Dedicated Freight Corridor Corporation of India Ltd.
DFCCIL AJMER

Name of Work - Manufacture, supply, transportation and delivery of prime quality of UIC 60 Kg. 1080 grade head hardened class A rails and 880 grade rails as per Indian railway standard specification for flat bottom rails (with latest Advance & Correction slips) in the jurisdiction of CGM/DFCCIL/AJMER.

Tender No. AII-EN-CGM-AII-Supply of Rails

Single Packet OPEN E-TENDER

October -2021

TENDER DOCUMENT OF DFCCIL-AJMER FOR E-PROCUREMENT OF RAIL

ENGINEERING DEPARTMENT

INDEX

E-procurement Notice

1	Publishing Date	:	14.10.2021	19:29 Hrs
2	Bid Document Download/ Start Date	:	28.10.2021	15:00 Hrs
3	Bid Submission Start Date	:	28.10.2021	15:00 Hrs
4	Bid Submission End Date	:	11.11.2021	15:00 Hrs
5	Bid Opening Date	:	11.11.2021	15:30 Hrs

1.0 Chief General Manager/Ajmer, DFCCIL (A Govt. of India Undertaking) CGM-DFCCIL office, A/1, Circular Road, Ajmer (Rajasthan) -305001, e-mail: dfccil.ajmer@hotmail.com, contact no. +91-145-2970462 for and on behalf of DFCCIL invites online bids in Single packet system on prescribed forms from bonafide firms/companies having requisite experience and financial capacity for execution of the work detailed in the table given below. The bidder is advised to examine carefully all instructions including addendum/ corrigendum(s), condition of contract data, forms, terms, technical specifications, bill of quantities in the bid document.

S N.	**Name of Work**	**Estimated Cost in Rs. Including all taxes**	**Earnest Money**	**Completion Period**
1	Manufacture, supply, transportation and delivery of prime quality of UIC 60 Kg. 1080 grade head hardened class A rails and 880 grade rails as per Indian railway standard specification for flat bottom rails (with latest Advance & Correction slips) in the jurisdiction of CGM/DFCCIL/Ajmer.	**15,62,09,981.69/-**	NIL (In place of Earnest Money, "Bid Security Declaration" Form has to be submitted in given Performa	03 Months

2.0 Website www.ireps.gov.in/eprocure/app may be referred for detailed terms and conditions of the bidding documents, which is available on line. Amendments / Corrigendum / Addendum, if any would be hosted on the website only.

3.0 **ELIGIBILTY CRITERIA**

Eligibility of the applicants shall be assessed based on the "Essential Qualifying Criteria".

4.0 **Accessing/Purchasing of Bid Documents**

4.1 The complete Bid Document can be viewed / downloaded from the e-Procurement portal i.e. www.ireps.gov.in free of cost.

4.2 It is mandatory for the bidders to get their firm /company registered with e-procurement portal www.ireps.gov.in to have user ID & password.

4.3 Tender documents will be available online on website www.ireps.gov.in as per date sheet which can be downloaded free of cost.

DFCCIL, AJMER

Section A

INSTRUCTIONS FOR SUBMITTING E-BIDs ON IREPS SITE

1.0 Please read carefully all Instructions of E-Tender document consisting of as given in para 5.0 below.

2.0 Your digital signature on the E-Tender form will be considered as your confirmation that you have read and accepted all the conditions laid down in the E-tender documents referred in para 1.0 above as well as schedule of tender, consisting of Techno-Commercial offer Form (including special conditions attached to E-Tender) and Financial offer Form, unless specific deviation is quoted in the Techno- Commercial offer form.

2.1 Firms, which are not registered on IREPS may refer to Annexure A-1 in which details of registration procedure on IREPS site are mentioned. They are also advised to refer to Annexure A-2 in which procedure for obtaining Class-III Digital signature is indicated.

3.0 All mandatory fields marked with (*) have to be filled in by the bidders.

4.0 Deleted

5.0 E-Tender document consists of –

i. Instructions for submitting E Bids on IREPS Site and Schedule of Items: SECTION "A"
ii. Instructions to tenderers and Special Conditions of Contract applicable for E- Tenders: SECTION "B"
iii. Important Terms & conditions of Electronic Tender Schedule of Requirement: SECTION "C"
iv. Information regarding workload on Tenderer: SECTION "D"
v. Special conditions for supply of free rails and Guarantee of Stores: SECTION "E"
vi. Instruction for tenderers on LC mode of payments: SECTION "F"
vii. Tender Conditions for Stores Tenders: SECTION "G"
viii. Technical Specification: SECTION "H"
ix. IRS Conditions of Contract and its amendments.
x. Techno-commercial offer.
xi. Financial Bid

6.0 No Manual offers sent by post/Fax or in person shall be accepted against such E-tenders even if these are submitted on the Firm's letter head and received in time. All such manual offers shall be considered as INVALID offers and shall be rejected summarily without any consideration.

7.0 DFCCIL Ajmer have arrangement for making payments through RTGS/NEFT system for quick money transfer to the tenderers account. Tenderers must give their consent in the mandate form provided at Annexure '8' of Section-B of Tenders for Supply Contract, for receipt of payment through RTGS/NEFT.

8.0 The tenderers must fill in the techno-commercial offer form (consisting of eligibility criteria, terms & conditions, performance statement, deviation statement, check list & special conditions etc.), financial offer form and attach scanned copy of all the documents needed as per Section-A, Section -B & Section -C as available on IREPS site i.e. www.ireps.gov.in.

9.0 All the mandatory fields of the Techno-commercial Offer Form and Financial Offer Form (i.e. Rate page) including basic rate, all taxes & duties (including percentage of CGST/IGST/UTGST/SGST or any other taxes/duties which may become applicable during the currency of Contract), freight and any other charges shall have to be filled up by the vendor. Once the unit of rate shall be as indicated in the tender schedule and this cannot be changed or altered by the vender. Thereafter, all-inclusive unit rates on for destination basis shall be automatically calculated by the system and shown to the vendor before submission of offer.

Important Note: - All tenderers should note carefully that the entries for rate, taxes & duties and any other levy shall have to be made by them only in the relevant fields as provided in the financial offer form. In case, any entry made by tenderer outside the relevant field, same shall be ignored by the system while evaluating the offers for the reason that the comparative statement is prepared automatically by the system on the basis of the entries as made by tenderer in the relevant & respective field only. This computer generated comparative statement forms the basis for evaluation of offers, deciding the inter-se ranking of offers and further deciding the tender accordingly.

If the any duty/taxes, packing charges, forwarding charges etc. are not quantified in exact %age, then these elements like taxes/duties etc. shall also be taken as nil by the system in the comparative statement prepared automatically by the EPS system.

It is therefore, in the interest of the vendors to enter the exact %age or Amount in the relevant fields in the financial offer form, failing which any entry made by the tenderer outside the relevant field shall be ignored and considered the same with impact as nil while deciding the inter ranking of the offers irrespective of the fact whether the tenderer has mentioned specific rates at some other place in its offer instead of the nominated field.

Therefore, it is quite essential for the vendor to note that the entries for rate, taxes/duties and any other levy should not be made anywhere else except in the appropriate field/column provided in the financial offer form.

10.0 The E-bid system does not permit submission of any offer after closing date & time of the e-tender. Hence there is no scope of any late or delayed offer in the online bidding process.

11.0 E-Tender form is not transferable and the same is to be submitted with digital signatures by the pre-authorized personnel of the vendor, already registered with the site.

12.0 **EARNEST MONEY DEPOSIT: FOR OPEN TENDERS**:

12.1 The Earnest Money Deposit (E.M.D.) shall be taken from all tenderers against advertised tenders subject to exemptions as detailed in condition No.11 of Section -C

12.2 The amount of EMD has been as specified in condition No.–11 of Section-C

12.3 If a tenderer does not furnish the earnest money & is seeking waiver or exemption from payment of EMD he/she shall have to attach scanned copy of requisite documentary evidence in support of his/her claim and he/she should clearly indicate the category under which the firm is exempted. Failure to do so will be taken as unwillingness on his/her part to deposit the earnest money and such offers are liable to be ignored. For the other tenderers, Earnest Money as stipulated in the Notice for Invitation of Tenders (NIT) will have to be paid online through Payment Gateway link (Hyperlink).

12.4 All other bid terms and conditions shall be as per Annexure-B & C.

13.0 **Drawings and Specifications**:

13.1 Unless Drawings and Specifications as mentioned in the tender schedule/enquiry / offer form are provided with the tender documents or made available on Railway's website for downloading by the tenderers, these may be obtained in the manner shown below:

(i) Specification/STR/Drawing of RDSO/ICF/DLW/CLW/ CORE etc may be obtained from the concerned authorities who have issued these, on payment.

(ii) For such tenderers who download the tender documents, they have to produce the proof of such download while asking for such drawings and specifications.

13.2 If any tenderer happens to quote with their own Drawing No./Part No./Specification, then he shall have to necessarily, submit copy of all the requisite documents and information in support of his offer being in conformity with the tender Drawing/ Specification. Furthermore, copies of such drawings/specifications/catalogue are also to be enclosed, failing which the offer will be liable to be rejected.

14.0 **E-Tender Opening**:

14.1 No Vendor shall be required to be present in the DFCCIL office for any E-

Tender Opening Process to know the comparative position. They can obtain totally transparent bid tabulation statement by logging on to the website.

14.2 DFCCIL do not guarantee opening of tenders at the specified Date and Time due to reasons beyond control and unavoidable circumstances hence tenders can be opened even after due date and time. It shall, however, be ensured that no bids are submitted after tender closing Date and Time. Vendors cannot submit any offer or attach any file after the stipulated due date and time as given in the tender notice.

15.0 Documents to be attached/uploaded along with electronic offer by the tenderer:

Scanned copies of all the documents, which are required to be submitted by the tenderer in reference to our bid conditions as specified in bid documents i.e. Section-A, Section-B & Section-C shall have to be uploaded, along with their electronic offer.

16.0 **Rate, Taxes and Duties**:

16.1 Each vendor shall fill in and submit the Financial Offer Form in all respect and encrypt his offer on his client machine with the secure encryption key available with the tender and digitally sign using his Digital Signature Certificate.

16.2 Tenderers shall clearly indicate separately ex-works basic price, packing charges, forwarding charges, the applicable percentage of GST in exact %age, Educational Cess, and also specific amount of Freight charges up to destination etc, in the respective field of the Financial Offer Form for each unit tendered.

16.3 Tenderers are required to quote in the same rate unit (i.e. Number, set etc.) as given in the Tender Schedule. Any deviation in this aspect will make the offer liable to be ignored.

16.4 All other terms and conditions shall be i.e. as per instructions to tenderers i.e. Annexure-B and also as per E-Tender SOR i.e. Section -C.

17.0 GOODS AND SERVICE TAX (CGST/IGST/UTGST/SGST)

Tenderers are requested to refrain from quoting vague terms like "GST as applicable." The tenderer must use the drop down option in the GST category and select appropriate option i.e. "Inclusive"/ "Max. Applicable"/"NIL"/ "Not applicable/Specific GST Inclusive.

(i) If GST is not claimed in the offer and nothing is mentioned about GST, no GST will, then, be payable and will be borne by Vendor.

(ii) If tendered item is not dutiable, the tenderer must use the drop down option in the GST Type and select appropriate option such as "NIL" or "Not applicable".

(iii) In case the GST is shown as "inclusive" by the tenderer, GST %age shall, then, be specified in the remarks field provided in the financial offer form otherwise the offer will be considered as inclusive of GST at the applicable rate. In such cases, no increase in GST rate after placement of purchase

order on account of statutory variation shall be allowed to the tenderer.

(iv) If the tenderer misclassifies the goods under relevant GST tariff rules, the DFCCIL will not pay increased GST due to such misclassification.

(v) GST will be paid subject to Tax invoice and government notification only.

18.0 Tenderers will examine the various provisions of the Central Goods and Services Tax Act, 2017 (CGST)/Integrated Goods and Services Tax Act, 2017 (IGST)/ Union Territory Goods and Services Tax Act, 2017 (UTGST)/ respective State's State Goods and Services Tax Act (SGST) also, as notified by Central/State Govt. & as amended from time to time and applicable taxes before bidding. Tenderers will ensure that full benefit of Input Tax Credit (ITC) likely to be availed by them is duly considered while quoting rates.

18.1 The successful tenderer who is liable to be registered under CGST/IGST/UTGST/SGST Act shall submit GSTIN along with other details required under CGST/IGST/UTGST/SGST Act to DFCCIL immediately after the award of contract, without which no payment shall be released to the contractor. The contractor shall be responsible for deposition of applicable GST to the concerned authority.

18.2 All other terms and conditions shall be as per Section-B & C on the subject matter.

19.0 Price Variation Clause:

Firm price.

