE STRICTLY ADHERED TO.
- 1. ALL DIMENSIONS ARE IN MILLIMETRES.



IRS/T-46

ALT:	DESCRIPTION	DATE
4.	DIMENSION & WEIGHT ALTERED	11.7.2018
3.	CHANGE IN POSITION OF MARKINGS.	06.11.2013
2.	GATING POSITION SHOWN, YEAR OF MANUFACTURE, PATTERN & HEAT No. ADDED.	22.02.13
1.	WT. OF INSERT DRG. No. MAKERS INITIALS & NOTE No.3 ADDED.	04.05.12

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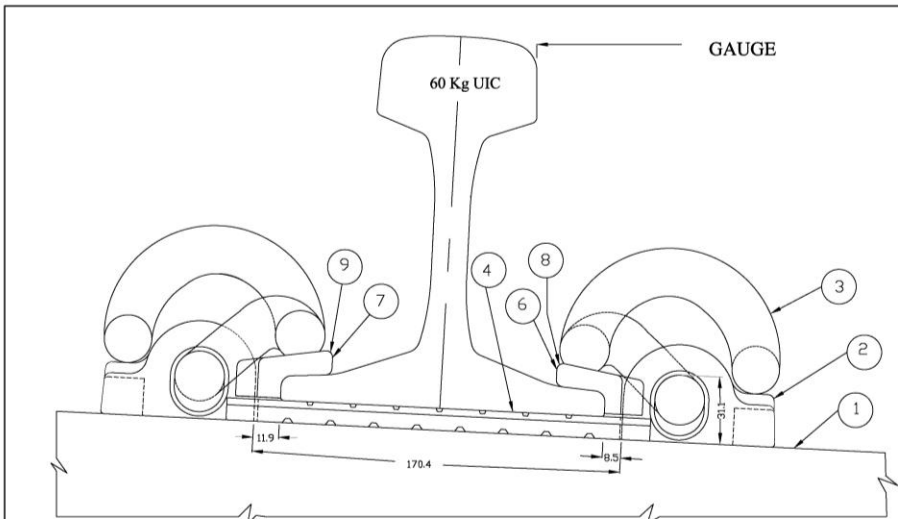
R. D. S. O.

S.G.C.I. INSERT FOR USE WITH ELASTIC RAIL CLIP MARK-V AND 136 RE RAIL IN B.G. PSC SLEEPER

STAND. ADVANCE (T)
CANCELD. 02-12-08
REV. 03.

RDSO / T- 6901

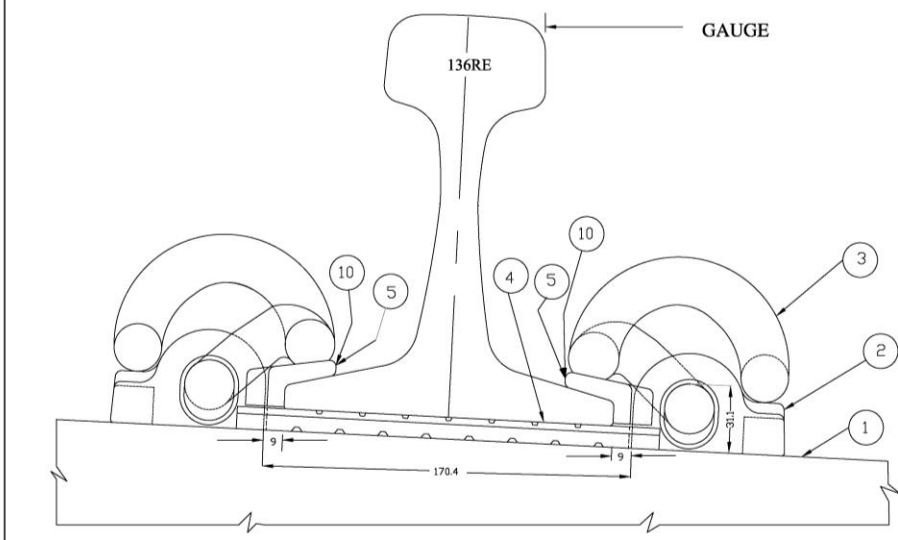
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TRC:	CH:		
COMPUTER SHEET			
JDS:	CH:		
DD/S:	CH:		
MAKERS:	CH:		