20.0 Tenderers are advised to refer to Section-B, Section-C and E-Tender Guidelines for detailed Terms and Conditions as available on IREPS site i.e. http://www.ireps.gov.in.

ANNEXURE 'A-1'

Important notice to Vendors not registered on IREPS for Participation in E tenders floated on IREPS site

1. Please note that the bids/offers against above tender case of this DFCCIL have been invited electronically to be submitted in Electronic format available on website www.ireps.gov.in.
2. The bid submitted manually shall not be accepted at all. So, all the prospective bidders are requested to submit their offer electronically only in the format available on website www.ireps.gov.in.
3. For submitting the offer electronically, the tenderers are required to have their class III Digital Signatures Certificate and registration on Indian Railways E Procurement (IREPS) website www.ireps.gov.in.
4. It may be noted that it shall be the sole responsibility of prospective bidders to get themselves registered on IREPS website and to submit their bid electronically prior to due date. DFCCIL shall not extend due date of tender opening for any delay on part of the bidder in obtaining digital signature and registration on IREPS site and later on DFCCIL/Ajmer shall not entertain any complaint for not giving opportunity to the tenderer to quote against this E-tender.
5. The vendors are also requested to read the Vendor user manual available on IREPS website and familiarize themselves with the electronic tender process.
6. Following officers are nominated for assisting the vendors willing to participate in e-procurement process:

Sr. No	Name & Designation	Telephone/Mobile No.	e-mail ID
1.	Executive/Civil	8003899308	npareta@dfcc.co.in
2.	Dy.PM/Engg.	8003899316	vparihar@dfcc.co.in

7. The procedure in brief for obtaining digital signatures and registration on IREPS site are available in Annexure-B for the guidance of bidders.

For DFCCIL/Ajmer

ANNEXURE 'A-2'

Procedure for obtaining Class III digital signatures for participation in tender of DFCCIL AJMER through e-procurement.

1. Vendors desirous of Registration on IREPS website http://www.ireps.gov.in/, have to obtain class III digital signatures as a prerequisite for registration.
2. The digital signature is a tool required for authentication of person who is signing and submitting the document electronically on the website.
3. The type of digital signature required for participation in the tenders of IREPS is a "Class III digital certificate".
4. The digital certificate can be purchased by vendor from any of the Certifying Agencies authorized by Controller of Certifying Agencies (CCA) on payment of charges.
5. The details of the Certifying Agencies for selling of digital signatures are available on website of CCA --- http://www.cca.gov.in/.
6. Vendors are requested to contact any of the Certifying Agencies for purchase of digital signature and then submit its request for registration on website of IREPS.
7. After having obtained class III Digital Signatures, the vendors may click on the "new vendors" link on IREPS website http://www.ireps.gov.in/ which will open a form for registration on the website. Vendors are requested to fill the complete details along with details of digital certificate on this registration form and submit.
8. The registered vendors shall be sent their "user name" and "password" in their e-mail by CRIS for logging on the website of IREPS.
9. Thereafter, new registered vendors can submit their offers after logging on the website using their digital signatures certificate.
10. In case any problem is faced during registration on IREPS website then help can be obtained from help desk CRIS (Centre for Railway Information System) which is being maintained at IREPS website by contacting at following telephone numbers:
    I. 011-24105180 II. 011-24102855
    Alternatively an e-mail can be sent to help desk of CRIS at following e-mail address: helpdesk.eps@cris.org.in Contacts details of officials of CRIS are as under:

I.	GM/Project	Tel. No. 011-23379934
II.	DGM/Project	Tel. No. 011-24104525

11. Further help can be taken from the officers mentioned in Annexure-"A" in regard to any problem related to purchase of digital signatures, registration on IREPS website and submission of offers for e-procurement tenders.

For DFCCIL/Ajmer

SCHEDULE OF ITEMS

Name of Work:- Manufacture, supply, transportation and delivery of prime quality of UIC 60 Kg. 1080 grade head hardened class A rails and 880 grade rails as per Indian railway standard specification for flat bottom rails (with latest Advance & Correction slips) in the jurisdiction of CGM/DFCCIL/Ajmer.

Item No.	Description	Unit	Qty	Unit Price in Rs. (Including GST @18%)	Total amount including GST in Rs.
	Schedule-A				
1/NS	Manufacture & supply of prime quality of UIC 60 Kg/m, 1080 Grade Head Hardened Class A Rails, as per Indian Railway Standard Specification for Flat Bottom Rails IRS-T-12-2009 (With latest A&C Slips) at DFCCIL Project, western Corridor in MD-PNUN section	MT	1643.73	82600.31	13,57,72,607.56
2/NS	Manufacture & supply of prime quality of UIC 60 Kg/m, 880 Grade Head Hardened Class A Rails, as per Indian Railway Standard Specification for Flat Bottom Rails IRS-T-12-2009 (With latest A&C Slips) at DFCCIL Project, western Corridor in MD-PNUN section	MT	166.54	73,750.00	1,22,82,325.00
	Total Amount of Schedule A including GST				**14,80,54,932.56**

Item No.	Description	Unit	Qty	Unit Price in Rs. (Including GST @18%)	Total amount including GST in Rs.
	Schedule-B				
171130	Leading all types of P.Way materials by road vehicles to destination excluding loading / unloading, with contractor's vehicle, crew, consumables, labour, tools & plants etc.				
171131	Lead upto 10 Km	MT	1810.271	101.06	1,82,945.89
171132	Extra to Item no. 171131 for additional lead over 10 Km for every 5 Km lead or part thereof upto 100 Kms	MT	1810.271	30.60x18 =550.80	9,97,096.72
171133	Extra to Item no. 171131 & 171132 for additional lead beyond 100 Km for every 5 Km lead or part thereof	MT	1810.271	14.13x60 =847.80	15,34,746.91

	upto 400 Kms				
171134	Extra to Items no. 171131, 171132 & 171133 for additional lead beyond 400 Km for every 5 Km or part thereof upto 1000 Kms	MT	1810.271	13.87x120 =1664.40	30,13,013.39
171010	Loading of rails of any section and length upto 14 metres in Wagons / Truck / Trailor including lead upto 50 metres and lift upto 5 metres -				
171014	In Wagon where mechanical handling is possible and traffic block is not required or in Truck/Trailor	MT	1810.271	114.41	2,07,112.99
171060	Unloading of rails of any section and length upto 13 metre, in neat manner for Railway Unloading of rails of any section and length upto 13 metre, in neat manner for Railway usage from departmental material train (DMT) or contractor's / Railway's Truck/Trailor usage from departmental material train (DMT) or contractor's / Railway's Truck/Trailor				
171063	In Wagon where mechanical handling is possible and traffic block is not required or in Truck /Trailor	MT	1810.271	67.99	1,23,080.26
3/NS	Extra to Items no. 171131, 171132, 171133 & 171134 for additional lead beyond 1000 Km for every 5 Km or part thereof.	MT	1810.271	13.47x86 =1158.42	20,97,052.97
	Total amount of Schedule-B including GST				**81,55,049.13**
Total cost of Schedule A&B including all taxes in Rs.					**15.62.09.981.69**
Say Rs.					**15.62.09.981.69**

Note-

1. The rate shall be inclusive of all other taxes and levies as applicable & also covering the Scope of work clause 4 of SCC.
2. All USSOR-2019 item contains item Nos., if any, discripiency found in rates, units, nomenclature etc. USSOR-2019 will prevail.
3. Above rate are inclusive of all taxes as applicable in Rajasthan and Gujarat states.
4. DFCCIL reserves its right for pre-dispatch inspection which may be carried out at manufacture's/supplier's work by DFCCIL's authorized representative and/or a third party inspection agency duly approved by DFCCIL to ensure that the materials/equipment, being supplied, conform to the contractual specifications. Supplier will provide all testing facilities without any extra cost to DFCCIL.

SECTION-B

INSTRUCTIONS TO TENDERERS AND SPECIAL CONDITIONS OF CONTRACT APPLICABLE FOR E-TENDER

1.0 GENERAL INSTRUCTIONS

1.1 On behalf of the President of India, the Chief General Manager, DFCCIL-Ajmer, A/1, Circular Road, Ajmer-305001 (hereinafter referred to as the Purchaser), invites E- tenders for the supply as set forth in the "Electronic Tender Schedule of Requirements" (E-tender SOR) on the IREPS site.

1.2 All the E-Bids in prescribed electronic tender form on the IREPS site should be submitted before the due date and time fixed for the receipt of e bids as set forth in the e-tender.

1.3 The contract, if placed, shall be governed by the latest version of Indian Railways Standard (IRS) Conditions of Contract as supplemented by Special conditions of Contract and instructions to tenderers contained in this booklet of this Railway with latest correction slip if any and Important terms and conditions of e-tender SOR i.e. Section-C. This booklet with latest correction slip & Indian Railways Standard (IRS) Conditions of Contract is also available on website www.ireps.gov.in.

1.4 The stores, offered should be in accordance with stipulated drawings and specifications in "Electronic Tender Schedule of Requirements". The e-bids should comply with the Instructions to Tenderers, IRS and Special Conditions of Contract. Details of deviations, if any, from tender specification and other conditions should be clearly indicated in deviation statement in Annexure-1. The Purchaser, however, reserves the right to accept or reject these deviations and his decision thereon shall be final.

1.5 The tenderer may download the e-tender form from the "IREPS website"

1.6 Corrigendum: Purchaser reserves the right to issue any corrigendum to the tender even upto ten days prior to the due date of opening of the tender. Tenderers are also advised to check the website for the purpose of submitting their e-bids or revising their e-bids, whether any such corrigendum to the tender has been issued or not.

2.0 ELIGIBILITY CRITERIA AND QUALIFYING REQUIREMENTS OF TENDERERS:

2.1 See Important Terms and Conditions of Electronic Tender of SOR i.e. Section C at Para 2.0 [Sl. No. 2.1 to 2.3]

2.2 CARTELFORMATION: In cases where cartel is suspected among approved sources, the purchaser shall be at a liberty to exercise the following:

(a) Whenever all or most of the participating tenderers quote equal rates and cartel formation is suspected, the Purchaser reserve the right to place order on one or more tenderers with exclusion of the rest without assigning any reason thereof.

(b) Offers for quantity less then 50% of tendered quantity will be considered unresponsive and liable to be rejected in case cartel formation is suspected. Purchaser, however, reserve the right to order on one or more tenderers any quantity.

(c) The firms who quote in cartel are warned that their names are likely to be deleted from list of approved sources.

2.3 Should a tenderer have a relative employed in Gazetted capacity in the Engineering Department of the DFCCIL-AJMER or in the case of a partnership firm or company incorporated under the Indian Company Law should a partner or a relative of the partner be employed in Gazetted capacity in

Engineering Department of DFCCIL-AJMER, the authority inviting tenders shall be informed of the fact at the time of submission of tenders, failing which the tender is liable to be rejected, or if such fact subsequently comes to light the contract may be rescinded.

2.4 Tenderer should specify the names of venders from whom he intend to procure Raw Material / Component used in his offered product.

2.5 Firms who are traders, are required to indicate name & address of manufacturer works and submit the authorization letter from their manufacturer on their letterhead along with the tender in the Performa as in Annexure-5. The material supplied by the traders will be inspected at their Manufacturer premises by the inspecting agency before supply.

2.6 If a tenderers is not registered with DFCCIL or is not an approved source for the tendered item with DFCCIL / Railways production units/ CORE/ RDSO, he shall provide a satisfactory evidence acceptable to the Purchaser to show that: -

(a) he is an established manufacturer, who regularly manufactures the items offered and has adequate technical knowledge and practical experience;

(b) he has adequate financial stability and status to meet the obligations under the contract for which he is required to submit a report from a recognized bank or a financial institution and last three years financial balance sheet / profit & loss statement.

(c) he has adequate plant and manufacturing capacity to manufacture the items offered and supply within the delivery schedule offered by him;

(d) he has established quality control system and organization to ensure that there is adequate quality control at all stages of the manufacturing process.

2.6.1 For purpose of para 2.1, the tenderer should additionally submit: -

a) A performance statement as in Annexure - 2, giving a list of major supplies effected in the recent past, of the items offered by him, giving details of the purchaser's name and address, contract Number and date, quantity supplied and consignee's certificate/receipt note/Inspection note in support of having executed the contract satisfactorily. While doing so the tenderer should submit self-attested Xerox copy of such documents i.e. Purchase order, Inspection Certificate and Receipt Note etc.

b) A statement indicating details of equipment possessed and skilled manpower employed and quality control measure adopted etc as in Annexure 3.

2.7 If the tenderer is registered with NSIC he must enclose a photocopy of valid NSIC certificate showing monetary limit and the items for which registered. In case the tenderer is approved by RDSO/Production Units / CORE for the quoted item, a Photostat copy of the approval must be furnished with the offer. No back reference is likely to be made in this regard and responsibility will lies with firm, if firm is considered unapproved.