SCHEDULE OF MATERIAL FOR ONE SLEEPER

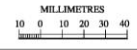
PART No.	No. OFF.	PART DESCRIPTION	DRAWING No.	SPECIFICATION
1	1	CONCRETE SLEEPER	RDSO/T-7008	IRS T-39
2	4	SOCT INSERT	RDSO/T-6901	IRS T-46
3	4	ELASTIC RAIL CLIP Mk-V	RDSO/T-5919	IRS T-31
4	2	10mm THICK COMPOSITE GROOVED RUBBER SOLE PLATE	RDSO/T-7010	RDSO/M&C/RP-200/2007
5	4	GLASS FILLED NYLON-66 INSULATING LINER	RDSO/T-6937	IRS T-44
6	2	- DO -	RDSO/T-6938	IRS T-44
7	2	- DO -	RDSO/T-6939	IRS T-44
8	2	- METAL LINER	RDSO/T-8616	IRS SPECIFICATION FOR METAL LINER FOR USE WITH ELASTIC RAIL CLIPS (PROVISIONAL-2013)
9	2	- DO -	RDSO/T-8617	
10	4	- DO -	RDSO/T-8618	

ALT. 1



1. ALL DIMENSIONS ARE IN MILLIMETRES.

AS PER TABLE



1.

METAL LINER ADDED

16/08/2017

STAW
GANC
REV

ADVANCE
20/05/2009

(T)