2.8 For items reserved for procurement from approved sources:

2.8.1 In case item is reserved to be procured from RDSO/Production Units / CORE approved sources, then Categorization of Vendors shall be as under: For the purpose of these instructions, the vendors shall be categorized into following two categories.

2.8.1.1 Developmental Vendors: - Such vendors shall include vendors found by RDSO as capable to develop the item under consideration. Erstwhile Part-II sources of RDSO (as on 31.12.2016, but not yet approved by RDSO), shall also be considered as developmental vendors, till they complete the pre-defined requirement as to be qualified as approved source. Such vendors shall be listed as developmental vendors by RDSO in RDSO vendor directory.

2.8.1.1 Approved vendors: Sources categorized as approved vendors by RDSO.

2.8.2 Ordering on the vendors Assessed/Developed/Approved by RDSO.

2.8.2.1 Status to be taken as on tender opening date: The status of the vendor (as approved or developmental vendor) shall be reckoned as on the date of tender opening and not thereafter. However, cases of downgrading/removal/suspension/banning etc. after opening of tender, shall be taken into account while considering the offers.

2.8.2.2 Orders on developmental vendors shall be developmental order and treated as such, specifically, with regard to applicability of liquidated damages for delayed supplies and levy of general damages.

2.8.3 Quantity Allocation

a) Developmental Vendors shall be eligible for developmental order of 20% of NPQ in regular tenders. Total quantity to be ordered on developmental sources shall be limited up to 20% of NPQ in regular tenders.

b) Approved vendors shall be eligible for bulk order, as per predefined tender conditions.

Where there are not more than three Indian Suppliers categorized as Approved vendor for a particular item, developmental vendors can be considered for placement of bulk order without any quantity restrictions. However, while considering such vendors, factors including past performance, capacity, delivery requirements, quantity under procurement.

Essential Qualifying Criteria

A. For Placement of Regular Order:

i. The tenderer should have the experience of Manufacturing 60E1, 1080 Grade Head Hardened Rails or heavier grade rails during the last 3-years (ending last day of the month previous to the one in which tenders are invited).

ii. The tenderer should have supplied the above rails, for the quantity not less than 50% of the tendered quantity of rails, during the last five-year period (ending last day of the month previous to the one in which tenders are invited) to passenger traffic/mixed traffic carrying railway/metro system, in operation.

Note: Approval of Head Hardened (HH) Rails manufacturing facilities by RDSO (Ministry of Railways) is to be submitted with the bid.

B. For Placement of Developmental Order upto 20% of the Tender Quantity:

Notwithstanding the inter-se ranking, only domestic bidders will be considered for the placement of developmental order up to 20% of net procurable quantity provided DFCCIL is satisfied that technical capability and manufacturing capacity is available with the bidder as per the evaluation and certification of technical capability and manufacturing capacity of bidder by RDSO.

The Technical capability shall be evaluated by RDSO based on items listed for "Process Approval". Manufacturing capacity will be assessed by RDSO based on the details submitted by the bidder as per **Annexure-11 (Copy enclosed)**. Physical verification of Technical Capability and Manufacturing Capacity shall be done by RDSO. Expenses for travel, boarding & lodging for RDSO officials for this purpose will be borne by purchaser. However, all other expenses including cost of various tests etc. shall be borne by the bidder. Only one opportunity shall be provided to bidder for above evaluation/certification of technical capabilities/manufacturing capacity. In case of any shortcoming, the bid of that bidder shall not be considered.

However, in case evaluation of technical capability or process approval and assessment of manufacturing capacity has been done by RDSO after 01.01.2017 then such evaluation/assessment would not be required again provided no change in manufacturing process has taken place after the evaluation/assessment by RDSO and a declaration to this effect is given by the manufacturer. In case of any change in process, evaluation/assessment shall be done again by RDSO as mentioned above.

Domestic manufacturer who does not have proven performance of supply of rails in the past on passenger traffic/mixed traffic railway system and thus does not meet the eligibility criteria stipulated for regular order as per EQC – of Instructions to the tenderer of this bidding document, may be considered for developmental order up to 20% of the "Net Procurable Quantity (NPQ) as per Railway Board's letter No 99/RS(G)/709/1/Pt. dated 13.01.2015, enclosed as amended, provided Railway is prima facie satisfied that technical capacity and manufacturing capability is available with the bidder as per the evaluation by RDSO and such bidder having given an undertaking for availability of requisite machinery and manufacturing facility for complying provisions of Para – 21 of IRS:T-12/2009 read along with A&C slip No-4 dt 04.03.2019 issued by RDSO for producing rails conforming to the level of hydrogen content stipulated therein. Copy of the affidavit for development order to be submitted by bidder as per **Annexure-12 (Copy enclosed).**

C. The average annual financial turnover during the last 3 years should be at least 30% of the estimated cost.

D. The Supplier should have positive net worth. This will be judged from the audited Balance Sheet of the last financial year ending on a date not prior to 18 months from the date of submission of the tender.

E. The Supplier should submit performance certificates in reference to above issued by respective railway system for having successfully completed similar works in the last 7 years.

F. The bidder shall sign the Affidavit as enclosed in Annexure-IV of "Instructions to Tenderers"

3.0 EARNEST MONEY

3.1 The Earnest Money Deposit (E.M.D.) shall be taken from all tenderers against advertised tenders subject to exemptions as detailed in condition No. 11 of Important terms and conditions of E-tender SOR i.e. Section -C.

3.2 The amount of E.M.D. shall be as specified in condition No. 11 of Important terms and conditions of E-tender SOR i.e. Section -C.

3.3 If a tenderer does not furnish the earnest money, he should clearly indicate the category under which the firm is exempted and should submit the documentary evidence for the same. Failure to do so will be taken as unwillingness on his part to deposit the earnest money and such offers are liable to beignored.

3.4 The earnest money will be deposited only via the online system through payment gateway facility provided on the website of IREPS.

3.5 No interest shall be payable on the Earnest Money deposits.

3.6 The purchaser reserves the right to forfeit the earnest money deposit; (a) If the tenderer withdraws or revise the offer within validity of offer, (b) if the tenderer fails to deposit security money in terms of item 1 of special condition of contract.

4.0 TIME SCHEDULE

4.1 Tenderers should invariably quote firm delivery period as stipulated in

important terms and conditions in Electronic Tender SOR. Any offer with longer delivery period or not agreeing with the delivery schedule specified in the tender will be summarily rejected. Thus, while quoting the DP, this aspect may be kept in view by the tenderer.

4.2 In the case of "ex-stock" offers, the dispatch of stores is to be effected within 7 days of the receipt of order. However, wherever the stores are subject to inspection by RITES/RDSO etc. before dispatch, extra time of 3 weeks will be allowed to cover time in inspection.

4.3 In case of delivery by rail, the date on which stores are placed on rail after inspection (i.e. RR/PWB date) will be the date of delivery. In case of local delivery/ outstation dispatches sent by lorry, the date on which materials are actually received/ delivered to consignee will be taken as date of delivery. In all cases, clause 0600 of the IRS Conditions of Contract will have the over-riding effect.

4.4 The tenderers should quote the delivery period / delivery schedule carefully, because the time and date for the delivery of stores shall be the essence of the contract and delivery must be completed not later than the date / period so specified. The attention of the tenderers is invited to clauses 0700, 0701 and 0702 of the IRS Conditions of Contract, which shall govern the contract.

4.5 Contracts with staggered Delivery period: In case of failure on the part of supplier to arrange supplies as per the delivery schedule/installments fixed in advance, save force majeure conditions or delays attributable to Purchaser, the Purchaser reserves the right to levy Liquidated Damages which shall be levied as per Para 702 (a) of IRS Condition of Contract for the delayed quantity which have remained unsupplied for that period.

5.0 DELIVERY TERMS

5.1 The purchaser will not pay separately for transit insurance and supplier will be responsible till the entire stores contracted for are received by the ultimate consignee in good condition at destination.

5.2 In cases of delays of contractual delivery full LD will be levied as per IRS conditions of contract and being a contractual provision no request for LD waival will be considered, notwithstanding any past instances of such waiver or levy of token LD.

5.3 DFCCIL should recover from contractor as agreed liquidated damages and not by way of penalty, a sum equivalent to **½%** of the price of any stores including element of taxes, duties, freight etc., which the contractor has failed to deliver within the period fixed for delivery in the contract or as extended for per week or part of a week during which the delivery of such stores may be in arrears where delivery thereof is accepted after expiry of the aforesaid period, subject to maximum of 10% of value of the delayed supplies ."

5.4 PACKING CONDITIONS: - Material should be provided with standard packing, which can withstand transit damage, handling and proper storage.

6.0 SUBMISSION OF E-BIDS

6.1 The tenderers should submit their E-Bids on the Electronic Tender on the IREPS site. The tenderer's digital signatures on the E-tender form shall be considered as their confirmation that they have read and accepted all terms & conditions as laid-down in the Electronic Tender Documents referred in Para 2 of the instructions to tenderers for E-tendering i.e. Section-A as well as Electronic Tender schedule of requirements i.e. Section-C., consisting of techno- commercial offer form (including special conditions attached to E-tender) and financial offer form, unless specific deviation is quoted in the techno- commercial offer form.

6.2 There is Check List for Tenderers (Annexure-9) for the information and guidance of Tenderers.

6.3 Deleted

6.4 The individuals signing the tender or any other documents connected there-with should clearly indicate his full name and designation, specify whether he is signing and scan the documents attached with their e-bids: -

a) As sole proprietor of the concern or as attorney of the sole proprietor;

b) As partner(s) of the firm.

c) As Director, Manager or Secretary in case of Limited Company duly authorized by a resolution passed by the Board of Directors or in pursuance of the Authority conferred by Memorandum of Association.

d) An authenticated copy of the document, which authorizes the signatory to commit on behalf of the tender, shall accompany the offer.

6.5 The offers should strictly conform to the tendered description and drawing/ Specification as given in schedule of requirements and no samples need be submitted unless so mentioned in tender form.

6.5.1 Deleted

6.5.2 Deleted

6.6 The tenderer shall keep its offer valid for minimum 120 days from the date of opening of tender. Any offer submitted with lesser validity period than specified in the tender, will be summarily rejected.

6.7 All tenderers are advised to indicate their Banker's name and account number in their offers. This information is needed for the purpose of payment against the contract through cheques, being issued with indication of bank account number. etc. to safeguard against misappropriation of cheque. For payment through NEFT, tenderers are required to submit the following along with their offer.

(i) Tender to give consent in a mandate form for receipt of payment through NEFT / RTGS & must submit the Annexture-8.

(ii) Tenderer to provide the detail of Bank account in line with RBI guidelines for the same these details will include Bank name, branch name and address, account type, Bank account No. and Bank and branch code as appearing on MICR cheque issued by Bank.

(iii) Tenderer to attach certificate from their bank. Certifying the correctness of all above mentioned information (as mention in para ii above).

6.8 Price Variation Clause: Firm Price

7. SECURITY DEPOSIT & PERFORMANCE GUARANTEE

A. SECURITY DEPOSIT

7.1 Tenderers shall deposit SD by furnishing a Money receipt or demand draft or fixed deposit receipt (Auto renewal and duly discharged) issued by a scheduled bank, approved by RBI, drawn in favour of "CPM, DFCCIL, Ajmer" (as per details given below as security for satisfactory fulfillment of the contract. The Security deposit can also be made in the shape of online/offline Guarantee Bond executed by a Scheduled bank as per Annexure 6.

7.2 The security deposit required to be deposited by the tenderers shall be as detailed in important terms and condition No. 12 of SOR i.e. Section-C.

7.3 Firms who are not willing to submit security deposit should clearly mention this deviation in their offer itself otherwise it will be treated as agreement on firm's part to DFCCI terms and conditions in this regard. Offers of firms who are not willing to submit the security deposit are liable to be ignored, until unless specifically exempted as per extant rules.

7.4 When security is deposited in cash, the money receipt should be sent to the Chief General Manager, DFCCIL-AJMER (Rajasthan)-305001.

7.5 Registered firms shall, however, furnish security deposit for orders beyond the monetary limit of registration and also for items for which they are not registered.

7.6 The refund of security deposit becomes due when the contract is satisfactorily completed in accordance with terms & conditions of the contract. Purchaser's decision in this regard shall be final and binding on the supplier. No interest shall be payable on the Security Deposit.