NOTE

SPECIFICATION

SCALE

ALT

DESCRIPTION

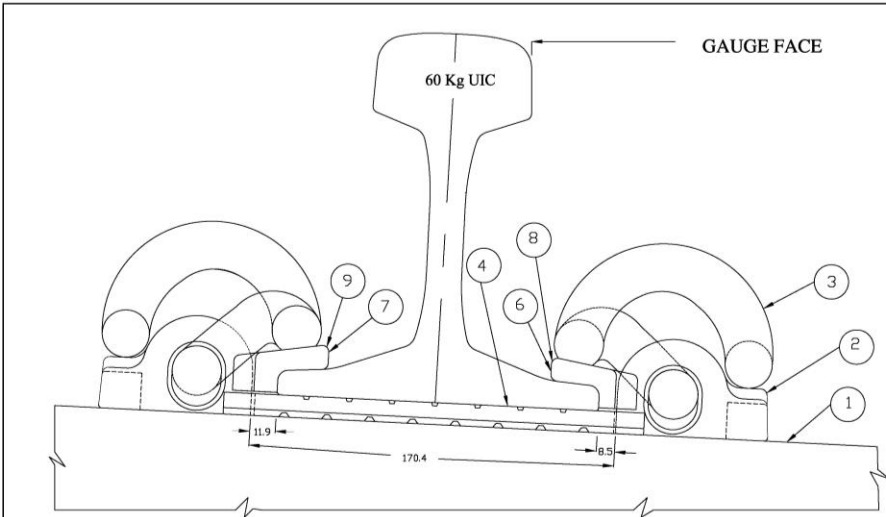
DATE

RDSO/T-7009

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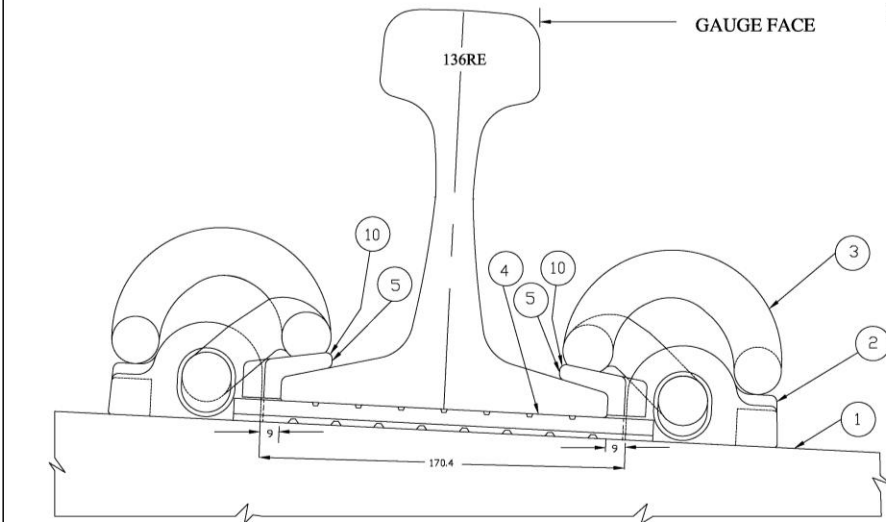
R. D. S. O.

RAIL SEAT ASSEMBLY ON
CONCRETE SLEEPER WITH 136 RE
& 60 Kg UIC RAIL



SCHEDULE OF MATERIAL FOR ONE SLEEPER

PART No.	No. OFF		PART DESCRIPTION	DRAWING No.	SPECIFICATION
	60Kg	136RE			
1	1	1	WIDER PSC SLEEPER	RDSO/T-8527	IRS T-39
2	4	4	SGCI INSERT	RDSO/T-6901	IRS T-46
3	4	4	ELASTIC RAIL CLIP Mk-V	RDSO/T-5919	IRS T-31
4	2	2	10mm THICK COMPOSITE GROOVED RUBBER SOLE PLATE	RDSO/T-8528	RDSO/M&C/RP-200/2007
5	-	4	GLASS FILLED NYLON-66 INSULATING LINER	RDSO/T-6937	IRS T-44
6	2	-	DO	RDSO/T-6938	IRS T-44
7	2	-	DO	RDSO/T-6939	IRS T-44
8	2	-	METAL LINER	RDSO/T-8616	IRS SPECIFICATION FOR METAL LINER
9	2	-	DO	RDSO/T-8617	FOR USE WITH ELASTIC RAIL CLIPS
10	-	4	DO	RDSO/T-8618	(PROVISIONAL-2013)



ALT.1

For Trial Only

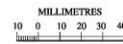
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R. D. S. O.

RAIL SEAT ASSEMBLY ON WIDER PSC SLEEPER (RT-8527) WITH 136RE & 60 Kg (UIC) RAIL

- 2. LATEST ALTERATION NUMBER SHALL BE CHECKED BEFORE PLACING ORDER.
- 1. ALL DIMENSIONS ARE IN MILLIMETRES.

AS PER TABLE



1.

METAL LINER ADDED

16/08/2017

STAN ADVANCE (T)
CANC 2001/2016
REV

RDSO/T-8529

NOTE

SPECIFICATION

SCALE

ALT

DESCRIPTION

DATE

FILE CTMTEL
PAGE 09-2-11(SN 366-)

MTU/RAJ
DD/TJEF

APPD

S. KUMAR

DRG.

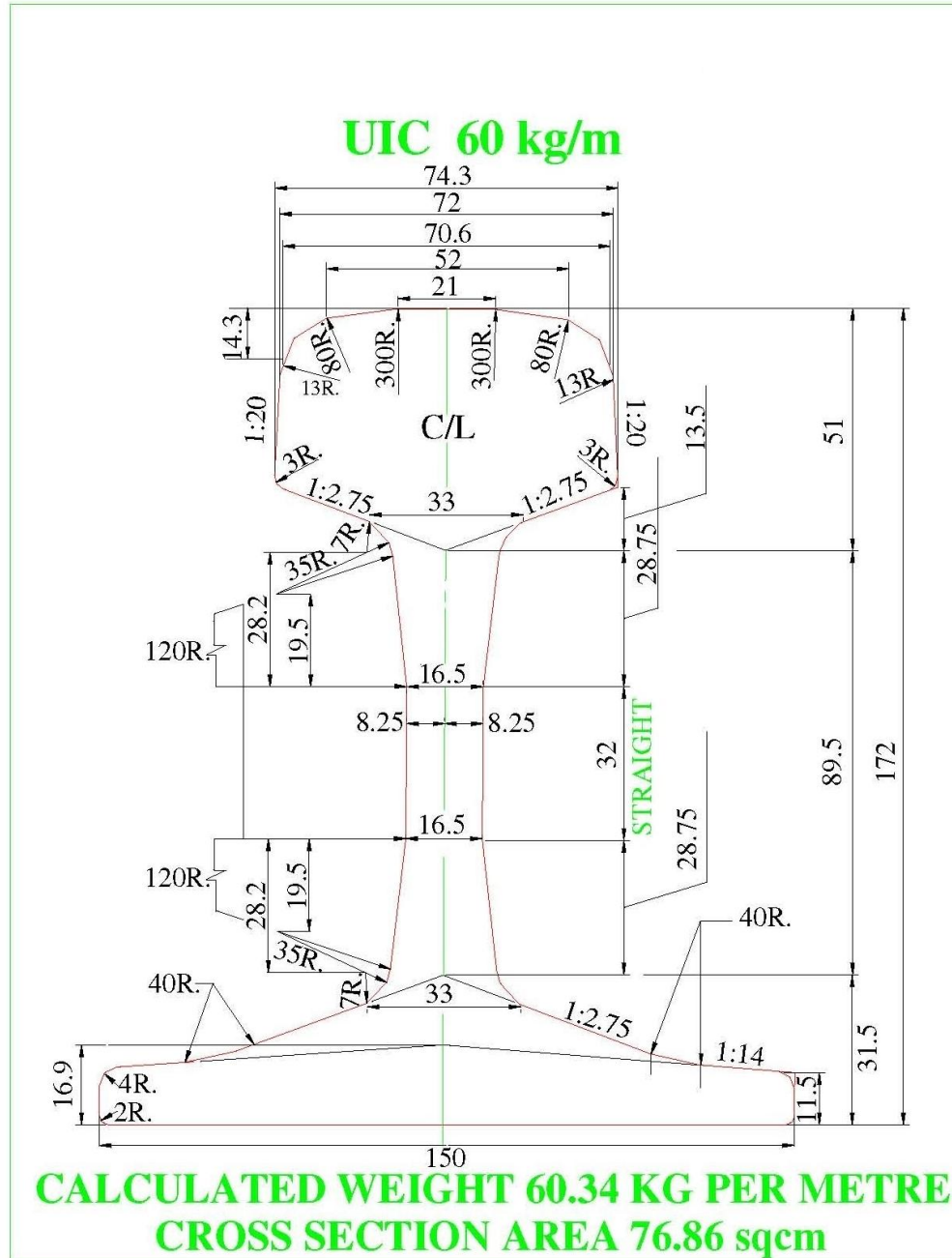
S. K. GUPTA

CAL.