B. Performance Guarantee

The procedure for obtaining Performance Guarantee is outlined below:

(a) The successful bidder shall have to submit a Performance Guarantee (PG) within 21 (Twenty one) days from the date of issue of Letter of Acceptance (LOA). Extension of time for submission of PG beyond 21 (Twenty one) days and up to 60 days from the date of issue of LOA may be given by the Authority who is competent to sign the contract agreement. However, a penal interest of 12% per annum shall be charged for the delay beyond 21(Twenty one) days, i.e. from 22nd day after the date of issue of LOA. Further, if the 60th day happens to be a declared holiday in the concerned office of the DFCCIL, submission of PG can be accepted on the next working day. In all other cases, if the Contractor fails to submit the requisite PG even after 60 days from the date of issue of LOA, the contract is liable to be terminated. In case contract is terminated DFCCIL shall be entitled to forfeit Earnest Money Deposit and other dues payable against that contract. In case a tenderer has not submitted Earnest Money Deposit on the strength of their registration as a Startup recognized by Department of Industrial Policy and Promotion (DIPP) under Ministry of Commerce and Industry, DIPP shall be informed to this effect.

The failed Contractor shall be debarred from participating in re-tender for that work.

(b) The successful bidder shall submit the Performance Guarantee (PG) in any of the following forms, amounting to 3% of the contract value (for all tenders issued till 31.12.2021). The reduced percentage of Performance Security shall continue for the entire duration of the contract and there shall be no subsequent increase of Performance Security even beyond 31.12.2021.

(i) A deposit of Cash;
(ii) Irrevocable Bank Guarantee;
(iii) Government Securities including State Loan Bonds at 5% below the market value;
(iv) Deposit Receipts, Pay Orders, Demand Drafts and Guarantee Bonds. These forms of Performance Guarantee could be either of the State Bank of India or of any of the Nationalized Banks;
(v) Guarantee Bonds executed or Deposits Receipts tendered by all Scheduled Banks;
(vi) Deposit in the Post Office Saving Bank;
(vii) Deposit in the National Savings Certificates;
(viii) Twelve years National Defence Certificates;
(ix) Ten years Defence Deposits;
(x) National Defence Bonds and
(xi) Unit Trust Certificates at 5% below market value or at the face value whichever is less. Also, FDR in favour of CPM, DFCCIL, Ajmer (free from any encumbrance) may be accepted.

(c) The Performance Guarantee shall be submitted by the successful bidder after the Letter of Acceptance (LOA) has been issued, but before signing of the contract agreement. This P.G. shall be initially valid up to the stipulated date of completion plus 60 days beyond that. In case, the time for completion of work gets extended, the Contractor shall get the validity of P.G. extended to cover such extended time for completion of work plus 60 days.

(d) The value of PG to be submitted by the Contractor will not change for variation up to 25% (either increase or decrease). In case during the course of execution, value of the contract increases by more than 25% of the original contract value, an additional Performance Guarantee amounting to 3% (Three percent) for the excess value over the original contract value shall be deposited by the Contractor.

On the other hand, if the value of contract decreases by more than 25% of the original contract value, Performance Guarantee amounting to 3% (Three percent) of the decrease in the contract value shall be returned to the Contractor. The PG amount in excess of required PG for decreased contract value, available with DFCCIL, shall be returned to Contractor as per his request duly safeguarding the interest of DFCCIL.

(e) The Performance Guarantee (PG) shall be released after physical completion of the work based on 'Completion Certificate' issued by the competent authority stating that the Contractor has completed the work in all respects satisfactorily.

(f) Whenever the contract is rescinded, the Performance Guarantee already submitted for the contract shall be encashed in addition to forfeiture of Security Deposit available with DFCCIL.

(g) The Engineer shall not make claim under the Performance Guarantee except for amounts to which the President of India is entitled under the contract (not withstanding and/or without prejudice to any other provisions in the agreement) in the event of:

(i) Failure by the Contractor to extend the validity of the Performance Guarantee as described herein above, in which event the Engineer may claim the full amount of the Performance Guarantee.

(ii) Failure by the Contractor to pay President of India any amount due, either as agreed by the Contractor or determined under any of the Clauses/Conditions of the Agreement, within 30 days of the service of notice to this effect by Engineer. The Contract being determined or rescinded under clause 62 of the GCC

As per Clause No.16.(4), Part-II of GCC-2020, with up to date correction slip

8.0 **STATUTORY VARIATION**

Statutory Variation in taxes and duties, or fresh imposition of taxes and duties by State/ Central Governments in respect of the items stipulated in the contract (and not the raw materials thereof), within the original delivery period stipulated in the contract, or last unconditionally extended delivery period shall be to DFCCIL's account. Only such variation shall be admissible which takes place after the submission of bid. No claim on account of statutory variation in respect of existing tax/duty will be accepted unless the tenderer has clearly indicated in his offer the rate of tax/duty considered in his quoted rate. No claim on account of statutory variation shall be admissible on account of misclassification by the supplier/ contractor.

9.0 ADVICE OF DESPATCH OF STORES

9.1 The supplier should ensure that Railway receipts / PWB under which the material is booked to a DFCCIL consignee are prepared in the favour of ' consignee ' and not ' self-failing which they will be required to take the delivery themselves and deliver the consignment to the consignee. When suppliers submit the original RR/PWB along with other documents to paying authority for claiming advance payment, a photocopy of RR/PWB should be sent simultaneously to consignee.

9.2 All dispatch documents i.e. RR/PWB, Challan, Inspection certificate etc. should be sent to the consignee and copies of advice of dispatch must also be sent to the Chief General Manager, DFCCIL-Ajmer (Rajasthan) -305001.

9.3 The contractor shall submit monthly report concerning the progress of the contract and / or supply of stores to the Purchaser and Consignee. The submission and acceptance of such reports shall not prejudice the rights of the purchaser in any manner.

10.0 PAYMENT TERMS:

The standard payment terms subject to recoveries, if any, under the liquidated damages clause in the IRS Conditions of Contract will be as

under: -

10.1 Payment for the Stores or each consignment thereof will be made to the contractor on submission of bill accompanied by the prescribed documents mentioned in the contract.

10.2

a) On dispatch Delivery:- The Purchases shall pay the supplier, within Twenty Eight (28) days, Seventy Five (75) percent of the contract price of the Goods shipped upon submission of inspection of inspection certificate and proof of dispatch.

b) On receipt & Acceptance: - Twenty-Five (25) percentage of the contract price of Goods received and the contract price of the related services performed shall be paid within Twenty-Eight (28) days of receipt of the Goods upon submission of a claim supported by the acceptance certificate issued by the consignee to be nominated by the Purchaser.

10.3 Suppliers are requested in their own interest to observe the following instructions to avoid delay in payment of their bills for materials supplied for stock purposes and dispatched to the Depots mentioned in contract:

(i) Receipt note sent to the supplier in token of receipt of the material should be attached with the bill to be prepared in ink on prescribed form (detailed in para 10.9 below) and submitted in duplicate to the CGM-DFCCIL office, A/1, Circular Road, Ajmer (Rajasthan) -305001.

(ii) Where the condition of advance payment on proof of dispatch is accepted and specified in the Purchase Order the suppliers will submit advance payment bill (in duplicate) supported with challan, inspection certificate, proof of dispatch/delivery etc. as per terms of the contract to the CGM-DFCCIL office, Ajmer (Rajasthan), endorsing a copy of the forwarding letter to the Chief General Manager well as to the Consignee. The bills for balance payment should be submitted in the manner as indicated at (i) above for payment.

10.4 For materials supplied against orders placed for direct dispatch to the consignee on the DFCCIL-AJMER on non - stock basis i.e. other than those cases mentioned in clause 10.3 above, the supplying firm will prepare their 100% payment bills in duplicate, in ink on prescribed forms and submit the same as under: -

(i) One copy of the bill marked, "ORIGINAL" with all dispatch documents as per terms of contract directly to the consignee.

(ii) Another copy of bill marked "DUPLICATE NOT FOR PAYMENT" to the Controlling Officer of the consignee mentioned in the Supply Order.

(iii) Where the condition of advance payment on proof of dispatch is accepted and specified in the Direct Dispatch order, the suppliers will submit advance payment bill (in duplicate) along with the documents as per para 10.3 (ii) above to the Accounts Officer of the consignee indicated in contract. ORIGINAL copy of the balance payment bill should be sent to the consignee and "DUPLICATE NOT FOR P AYMENT" copy to Controlling Officer of the consignee as specified in such Supply Order.

10.5 The Supplier is also required to furnish the following certificate on their bill for advance payment.

"We have personally examined and verified and do hereby certify that stores in respect of which payment is being claimed have been actually dispatched under RR/PWB no.....dt……..and further that these goods are the exact materials as indicated in challan no.....dt.....and covered by inspection certificate no.....dt..... We also certify that the above referred challan, RR/PWB and inspection certificate have been sent to consignee by Regd. Post/Speed Post on..... We shall hold ourselves

personally responsible for correctness of this statement."

10.6 The bill for payment should also be accompanied certificate/ declaration of input tax credit as per Para 1.6 of Section "F".

10.7 The firm should submit their bills only for the supplies made by them during the scheduled delivery period or as extended from time to time. For supplies made after expiry of scheduled delivery period, firms should first obtain necessary extension of delivery period from the competent authority before submission of their bills.

10.8 In case the bill is submitted to CGM-DFCCIL office, supported by amendment to purchase order extending delivery period reserving DFCCIL-AJMER right to impose liquidated damages, the payment of bill would be released deducting full liquidated damages (LD) @ 1/2% of the value of delayed stores for delay of every week or part thereof, however upper limit of recovery of in supply contract will be 10% (Ten Percent of value of delayed supplies) irrespective of delays, unless otherwise provided specifically in the contract.

10.9 Following Points may also be observed by the suppliers while submitting the bills for payment:-

(a) Consignee's name and Order reference should be given on the bill as well as in all correspondence in connection therewith for facilitation of connecting the relevant papers and arranging early payment.

(b) The firms are advised that bills for payment should only be submitted for the amounts permitted on the Purchase Orders and in case further amounts are claimed, an amendment should be obtained from the Chief General Manager, A/1, Circular Road, Ajmer-305001 before bills are submitted.

(c) All Bills should be submitted in duplicate, marked ' Original' and 'Duplicate'.

(d) The nomenclature of the material supplied shown in the bills should be strictly in accordance with description given in the Purchase Order.

(e) The Bills should be signed and pre - receipted with revenue stamp. All corrections should be attested. Fluid should not be used on Bill at all.

(f) Rate and Quantity should be mentioned both in figures and words.

(g) Status/category of Bill should be mentioned i.e. whether 100% / PVC etc.

(h) All Columns of Bill should be properly filled in i.e. Vendor Code, Bank Account No. and Branch, Purchase Order No. / Contract No., Date, PL No. etc.

(i) Wherever PVC is applicable, basis of PVC may be given, with relevant documents.

(k) Copy of Amendment letter issued by Engineering/ Stores Department, if any be enclosed.

(l) Transport Receipt/Challan / E-Way bill for freight charges should be enclosed along with the bills.

(m) The following documents should also be enclosed along with the

bills: - (i) Receipt Delivery Challan Duly signed and stamped by

Gazetted
Officer/Clear DFCCIL Receipt.

(ii) Original Inspection Certificate.
(iii) Declaration of Input Tax Credits
(iv) Tax Invoice (original - for buyer) wherever applicable.
(v) E-Way bill
(n) All other relevant documents as per Contract provisions.

11.0 ACCEPTANCE OF TENDER

The purchaser may accept a tender for a part or whole of the quantity offered, reject any tender without assigning any reason and may not accept the lowest or all the tenders.

12. 0 Deleted.

13.0 **RISK PURCHASE**: Please note risk purchase period shall be 9 months instead of 6 months as provided in clause 0702(B) of IRS terms & conditions of contract. The above Risk purchase clause shall not be applicable where ever security deposit has been taken from supplier and in case of default by such supplier, the security deposit shall be forfeited, the quantities unsupplied shall be procured independently without risk and cost of the original firm/supplier. However, in such case adverse performance of such firm may be recorded & intimated to the source approving agency & also taken in to account in future tender cases on merit & in other case where tenders not asked to deposit Security Deposit, in case of default on the part of the firm, action will be initiated as per IRS conditions.

14.0 **Deleted**

15.0 Deleted

16.0 Splitting of tendered quantity:

16.1 Case of no prior decision to split the order-

16.1.1 Normally full order should be placed on L-1 firm. However, if after due processing, it is discovered that the quantity to be ordered is more than what L-1 alone is capable of supplying and there was no prior decision to split the quantities, then this aspect should be recorded in TC minutes/ acceptance in direct acceptance cases. The quantity being finally ordered will be distributed among the other bidders in a manner that will be fair, transparent and equitable.

The manner of splitting will take specific note of the following parameters

(i) Past Performance of bidders
(ii) Capacity of bidders
(iii) Delivery requirements in the tender
(iv) Quantity under procurement
(v) Vital / safety nature of the items

16.1.2 In the absence of any differentiation on the above parameters, the manner of splitting will be based on the stipulation given in para 6.2.2 below.

16.2 Case of pre-decided split ordering-

16.2.1 DFCCIL may decide in advance to have more than one source of supply on account of delivery requirement in tender, past performance and capability of bidders, quantity under procurement and vital/safety nature of items.

16.2.2 Following provisions {1**6.2.2(A) to 16.4**} shall be applicable in all such cases of pre-decided split ordering: -

(A) The purchaser reserves the right to distribute the procurable quantity on one or more than one of the eligible tenderers. Zone of consideration of such eligible

tenderers will be the right of the Purchaser. The zone of consideration will be a dynamic mix of inter-se position of firms, supply performance of the firms, quantity being procured, criticality of and lead time of supply of the item, number of established suppliers, their capacity etc.

(B) Whenever such splitting of the procurable quantity is made, the quantity distribution will depend (in an inverse manner) upon the differential of rates quoted by the tenderers (other aspects i.e. adequate capacity- cum-capability, satisfactory past performance of the tenderers, outstanding order load for the DFCCIL-AJMER making the procurement, quoted delivery schedule vis-à-vis the delivery schedule incorporated in the tender enquiry etc. being same/ similar) in the manner detailed in the table below:

Price differential between L1 and L2	Quantity distribution ratio between L1 and L2
Upto 3%	60 : 40
More than 3% and upto 5%	65 : 35
More than 5%	At least 65% on the L1 tenderer. For the quantity to be ordered on the L-2 tenderer, TC/TAA shall decide

In the phrase 'differential rates quoted by the tenderers', the quoted rate would mean

(i) When no price negotiation has been called for, the original rates as obtained at the time of tender opening. However, the rate of the highest eligible tenderer within the zone of consideration has to be per se reasonable.

(ii) When price negotiation has been called for, the reference L1 rate for assessment of ratio will be the original rate of L1 firm (suitable for bulk quantity)- say firm "A"- as obtained at the time of tender opening.

(iii) If splitting of quantity is required to be done by ordering on tenderers higher than the L2 tenderer, then the quantity distribution proportion amongst the tenderers will be decided by transparent/logical/equity based extrapolation of the model as indicated in the above para.

16.2.3 In cases of pre-decided splitting, if the purchaser decides not to split the ordered quantity, the reason for the same should be recorded in TC minutes/acceptance in direct acceptance cases.

16.3 For cases where the Rlys/PSUs had entered into ToT/JV agreements, the following clause should be stipulated as tender conditions:
As the DFCCIL has entered into ToT/JV agreement with …….. no. of firms, they reserve the right to place orders on all such ToT/JV agreement partners. However, for ratio/proportion of quantity distribution among such agreement partners, conditions as detailed in Para 6.2.2 (B) shall apply with the exception that the aspect of 'per-se reasonability' will not be applicable.

16.4 In the cases of inadequate capacity-cum-capability, dissatisfactory past performance, large quantity of outstanding orders (liquidation of which will take very long time) etc., the Purchaser shall have the right to distribute the procurable quantity amongst tenderers with due consideration to these constraints and in such a manner that would ensure timely supply of material in requisite quantity to meet the needs of operation, maintenance, safety etc., of the DFCCIL-AJMER regardless of inter-se ranking of the tenderers and in a fair and transparent manner with due conformity to the Principles of Natural Justice and Equity.

ANNEXURE - 1

(Please see clause 1.4 of Section -B)

PROFORMA FOR STATEMENT OF DEVIATIONS

(1) The following are the particulars of deviations from the requirements of the tender specifications:-

CLAUSE	**DEVIATION**	**REMARKS** (Including - justification)

(2) The following are the particulars of deviations from the requirements of the Instructions to Tenderers, Indian Railway Standard Conditions of Contract and Special Conditions of Contract.

CLAUSE	**DEVIATION**	**REMARKS** (Including - justification)

Signature and seal of
The manufacturer /
Tenderers

ANNEXURE - 2

(Please see clause 2.1.1(a) of Section -C)

PROFORMA FOR PERFORMANCE STATEMENT
(For a period of last 3 years)

Tender No…….Date ofopening…….

Name oftenderer……

Order place by (Full address of purchaser)	Purchase order No. & date	Unit Price, ED, ST, GST & FOR terms	Date of completion of Delivery as per contract	Actual Date of completion of Delivery	Reasons for late delivery, if any

Signature and Seal of Tenderer

ANNEXURE - 3

(Please see clause 2.1.1(b) of Section "C")

PROFORMA FOR EQUIPMENT AND QUALITY CONTROL

Tender No. ..... Date of Opening.....Time .....Hours

Name of the Firm.....

Note : All details required only for the items tendered :-

1. Name & full address of the firm.
2. Telephone & FAX No. Office/Factory/Works.
3. Telegraphic and E mail address.
4. Location of the manufacturing factory.
5. Details of Industrial Licence, wherever required as per statutory regulations.
6. Details of plant & machinery erected and functioning in each Deptt.(Monographs & Description pamphlets be supplied if available.)
7. Details of the process of manufacture in the factory in brief.
8. Details & stocks of raw material held.
9. Production capacity of item(s) quoted for, with the existing plant & machinery.
   - 9.1 Normal
   - 9.2 Maximum
10. Details of arrangement for quality control of products such as laboratory testing Equipment etc.
11. Details of staff.
    - 11.1 Details of technical supervisory staff-in-charge of production & quality control
    - 11.2 Skilled labour employed.
    - 11.3 Unskilled labour employed.
    - 11.4 Maximum No. of workers (skilled & unskilled) employed on any day during the 18 months preceding the date of application
12. Whether stores are tested to any standard specification, if so, copies of original test Certificates should be submitted in triplicate.
13. Are you registered with the Directorate General of Supplies & Disposals, New Delhi. If so, furnish full particulars of registration; period of currency etc.
14. Are you a Small Scale Unit, registered with the National Small Industries Corporation Ltd., New Delhi. If so, furnish full particulars of registration, currency period etc.
15. Are you registered with the RDSO for the tendered items. If so, furnish full particulars of registration; address of works etc.

Signature and seal of the
Manufacturer / Tenderers

ANNEXURE- 4

DELETED

ANNEXURE - 5
(Please see clause 2.6 of Section -B)

PROFORMA FOR AUTHORITY FROM MANUFACTURERS

No.....Dated.....

To

The PRESIDENT OF INDIA,
Acting through the Chief General Manager,
DFCCIL, AJMER (Rajasthan) -305001

Dear Sir,

Subject : CGM/DFCCIL/Ajmer's Tender No.....

We .....an established and reputed manufacturer of .....having factories at .....do hereby Authorize M/s ..... (Name_and address of Agents) to represent us, to bid, negotiate and conclude the contract on our behalf with you against Tender No.....

No company/firm or individual other than M/s.....are authorized to represent us in regard to this business against this specific tender.

Yours faithfully,

(NAME)

for & on behalf of M/s.....
(Name of Manufacturers)

Note : This letter of authority should be on the Letter -Head of the manufacturing concern and should be signed by a person competent and having the power of attorney to bind the manufacturer.

ANNEXURE - 6

(Please see clause 7.1 of Section B)

PROFORMA OF BANK GUARANTEE FOR CONTRACT PERFORMANCE GUARANTEE BOND

1. In Consideration of the president of India(herein after called "the Government") having agreed to exempt_____(hereinafter called "the said Contractor(s) from the demand, under the terms and conditions of an Agreement dated_____made between _____and_____for _____(hereinafter called "the said Agreement"), of security deposit for the due fulfillment by the said contractor (s) of the terms and conditions contained in the said Agreement, on production of a bank Guarantee for Rs._____ (Rupees_____only) we,_____(hereinafter referred (indicate the name of bank)
to as the bank) at the request of _____(contractor(s) do hereby undertake to pay to the Government an amount not exceeding Rs._____ against any loss or damage caused to or suffered or would be caused to or suffered by the Government by reason of any breach by the said Contractor (s) of any of the terms or conditions contained in the said Agreement.

2. We_____do here by undertake to pay the amounts due and
(indicate the name of bank)
payable under this guarantee without any demur, merely on a demand from the Government stating that the amount/ claimed is due by way of loss or damage caused to or would be caused to or suffered by the Government by reason of breach by the said contractor(s) of any of the terms or conditions contained in the said Agreement or by reason of the contractor(s) failure to perform the said Agreement. Any such demand made on the bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. _____.

3. We under-take to pay to the Government any money so demanded notwithstanding any dispute or disputes raised by the contractor(S)/supplier(s) in any suite or proceeding pending before any court or Tribunal relating thereto our liability under this present being absolute and unequivocal.
The payment so made by us under this bond shall be a valid discharge of our liability for payment there under and the contractor (s)/supplier (s) shall have no claim against us for making such payment.

4. We_____further agree that the guarantee herein contained
(Indicate the name of bank)
shall remain in full force and effect during the period that would be taken for the performance of the said Agreement and that it shall continue to be enforceable till all the dues of the Government under or by virtue of the said Agreement have been fully paid and its claims satisfied or discharged or till _____ Office/Department) Ministry of_____certifies that the terms and conditions of the said Agreement have been fully and properly carried out by the said Contractor(s) and accordingly discharges this guarantee. Unless a demand or claim under this guarantee is made on us in writing on or before the_____we shall be discharged from all liability under this guarantee thereafter.

5. We_____further agree with the government that the
(Indicate the name of bank)
Government shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Agreement or to extend time of performance by the said contractor(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the Government against the "said contractor (s) and to forbear or enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such

variation, or extension being granted to the said contractor (s) or for any forbearance, act or omission on the part of the Government or any indulgence by the Government to the said Contractor (s) or any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.

6. This guarantee will not be discharged due to this change in the constitution of the Bank or the Contractor (s) Supplier (s).

7. We_____lastly undertakes not to revoke this guarantee
(indicate the name of bank)
during it currency except with the previous consent of the Government in writing.

8. It is certify that above BG is executed on adequate value of stamp duty as per stamp act of the state.

Dated the _ day of_____20
For_____.
(indicate the name of bank)

Annexure '7'

PROFORMA FOR WARRANTY GUARANTEE BOND

To:
The President of India
Acting through
The CGM,
DFCCIL, Ajmer
(Rajasthan) -305001.

Sub: Guarantee No._____for_____(Amount) Covering Machine(s) Serial No._____supplied to (Consignee/s)_____.
Ref: Contract No. _____dated _____placed on M/s. _____

1. WHEREAS M/s._____one of our constituents, hereinafter called the "Sellers" have agreed to sell to you (hereinafter referred to as the "Government") _____Nos. of_____(give description) as per contract No._____dated_____(hereinafter called "the said contract").

2. AND WHEREAS according to the terms of said contract, it has been stipulated that payment of 10 per cent of the value of the stores would be made, provided that the Sellers furnish to the Purchaser a Bank Guarantee from a recognized Bank, acceptable to the Purchaser for 10 per cent of the value of the said contract, valid for a period covering in full the Guarantee Period as per the Warranty clause of the said conditions of the contract, being the conditions attached to and forming part of the said contract.

3. AND WHEREAS the Sellers have approached us to give the said Bank Guarantee on their behalf in your favour for an amount representing 10 per cent of the value of the contract which you have agreed to accept.

4. That in consideration of the promises and at the request, of the said Sellers, we hereby irrevocably undertake and guarantee to pay to the Government of India or at such other place as may be determined by you forthwith on demand and without any demur, any sum up to a maximum amount of _____ (Rs._____) representing 10 per cent of the value of the Stores dispatched under the said contract in case the Sellers make default in paying the said sum or make any default in the performance observance or discharge of the guarantee contained in the said contract.

5. We agree that the decision of the Government whether any default has occurred or as been committed by the Sellers in the performance, observance or discharge of the guarantee aforesaid shall be, conclusive and binding on us.

6. Government shall be at liberty, from time-to-time, to grant or allow ex tension of time or give other indulgence to the said Sellers or to modify the terms and conditions of the contract with the said Sellers without affecting or impairing this guarantee or our liability hereunder.

7. We undertake to pay to the Government any money so demanded notwithstanding any dispute or disputes raised by the e Sellers in any suit or proceeding pending before any Court or Tribunal relating thereto our liability under this present being absolute and unequivocal.

The payment so made by us under this bond shall be a valid discharge to our liability for payment there under and the Sellers shall have no claim against us for making such payment.

8. This Bank guarantee comes in to force when the balance ten percent of the value of the stores shipped per Vessel _____ vide Bill of Lading No. _____ dated _____ or R/ R No. _____ dated

_____ (in the case of indigenous contracts) under the said contract, has been paid and will remain in full force and effect up to_____i.e. for _____ months counted from the date of placing the stores in services, and shall continue to be enforceable for further six months i.e. up to_____(date), hereinafter called the said d ate.

9. This guarantee will not be discharged due to the change in the constitution of the Bank or the Sellers.

10. That no claim under this guarantee shall be entertained by us unless the same has been preferred by the Government within the said date.