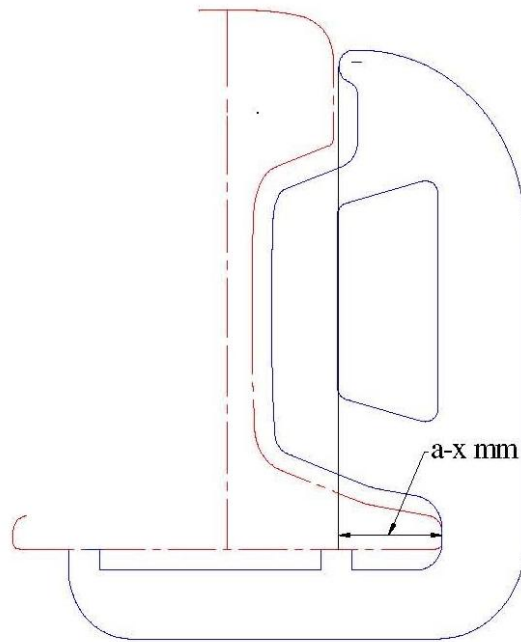
S. K. GUPTA

PERSON
PAGES

FILE
PAGE



GAUGE FOR CHECKING THE ASYMMETRY

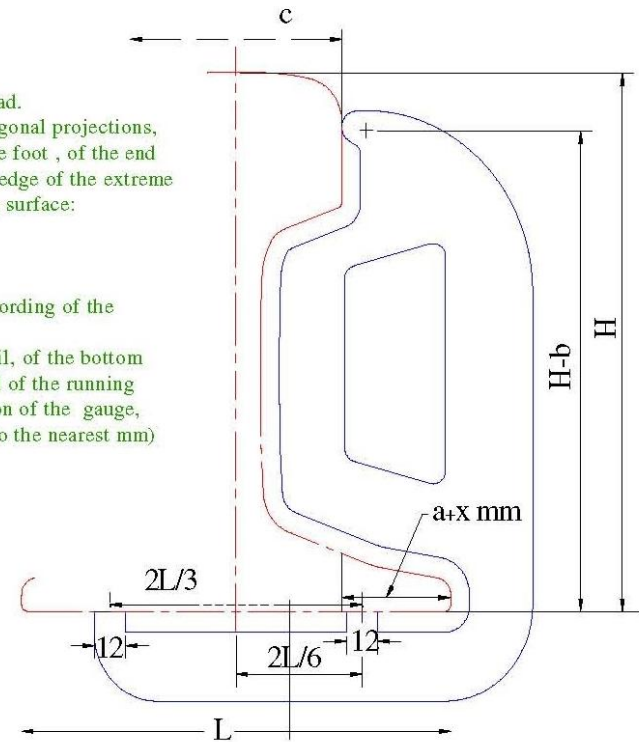


The (-) gauge, applied against the base of the railfoot, is pushed sideways towards the rail.
The (-) stop must not come into contact with the railhead.

H = Height of the rail.
L = Width of the railfoot.
C = nominal width of the railhead.
a = Distance between the orthogonal projections, measured on the base of the foot, of the end of the foot and the bottom edge of the extreme rounding all of the running surface:

$$a = \frac{L - C}{2}$$

x = Depends on the section, according of the general table of tolerance.
b = Height, relative to top of rail, of the bottom of the extreme rounding all of the running surface (for the construction of the gauge, H - b may be rounded off to the nearest mm)



The (+) gauge, applied against the base of the railfoot, is pushed sideways towards the rail.
The (+) stop must not come into contact with the railhead.

Proforma for Tie-up arrangement with the RDSO approved source for ERC Mk-III/V or any GFN/Metal Liners or any GRSP/CGRSP with PSC sleeper manufacturer and rest components manufacturer for manufacturing Modern Fastening System with stricter manufacturing tolerances in existing track components.

1.0 We, M/s.....are the valid RDSO approved source for ERC Mk-III/V and have entered into a tie-up arrangement with GFN Liners manufacturer M/s..... and Metal Liners manufacturer Ms..... and GRSP/CGRSP manufacturer M/s..... and PSC Sleeper manufacturer M/s..... for manufacturing Modern Fastening System with stricter manufacturing tolerances in existing track components at our manufacturing premises against RFP No.....due to open on.....(copy of agreement enclosed*).

or

We, M/s.....are the valid RDSO approved source for GFN Liner and have entered into a tie-up arrangement with ERC Mk-III/V manufacturer M/s..... and Metal Liners manufacturer Ms..... and GRSP/CGRSP manufacturer M/s..... and PSC Sleeper manufacturer M/s..... for manufacturing Modern Fastening System with stricter manufacturing tolerances in existing track components at our manufacturing premises against RFP No.....due to open on.....(copy of agreement enclosed*).

or

We, M/s.....are the valid RDSO approved source for Metal Liner and have entered into a tie-up arrangement with ERC Mk-III/V manufacturer M/s..... and GFN Liners manufacturer Ms..... and GRSP/CGRSP manufacturer M/s..... and PSC Sleeper manufacturer M/s..... for manufacturing Modern Fastening System with stricter manufacturing tolerances in existing track components at our manufacturing premises against RFP No.....due to open on.....(copy of agreement enclosed*).