11. It is certify that above BG is executed on adequate value of stamp duty as per stamp act of the state.

Date_____ Signature _____

Place_____ Printed Name _____

Witness _____ _____

Read and Accepted.

Signature of Tenderer _____

(Designation)
(Banks common Seal)

Annexure '8'

REAL TIME GROSS SETTELMENT/NATIONAL ELECTRONIC FUNDS TRANSFER (NEFT) MANDATE FORM

From: M/s. Date: _____

To:
Chief General Manager
DFCCIL, Ajmer
(Rajasthan)-305001

Sub : RTGS/NEFT payments.

****

We refer to the RTGS/NEFT being set up by DFCCIL for remittance of our payments using RBI's RTGS/NEFT scheme. Our payments may be made through the above scheme to our under noted account.

Name of City
Bank Code No.
Branch Code No.
Bank's Name
Branch Address
Branch Telephone / Fax No.
Supplier's Account No.
Type of Account
IFSC code for NEFT
IFSC code for RTGS
Supplier's name as per Account
Telephone no. of supplier
Supplier's E-mail ID

Confirmed by Bank

Signature of supplier with
Stamp and address

Enclose a copy of crossed cheque

ANNEXURE - 9

CHECK LIST FOR TENDERERS

1.	Have you quoted in the prescribed Performa in SOR	Yes/No.
2.	Have you submitted earnest money (Para 3 of Section -B)	Yes/No.
3.	Have you furnished the performance statement (Para 2..1.1(a) of Section -C and Annexure 2)	Yes/No
4.	Have you submitted the Banker's report (Para 2.1.(b) of Section -C)	Yes/No.
5.	Have your furnished the details of equipment / quality control (para 2.1.1(b) of Section-C and Annexure-3)	Yes/No.
7.	Have you furnished the statement of deviations (preferably nil) (Para 1.4 of Section-B)	Yes/No.
8.	Have you quoted price on the basis of free delivery to Destination, indicating break up (Para 6.1 of Section -B.')	Yes/No.
9.	Have you quoted delivery period correctly and precisely.	Yes/No.
10.	Have you kept your offer valid for 120 days	Yes/No
11.	Have you submitted authenticated copy of the document authorizing of the signatory to submit offer and commit on behalf of tenderers.	Yes /No

Signature & seal of
Manufacturer / Tenderer

SECTION--C

Important Terms & conditions of Electronic Tender & Schedule of Requirement

On behalf of the President of India, the Chief Project Manager, DFCCIL, Ajmer (Rajasthan)-305001 (hereinafter referred to as the Purchaser), invites Electronic tenders for the supply as set forth in the "Electronic Tender Schedule of Requirements for the respective E-tenders on IREPS site". You are advised to refer to IREPS site for further details of Electronic Tender Schedule of Requirements.

For CGM/DFCCIL/AJMER

Important Terms & Conditions of Electronic Tender & SOR:

NB: i) Tenderers are advised to go through all the conditions mentioned at S.No 1 to 30 below, all IRS conditions of Contract, conditions specified in instructions for submitting E- bids on IREPS site (Section-A), instructions to tenderers and special condition of contract applicable for E-tender (Section -B), and Special conditions of tender & technical specification of tendered item, carefully before submitting their offer.

ii) In case if there is any conflict between the conditions mentioned in the Important Terms & Conditions of Electronic Tender SOR as below and conditions as given in this tender i.e. Section-A & B, then the conditions as given in Important Terms & Conditions of Electronic Tender SOR i.e. Section-C will prevail upon.

1.0 SPECIAL CONDITION ONLY FOR TENDERS WITH PRICE VARIATION CLAUSE:
Deleted

2.0 ELIGIBILITY CRITERIA AND QUALIFYING REQUIREMENTS OF TENDERERS

2.1 If a tenderers is not registered with DFCCIL or is not an approved source for the tendered item with DFCCIL / Railways production units/ CORE/ RDSO, he shall provide a satisfactory evidence acceptable to the Purchaser to show that: -

(a) he is an established manufacturer, who regularly manufactures the items offered and has adequate technical knowledge and practical experience;

(b) he has adequate financial stability and status to meet the obligations under the contract for which he is required to submit a report from a recognized bank or a financial institution and last three years financial balance sheet / profit & loss statement.

(c) he has adequate plant and manufacturing capacity to manufacture the items offered and supply within the delivery schedule offered by him;

(d) he has established quality control system and organization to ensure that there is adequate quality control at all stages of the manufacturing process.

2.1.1 For purpose of para 2.1, the tenderer should additionally submit: -

a. A performance statement as in Annexure - 2, giving a list of major supplies effected in the recent past, of the items offered by him, giving details of the purchaser's name and address, contract Number and date, quantity supplied and consignee's certificate/receipt note/Inspection note in support of having executed the contract satisfactorily. While doing so the tenderer should submit self attested Xerox copy of such documents i.e. Purchase order, Inspection Certificate and

Receipt Note etc.

b. A statement indicating details of equipment possessed and skilled manpower employed and quality control measure adopted etc as in Annexure 3.

2.2 The tenderer shall clearly indicate whether he is registered with DFCCIL for the quoted item and if so he must quote the registration number along with monetary limit, if any. If the tenderer is registered with NSIC he must enclose a photocopy of valid NSIC certificate showing monetary limit and the items for which registered. In case the tenderer is approved by RDSO/Production Units / CORE for the quoted item, a Photostat copy of the approval must be furnished with the offer. No back reference is likely to be made in this regard and responsibility will lies with firm, if firm is considered unapproved.

2.3 **For items reserved for procurement from approved sources**:

2.3.1 In case item is reserved to be procured from RDSO/Production Units / CORE approved sources, then Categorization of Vendors shall be as under: For the purpose of these instructions, the vendors shall be categorized into following two categories.

2.3.1.1 **Developmental Vendors**: - Such vendors shall include vendors found by RDSO as capable to develop the item under consideration. Erstwhile Part-II sources of RDSO (as on 31.12.2016, but not yet approved by RDSO), shall also be considered as developmental vendors, till they complete the pre-defined requirement as to be qualified as approved source. Such vendors shall be listed as developmental vendors by RDSO in RDSO vendor directory.

2.3.1.2 **Approved vendors**: Sources categorized as approved vendors by RDSO.

2.3.2 Ordering on the vendors Assessed/Developed/Approved by RDSO.

2.3.2.2 Status to be taken as on tender opening date: The status of the vendor (as approved or developmental vendor) shall be reckoned as on the date of tender opening and not thereafter. However, cases of downgrading/removal/suspension/banning etc. after opening of tender, shall be taken into account while considering the offers.

2.3.2.3 Orders on developmental vendors shall be developmental order and treated as such, specifically, with regard to applicability of liquidated damages for delayed supplies and levy of general damages.

2.3.3 **Quantity Allocation**

c) Developmental Vendors shall be eligible for developmental order of 20% of NPQ in regular tenders. Total quantity to be ordered on developmental sources shall be limited up to 20% of NPQ in regular tenders.

d) Approved vendors shall be eligible for bulk order, as per predefined tender conditions.

e) Where there are not more than three Indian Suppliers categorized as Approved vendor for a particular item, developmental vendors can be considered for placement of bulk order without any quantity restrictions. However, while considering such vendors, factors including past performance, capacity, delivery requirements, quantity under procurement, nature of item, outstanding order load etc. shall be considered in a transparent manner, subject to rates being reasonable. Quantity allocation among eligible vendors shall be based on pre-decided tender criteria. Such orders shall be treated as bulk orders.

Indian supplier shall be as defined in Para 10(e) of Public Procurement (Preference to Make in India) Order, 2017, which is as follows: "A Supplier or bidder shall be considered to be from India if (i) the entity is incorporated in India or (ii) a majority of its shareholding or effective control of the entity is exercised from India, or (iii)

more than 50% of the value of the item being supplied has been added in India".

2.3.4 Whenever tender is floated with purchase restriction from sources approved by nominated authorities and there exists a suspected cartel situation by approved sources or the rates available from approved source/sources are adjudged unreasonably high, despite fair efforts as permissible, the purchaser reserves the right to place orders on firms outside the approved vendors list, without any restrictions.

2.3.5 All tenderer must submit attested photocopies of the P.O's, inspection certificates and receipt notes/certificates related to the maximum quantity of the material under procurement, successfully supplied by them in any single order placed on them over the preceding three years by any Zonal Railway/Railways Production Unit/DFCCIL along with existing workload and production capacity as on date of tender opening. Such tenderers are to note that non-submission of such documents shall be taken to as they not having such past performance and their offers shall be considered further as per extant rules and no back reference in this regard will be made to them.

2.3.6 RDSO shall continue to do prototype inspection of the items supplied by developmental vendors. The balance supplies executed by the developmental vendors after clearance of prototype by RDSO can be inspected by any agency as decided by the purchaser.

3 A **Type of contract & Delivery Schedule:**

(i) The tenderer should note that as contract shall be entered into on severable contract basis only & therefore the PO will also be issued on severable contract basis with delivery of specific units of material shall be completed within each month or within specified period duly taking into account our delivery requirement as mentioned in Para 1 of Electronic Tender SOR as above. It shall not be on an entire contract basis, therefore the tenderer should take note of the same. **The delivery period shall be reckoned from the date of issue of Advance acceptance letter.**

(ii) The tenderer / supplier should note that failure on part of supplier to complete supplies of each installment within specified period or within specified date as indicated in PO (which will be placed only on severable contract basis with separate delivery period for each installment), shall be treated as a breach of contract on part of supplier & in such situation Purchaser shall have all rights to take all necessary penal actions (for that installment quantity whose delivery period expired but supplies not made by the supplier) against the supplier and may cancel the contract for defaulted part by forfeiting SD commensurate to that lot.

OR

3 B **Penalty for Delays in Supplies during delivery period**: In case of failure on the part of supplier to arrange supplies as per the delivery schedule installments fixed in advance, save Force Majeure conditions or delays attributable to purchaser, the purchaser reserves the right to levy liquidated damages which shall be levied as per para 702 (a) of IRS conditions of contract for the delayed quantities, which have remained unsupplied for that period.

4. EVALUATION CRITERIA OF OFFERS/CRITERIA FOR INTER-SE RANKING OF OFFERS:

(i) Tenderers may note that consideration of the offers will be done on the basis of consignee wise and item wise and for this purpose, the inter-se ranking of the offers for individual consignee would be worked out based on total unit rate (all-inclusive rate of one unit) for each consignees in case where there is more than one consignee for a particular tendered item (if more than one item is included in tender). It would not be on the basis of total value of all the consignees and for all items together.

(ii) Tenderers are advised to refer to important note under Para 9 of Section-A i.e. instructions to tenderers for filling up of rates, taxes, duties, freight charges and other levies in the financial offer form.

Evaluation of offers shall be made on the basis of the comparative statement generated by the EPS system as mentioned in the important note in Para 9 of Section-A.

(iii) The firm shall clearly indicate in their offer, the exact percentage of taxes that they shall be charging, which is applicable as per latest taxation laws/ regulation/ GST notification. The firms should also submit a scanned copy of documentary evidence along with their e-bid for claiming Taxes. In case, if any firm fails to quote the exact percentage of Tax as per latest taxation laws, then the system shall take nil value into accounting to calculate FOR/destination accordingly for the purpose of arriving at inter-se ranking of that offer.

(iv) The prices quoted shall be firm, unless otherwise permitted to quote with a specified Price variation clause only. The tenderer shall indicate price on free delivery to destination basis, which shall include all state and central taxes and duty leviable and all charges for packing, cartage, loading forwarding, etc. In addition, a complete break-up showing ex-factory price, GST, taxes, handling & freight charges etc. shall also required to be given by the tenderer.

(v) The tenders will be evaluated by the Purchaser on free delivery to destination basis, to ascertain the best and lowest acceptable tender, as specified in the specification and tender documents. In case of multi items or single item with multi consignee, the inter se ranking of offers will be decided separately for the individual item and for each consignee.

(vi) Claim for any tax or duty not stipulated in the quotation will not be admitted at any stage on any grounds whatsoever.

(vii) The price should be quoted only in Indian Rupees. The offers submitted in other currencies shall not be considered.

(viii) **Offer with discounts**: -

(a) Tenderer should quote clear offer with unconditional discounts, if any and the system shall evaluate the bid on FOR/destination basis and shall show up to the vendor before submitting e-bid.
(b) Conditional discounts attached to early payment and early receipt note shall not be considered and such offers shall be ignored.
(c) Conditional discount attached to quantity, if any is to be submitted as alternate offer and tenderer should submit multiple alternate offers in such cases.
(d) DFCCIL-AJMER may avail of the discounts linked to quantity if otherwise firm's offer is found to be suitable for placement of contract.

5. Increase or Decrease of Quantity (Option Clause): -

The purchaser shall be entitled to vary the order quantity upto +/- 30% anytime within the delivery period (including extended delivery period) on the same terms and conditions. The increase in quantity with respect to the tender quantity can be done even at the time of ordering and the tenderer shall be bound to accept the quantity so ordered on the basis of his original offer. The purchaser shall be entitled to exercise +/- 30% option clause in one or more than one installment as long as the total variation in quantity does not exceed the limit of 30% of ordered quantity.

a. "**Reasonable Notice"** is only for the purpose of allowing the contractor suitable time to make necessary arrangements for the supplies and not for seeking any consent from the contractor towards exercise of the contractual Option Clause. To this end, a reasonable delivery schedule for the enhanced ordered quantity stipulated in the relevant amendment to the contract will suffice.

b. The purpose of **"Reasonable Notice"** for exercise of (-) 30% Option Clause consequent

to decrease in prices subsequent to the placement of contract should be served by giving a reasonable opportunity to the contractor to unconditionally agree to accept such lower rates for the quantity unsupplied on the date of reduction/decrease of prices or the (-) 30% quantity, whichever is less. Here also, no consent from the contractor towards exercise of the contractual Option Clause is necessary.

c. In case Delivery Period is extended in a contract with (+) 30% Option Clause either for the full ordered quantity or a part quantity which remained unsupplied on the date of expiry of the original DP, then during the extended delivery period also, quantity variations can be made on the total ordered quantities.

6 Tenderers are called upon to carefully examine the locations of various consignees situated in different states and admissibility or otherwise of exemptions offered by the respective State Governments / Local Authorities on interstate Transportation / import of Goods from other states (e.g. IGST/CGST/UTGST/SGST etc.) before submitting their offer. It may be reiterated that the total landed cost of goods offered shall, in no case, exceed the sum of various constituents of rates quoted in their original offer.

7. Purchaser reserves the right to discharge a tender, accept the tender for a part or whole of the quantity without assigning any reasons whatsoever.

8. Wherever all or most of the approved firms quote equal rates and cartel formation is suspected, Purchaser reserve the right to place order on one or more firms with the exclusion of rest without assigning any reasons thereof. Firms are expected to quote for a quantity not less than 50% of the tendered quantity. Offers for quantity less than 50% of tendered quantity will be considered unresponsive and liable to be rejected, in case cartel formation is suspected, DFCCIL-AJMER, however, reserves the right to place order on one or more firms for any quantity without assigning any reason thereof. The firms who quote in cartel are warned that their names are likely to be deleted from the list of approved sources.

9. The cost of tender document is dispensed with for tender documents downloaded by bidders from website www.ireps.gov.in.

10. Supply tolerance Clause –

If unsupplied quantities value at the expiry of DP/Extended DP are within 5% of the contract quantity or Rs 8 Lacs, whichever is less, then the same will be treated as cancelled without financial repercussion.

11. SPECIAL CONDITIONS IN REGARD TO EARNEST MONEY:

11.1 There shall be no exemption from submission of EMD for any tender or by any tenderer subject to provisions under Clause 12.6 below, except following –

(a) EMD shall normally not be called against limited tenders with estimated value upto Rs 25 lakhs (including single tenders, global tenders).

(b) Micro and Small Enterprises (MSEs) registered for the tendered item in terms of Railway Board's letter No. 2010/RS(G)/363/1 dated 05.07.2012.

(c) Other Railways and Government Departments in terms of Railway Board's letter No. 2004/RS9G0/799/11 dated 24.07.07

(d) Indian Ordinance Factories in terms of Railway Board's letter No. 92/RSS(G)/363/1 dated 08.04.1993

(e) PSUs owned by Ministry of Railways and PSUs for the group of items that are manufactured by them in terms of Railway Board's letter No. 2003/RS(G)/779/5 dated 10.09.2004

(f) Vendors registered with Railways for the trade group of the item tendered.

(g) Vendors appearing on the approved vendor lists of RDSO/PUs/CORE, subject to approval status being valid on the date of tender closing.

(h) Vendors registered with railways for supply of medicine, medical equipments and consumables shall be exempted from submission of EMD for these items.

(i) In tenders issued against PAC, OEM in whose favour PAC has been issued shall be exempted from submitting EMD. KVIC and ACASH shall be exempted from EMD for items supplied by them.

11.2 Offers submitted without EMD shall be summarily rejected.

11.3 EMD amount shall be –

Estimated value of tender	EMD (rounded off to nearest higher Rs. 10 (ten)
Upto Rs. 50 Cr.	@2% of the estimated value of the tender subject to max. Rs. 20 Lakh.
Above Rs. 50 Cr.	Rs 50 lakh

11.4 EMD shall remain valid for a period of 45 days beyond the final bid validity period. When the tenderer agrees to extend the validity of offer, he shall also extend the validity of EMD suitably.

11.5 EMD shall be refunded when any one of the following conditions is satisfied.

(a) After finalization of tender the bidder is an unsuccessful bidder.

(b) Validity of offer expires and validity extension is not sought.

(c) Validity of offer expires and bidder refuses to extend validity of offer.

(d) After finalization of the tender successful bidder submits required SD.

11.6 Neither the standing deposit, if any lodged with this Railway nor will any other deposit against any other tender be accepted as earnest money for the purpose of this tender.

12. Special Condition in Regard to Security Deposit:

12.1 There shall be no exemption from submission of Security Deposit (SD) for any tender or by any tenderer except following –

(a) The contract cases of value upto Rs. 25 (Twenty-Five) lakh.

(b) Other Railways and Government Departments in terms of Railway Board's letter No. 2004/RS9G0/799/11 dated 24.07.07

(c) Indian Ordinance Factories in terms of Railway Board's letter No. 92/RSS(G)/363/1 dated 08.04.1993

(d) PSUs owned by Ministry of Railways and PSUs for the group of items that are manufactured by them in terms of Railway Board's letter No. 2003/RS(G)/779/5 dated 10.09.2004

(e) In tenders issued against PAC, OEM in whose favour PAC has been issued shall be exempted from submitting SD. KVIC and ACASH shall be exempted from SD for items supplied by them.

(f) Vendors registered with Railways for the trade group of the item tendered shall be exempted from SD for order valued upto their monetary limit of registration.

(g) Vendors appearing on the approved vendor lists of RDSO/PUs/CORE, subject to approval status being valid on the date of tender closing.

(h) Vendors registered with railways for supply of medicine, medical equipment's and consumables shall be exempted from submission of SD for these items.

Note: Apart from claiming damages from vendors, in case of failure to comply with the contractual obligations, Railway shall record poor performance of the vendors for taking suitable penal action as per extent instructions.

12.2 Security Deposit (SD) amount shall be as under:

Contract Value	SD (rounded off to nearest higher Rs. 10 (ten)
Above Rs. 25 Lakh and upto Rs. 50 Cr.	@5% of contract value subject to max. Rs. 50 Lakh.
Above Rs. 50 Cr.	Rs 1 Cr.

However, DFCCIL can raise the upper limit of SD upto 10% of the contract value in high value cases.

12.3 Security Deposit (SD) shall remain valid for a period of 60 days, beyond the date of completion of all contractual obligations.

12.4 **Time for deposit of SD:** SD from successful tenderer should be received in purchase office within 21 days from the date of communication of acceptance with respect to the purchaser.

12.5 In the event of successful tenderer(s) failing to deposit/submit SD in acceptable form within the prescribed period as aforesaid, the EMD submitted by such successful tenderer(s) shall be automatically adjusted towards SD in view of the fact that in most of the cases, EMD amount would be adequate to meet the SD amount. In case where available EMD amount is less than required SD and the successful tenderer does not deposit the balance SD amount within stipulated time, then the EMD shall be forfeited and case can be dealt with as that of withdrawal of offer by the tenderer.

12.6 All vendors, exempted from submitting EMD, as per para 11 above, irrespective of type of tender, i.e. single, limited or open, shall be required to sign a bid securing declaration as mentioned below:

As per Railway Board letter no 2004/RS(G)/779/11 pt. Dt 23.12.2019; Bid securing declaration to be signed by bidders availing exemption from submission of EMD

'I/We certify that my/our offer is eligible for exemption from submission of bid security/Earnest Money Deposit, in terms of the tender condition.
In case my/our claim to exemption from submission of bid security/earnest Money Deposit is not found valid as per terms of the tender, I/we understand and accept that DFCCIL has unquestionable right to summarily reject my bid and my offer shall not be considered for ordering further, I/we hereby understand and accept that if I/we withdraw or modify my/our bid during the period of validity ,or if I/we are awarded the contract and on being called upon to submit the performance security /security Deposit ,fail to submit the performance security / security Deposit before the deadline defined in the request for bid document/Notice inviting Tender I/we shall be debarred from exemption of submitting Bid Security/Earnest Money Deposit and performance security/security Deposit for a period of 6 (Six) month, from the date I/we are declared disqualified from exemption from submission of EMD/SD, for all tenders for procurement of goods issued by any unit of Indian Railways published during this period"

This para shall not be applicable for Govt. Departments/ ordance factories/ other Railways/ Railway PSUs/ KVIC/ ACASH and matter shall be taken up with them departmentally/ administratively.

12.7 Wherever SD has been exempted, for any reason, and the supplier fails to supply goods as per conditions of contract, as amended from time to time, Purchaser shall have right to levy damages from the supplier for failing to comply with the contractual conditions, not by way of penalty, an amount equal to SD amount, as would have been applicable if the contract was with a non- exempted vendor. These damages shall be treated as recoveries outstanding against the vendor and dealt with accordingly.

12.8 Risk purchase clause shall not be applicable.

12.9 In case, if there is any conflict between the provisions in regard to security deposit (SD) given in Para 7 of Section-B or anywhere else in the tender documents on one hand, and the provisions given in Section-C in regard to Security Deposit (as mentioned above) on the other, then the provisions given in Section-C in regard to Security Deposit (as mentioned above) will hold good.

13. (i) Bank Guarantee (BGs) to be submitted by suppliers/ contractors, if offline, should be

sent directly to the DFCCIL-AJMER authorities by the issuing bank.

(ii) Bank Guarantees (BGs) to be submitted by suppliers/ contractor, if online, should be issued on SFMS platform using message type IFN 760. The message will be sent to the beneficiary's bank/ advising bank through SMS. A hard copy of BG clearly indicating that it is as "COPY ONLY" may be handed over to the applicant for their use
e.g. for attaching it with any Bid Documents. The advising bank will print the BG on stamp paper of required value or pay the required stamp Duty by other means and then deliver the Bank guarantee to the Beneficiary.

14. **Road permit :** The tenderer / supplier should note that for getting road permits for making dispatches of material by road (after receipt of purchase order), they must send a written intimation at least 30 days in advance before likely date of dispatch of materials, duly indicating no. of road permits required, the approximate quantity with brief description of item etc. and this written intimation must be sent to the ultimate consignee both by fax & E-mail (where E-mail /fax is not available, communication for such matter must be made by speed post). However, the supplier are at their liberty to make telephonic calls in this respect also to the concerned person as indicated above, but sending the intimation both by E-mail and by fax (or by Speed post where E-mail/fax is not available) is must. The supplier shall also note that before asking additional no. of road permits from the concerned ultimate consignee, the supplier shall have to ensure that all earlier issued road permits against a particular purchase order has been used by them for that particular consignee of DFCCIL or else all unused road permits must be returned by them to the concerned officer (who have issued such road permit) but well within its validity period. In case any supplier does not fulfills this condition after entering into the contract, then the ultimate consignee shall be at liberty to take a final decision regarding issue of further road permits to such defaulting supplier (i.e. whether to issue further road permits or not) & then for any delay on this account (i.e. non-issue of road permit by consignee etc.), such defaulted supplier only will be held fully responsible. Firm should note that immediately after receipt of PO, they should obtain complete postal address, E-mail, fax no. etc. of all ultimate consignees for communication. Tenderer should note that, failure to comply above instructions by the supplier after receipt of PO (as these condition will also be the part of the contract) will be considered as adverse performance of the firm by DFCCIL.

15. **Inspection:** The tenderer should note that the supplier shall have to give a written communication of each inspection call to the concerned inspecting agency e.g. RITES/ RDSO/DFCCIL well before the expiry of contractual DP duly taking into account the transit time needed to reach the material finally at site as per terms and conditions of purchase order. Thus the inspection call should not be made at the fag end of delivery period in terms of IRS conditions of contract. Also the copy of each inspection call of materials must be sent by the supplier to the ultimate consignee & CGM/DFCCIL both by E-mail & fax (or through Speed post where E-mail/fax is not available).

16. Dispatches by road:

i) The tenderer should note that generally the supplier are supposed to quote delivery by road (only in exceptional cases, delivery by Rail will be accepted by DFCCIL) and that too on FOR destination basis for each consignee as given in the Electronic Tender SOR duly indicating separate freight elements for each consignee of Electronic Tender SOR. Tenderers are requested to refer to important note below Para 9 of Annexure-A for quoting the freight charges on the financial form.

ii) It shall also be entire responsibility of supplier to arrange truck /trailer etc. at their

end for dispatches of materials by road and DFCCIL shall not provide any assistance in this matter and no delay on part of the supplier on this account w.r.t. delivery of material shall be considered as a valid reason to extend the contractual DP / waive penalty etc. by the purchaser.