or

We, M/s.....are the valid RDSO approved source for GRSP/CGRSP and have entered into a tie-up arrangement with ERC Mk-III/V manufacturer M/s..... and GFN Liners manufacturer Ms..... and Metal Liner manufacturer M/s..... and PSC Sleeper manufacturer M/s..... for manufacturing Modern Fastening System with stricter manufacturing tolerances in existing track components at our manufacturing premises against RFP No.....due to open on.....(copy of agreement enclosed*).

or

We, M/s.....are the valid RDSO/IR approved source for PSC Sleeper and have entered into a tie-up arrangement with ERC Mk-III/V manufacturer M/s..... and GFN Liners manufacturer Ms..... and Metal Liner manufacturer M/s..... and GRSP/CGRSP manufacturer M/s..... for manufacturing Modern Fastening System with stricter manufacturing tolerances in existing track components at our manufacturing premises against RFP No.....due to open on.....(copy of agreement enclosed*).

2.0 We have agreed to allow access and use all our testing and manufacturing facilities in manufacturing samples of Modern Fastening System with stricter manufacturing tolerances in existing track components to the firm M/s

Signature of authorized signatory and seal
of RDSO approved firm for ERC Mk-III/V or any GFN/Metal Liners or any GRSP/CGRSP or
RDSO validated PSC sleeper manufacturer

*Note : The enclosed agreement on non judicial stamp paper as applicable duly notarized made between the two parties as indicated above should be such that, same is legally acceptable & enforceable under the extant Indian Law.

ANNEXURE-D

(To be given on non-judicial stamp paper of appropriate value, duly notarized)

UNDERTAKING FOR UNCONDITIONAL TRANSFER OF DRAWINGS/SPECIFICATIONS/STR & OTHER DOCUMENTS TO RDSO/IR AND INDEMNITY

I.....son of.....aged about.....resident of
.....the deponent do hereby solemnly affirm and undertake as
under:

1. The deponent is the authorized signatory of the (.....name of firm/company.....) as per the documents enclosed.
2. The deponent declares on behalf of the firm/company that it has developed the.....(product description) hereinafter referred to as “the product” and approached the Indian Railway /RDSO for field trial and use of these products on Indian Railways.
3. The deponent declares that the aforesaid product developed by them is not a patented product and not protected under any copyright, brand, IPR etc. and currently there are no pending legal or any other disputes pertaining to the product. It is also declared that the offered product does not infringe IPR of any other firm / body etc. and has not been developed by some other firm.
4. On behalf of the firm/company, the deponent hereby indemnifies RDSO/IR and its authorized agents/vendors (which interalia includes the Zonal Railways, Public Sector Undertakings under Ministry of Railways and Vendors developed by RDSO/Indian Railways) fully at all times from any possible litigation, claims, its cost and expenses/financial liability arising out of any violation/infringement of patent/registered design/trademark/IPR of any product/item of any other firm/company/vendor/organization located both in India and abroad for the duration of use of the said product on the Indian Railways/its units.
5. The deponent declares that firm has agree for unconditional transfer of drawings/specifications/STR and other documents of the product to RDSO/IR with consent for further issuing them by RDSO/IR as their own drawings/documents, without claiming any preferential treatment/incentive for the same and understands that for this, they are not entitled for any incentive in future. Firm, has also authorized RDSO to make any changes/improvisation therein.
6. The deponent further declares that they shall not have any objection if RDSO/IR develops vendors for supply or aforesaid product and the product is used in what

so ever manner and quantity by Indian Railways without deponent having any claim in any form.

7. The deponent further declares that the firm/company is willing to unconditionally provide all logistic support and technical knowhow for development and production of the product to RDSO/IR and its vendors as and when required.

Deponent

Verification

I declare that the contents of aforesaid Para 1 to 7 are true to my knowledge and belief, and nothing has been concealed. I understand that furnishing of any false information in above undertaking or concealing information will lead to legal and administrative action against the firm/company.

Deponent