17. Intimation regarding dispatches of material:

The tenderer should note that the supplier shall have to give a written intimation either at the time of making dispatches or immediately after the dispatches of material (i.e. preferably within 48 hours of dispatch of materials) duly indicating PO's reference, brief description of item, its quantity, truck/trailer no., name and mobile no. of carrier's driver (if available) to the ultimate consignee, by fax & E-mail (where E-mail /fax is not available communication for such matter must be made by speed post).

18. Deleted

19. Deleted

20. LD Clause

(a) In cases of delays of contractual delivery full LD will be levied as per IRS conditions of contract and being a contractual provision no request for LD waive will be considered, notwithstanding any past instances of such waiver or levy of token LD.

(b) DFCCIL-AII should recover from contractor as agreed liquidated damages and not by way of penalty, a sum equivalent to **1/2% (Half percent)** of the price of any stores including element of taxes, duties, freight etc., which the contractor has failed to deliver within the period fixed for delivery in the contract or as extended per week or part of a week during which the delivery of such stores may be in arrears where delivery thereof is accepted after expiry of the aforesaid period, subject to maximum of 10 % of value of the delayed supplies."

21. Deviation Statement

Tenderer should note that, if any column/field is left blank either in Techno- Commercial Offer Form or Financial Offer Form by them in Electronic Tender SOR, etc, both in respect of technical as well as commercial matters, then it will be treated as NIL deviation by DFCCIL and thereafter no change in those parameters will be accepted/permitted by DFCCIL.

22. The tenderer's digital signatures on the E-tender form shall be considered as their confirmation that they have read and accepted all terms & conditions as laid-down in the Electronic Tender Documents referred in Para 2 of the instructions for submitting E-bids on IREPS site i.e. Section-A, Important Terms & conditions of Electronic Tender Schedule of Requirement i.e. Section-C., consisting of techno-commercial offer form (including special conditions attached to E-tender) and financial offer form, unless specific deviation is quoted in the techno-commercial offer form.

23. The remedial action / penalty as prescribed by the vendor approving authority, for non-conformance of sample to the required quality, shall also be applicable.

24. RDSO's inspection & Consequent action:

Supplier being a Firm/Vendor approved by RDSO, shall abide by all the provisions of "General Guidelines for Vendor Development" of RDSO's website under the link "vendor interface".

25. Court Jurisdiction:

For any disputes related to contract or inspection/action by RDSO in pursuance of "General Guidelines for Vendor Approval", the court jurisdiction would be the HQrs of the DFCCIL, where the contract agreement has been signed.

26. GST

(A) For the tenders opening after roll out of GST- All the bidders/ tenders should ensure that they are GST compliant and their quoted tax structure/ rates are as per GST Law.

(B) In case the successful tenderer is not liable to be registered under CGST/IGST/UTGST/SGST Act, The DFCCIL shall deduct the applicable GST from his/their bills under reverse change mechanism (RCM) and deposit the same to the concerned tax authority.

(C) Where however, bidders quote different GST rates in offers, During transition phase, following conditions will govern:

(i) The offers shall be evaluated based on the GST rate as quoted by each bidder and same will be used for determining the inter se ranking. While submitting offer, it shall be the responsibility of the bidder to ensure that they quote correct GST rate and HSN number.

(ii) Purchaser shall not be responsible for any misclassification of HSN number or incorrect GST rate if quoted by the bidder.

(iii) Wherever the successful bidder invoices the goods at GST rate or HSN number which is different from that incorporated in the purchase order, payment shall be made as per GST rate which is lower of the GST rate incorporated in the purchase order or billed.

(iv) **Vendor is informed that she/he would be required to adjust her/his basic price to the extent required by higher tax billed as per invoice to match the all-inclusive price as mentioned in the purchase order**.

(v) Any amendment to GST rate or HSN number in the contract shall be as per the contractual conditions and statutory amendments in the quoted GST rate and HSN number, under SVC as defined in section 64A of Sales & Goods Act as amended from time to time.

(vi) DFCCIL shall recover GST-TDS @ 2% (CGST 1% and SGST/UTGST 1% or IGST @ 2%) on invoice value (Excluding GST) from the payment made of taxable goods or services or both, where the total contract value of such supply exceeds Rs 2.50 Lacs, or as prescribed by Government from time to time and remit the same to Govt. (Railway Board Letter No. 2018/AC-II/1/46 dated 29.09.2018)

27. PROMOTE MANUFACTURING AND PRODUCTION OF GOODS AND SERVICES IN INDIA

This Tender complies with Public Procurement Policy Order 2017 dated 15.06.17

As per Ministry of Commerce and Industry order no P-45021/2/2017-B.E.-II dated 15.06.2017 to encourage "Make in India" and promote manufacturing and production of goods and services in India preference will be given to local suppliers whose offered product meets the minimum local content as prescribed as under.

27.1 Local content: The minimum local content shall ordinarily be 50% **if not specified otherwise in a specific tender**. CGM DFCCIL shall be competent to vary the minimum local content below the prescribed level on case to case basis. Requisite action as per para 14 of the Ministry of Commerce and Industry Order No. P-45021/2/2017-B.E.-II dated 15.06.2017, shall be ensured.

27.2 Margin of purchase preference: The margin of purchase preference shall be 20% i.e. In tenders, participating Local Suppliers quoting a price within price band of L1 + 20% shall be allowed to supply a portion of the requirement by bringing down their price to L1 in a situation where L1 price is from someone other than a Local Supplier and such local suppliers can be together ordered upto 50% of the value out

of the net procurable quantity. Purchase preference shall be given to local suppliers in all procurements in the manner specified hereunder:

a. "In procurement of goods, services or works in respect of which the Nodal Ministry has communicated that there is sufficient local capacity and local competition, and where the **estimated value of procurement is Rs. 50 lakhs or less, only local suppliers shall be eligible.** If the estimated value of procurement of such goods or services or works is more than Rs. 50 lakhs, the provisions of sub-paragraph b or c, as the case may be, shall apply";

b. "In the procurements of goods or works which are not covered by paragraph 3a and which are **divisible in nature**, the following procedure shall be followed";

i. Among all qualified bids, the lowest bid will be termed as L1. If L1 is from a local supplier, the contract for full quantity will be awarded to L1.

ii. If L1 bid is not from a local supplier, 50% of the order quantity shall be awarded to L1. Thereafter, the lowest bidder among the local suppliers, will be invited to match the L1 price for the remaining 50% quantity subject to the local supplier's quoted price falling within the margin of purchase preference, and contract for that quantity shall be awarded to such local supplier subject to matching the L1 price. In case such lowest eligible local supplier fails to match the L1 price or accepts less than the offered quantity, the next higher local supplier within the margin of purchase preference shall be invited to match the L1 price for remaining quantity and so on, and contract shall be awarded accordingly. In case some quantity is still left uncovered on local suppliers, then such balance quantity may also be ordered on the L1 bidder.

c. "In procurements of goods or works not covered by sub-paragraph 3a and which are **not divisible**, and in procurement of services where the bid is evaluated on price alone, the following procedure shall be followed":-

Among all qualified bids, the lowest bid will be termed as L1. If L1 is from a local supplier, the contract will be awarded to L1.

If L1 is not from a local supplier, the lowest bidder among the local suppliers, will be invited to match the Li price subject to local supplier's quoted price falling within the margin of purchase preference, and the contract shall be awarded to such local supplier subject to matching the Li price,

In case such lowest eligible local supplier fails to match the LI price, the local supplier with the next higher bid within the margin of purchase preference shall be invited to match the **L1** price and so on and contract shall be awarded accordingly. In case none of the local suppliers within the margin of purchase preference matches the Li price, then the contract may be awarded to the L1 bidder.

27.3 The local supplier at the time of tender, bidding or solicitation shall be required to provide self-certification that the item offered meets the minimum local content and shall give details of the location(s) at which the local value addition is made.

27.4 In cases of procurement for a value in excess of Rs. 10 crores, the local supplier shall be required to provide a certificate from the statutory auditor or cost auditor of the company (in the case of companies) or from a practicing cost accountant or practicing chartered accountant (in respect of suppliers other than companies) giving the percentage of local content.

27.5 Procurements where the estimated value to be procured is less than Rs. 5 Lakhs shall be exempted from the order of Public Procurement Policy Order 2017 dated 15.06.17.

27.6 Debarment of Bidders:

(i) False declarations will be in breach of the Code of Integrity under Rule 175(1)(i)(h) of the General Financial Rules for which a bidder or its successors can be debarred for up to two years as per Rule 151 (iii) of the General Financial Rules along with such other actions as may be

permissible under law.

(iii) A supplier who has been debarred by any procuring entity for violation of this Order shall not be eligible for preference under this Order for procurement by any other procuring entity for the duration of the debarment. The debarment for such other procuring entities shall take effect prospectively from the date on which it comes to the notice of other procurement entities, in the manner prescribed under relevant rule.

28. **Implementation of payment through letter of credit (LC):** Implementation of payment through letter of credit (LC) as option in domestic supply contracts has been incorporated vide railway board letter no 2018/RS(G)/779/4 dated 04.06.2018 and necessary enclosure are available in Section "H".

29. Tender being floated by DFCCIL with reverse auction shall be governed by conditions as per Section-I.

30. Special condition for supply of rails and Guarantee of stores as required for fabrication of materials like Switches, SEJs and Glued joints etc. shall be governed as per Section "G" of tender document.

Section D

Information regarding workload on Tenderer

Tender Notice no.:

Name of the

firm/Vendor: P-way

Component:

S.No.	Item	Details			Any other relevant information	Remarks
1	Monthly Production capacity of vendors as Certified and circulated by RDSO.					
2	Orders on hand	Contract Reference	Balance quantity	Date of completion		
		a)				
		b)				
		c)				
3	Details of tenders already participated for same component (Yet to be finalized)	Tender Notice Details	Quantity tendered	Status		
		a)				
		b)				
		c)				

It is certified that the above information is true to the best of my knowledge till date and no information is suppressed. DFCCIL-AII is free to take action in case above information is found to be otherwise.

Section E

Special conditions for supply of Rails and Guarantee of Stores

1.0 Supply of Rails

1.1 UIC 60 Kg/m, 1080 Grade Head Hardened & 880 Grade Class A Rails: -

The material offered should be in accordance with the technical specification of IRS-T-12-2009 with Up-To-Date amendments & correction slips, for Flat Bottom Rails for HH Rails. The scope of work in the subject tender shall include but not limited to the following:

a. Manufacture of Prime Quality of prime quality of UIC 60 Kg. 1080 Grade Head Hardened Class A Rails as per Indian Railway Standard Specification for Flat Bottom Rails IRS-T-12-2009 (With latest A&C Slips) and approved Inspection & testing plan, to suit the requirement of DFCCIL.
b. Complete submission of Inspection & Testing plan and other submissions as per Specifications for manufacturing and obtaining approval for the same from DFCCIL.
c. Conducting all necessary inspection and testing required for the production of prime quality of rail and also arranging third party inspection from the nominated inspecting authority including providing all the inspection facilities.
d. Packing, loading, transportation from the source of manufacturing to place of delivery, handling, forwarding, documentation and delivery of the manufactured rails at designated place in Madar-New Palanpur section, including unloading & stacking.
e. Observing all safety precautions as required during all operations covered under this tender.
f. The rails shall be supplied in length of 13m with undrilled holes.
g. Supply of drawings, tracings or Reports of the material to be supplied shall, unless otherwise directed, be furnished by the Supplier with the first consignment of the work to which they relate and no payment whatsoever will be made until such drawings, tracings or Reports have been furnished to the satisfaction of the Purchaser.
h. Along with the consignment containing the rails, supplier shall supply two sets of clamps, capable to handle three to five rails in one operation, without any cost to DFCCIL. The cost of supplying these two sets of clamps is included in the accepted rates.
i. If the Rails are supplied in bundles, they are to be stacked as single rails.

2.0

a) (i) Security deposit for rails shall be submitted within 30 days of date of issue of Purchase Order. In case BG is not submitted within 30 days of date of issue of Purchase order; DFCCIL may take action to cancel the contract or any part thereof and procure the unsupplied quantity as per condition of contract.

(ii) Security deposit for rails shall be for a minimum amount required to meet with the requirement of rails to supply tendered material as per quarterly delivery schedule / delivery period of the purchase order.

b) Rails to be issued against this contract will be as under:

HH Rail 1080 Grade each of 13 M length

IRS-T-12-2009: Total 27300 Meter rails of 60 Kg

Rail 880 Grade each of 13 M length

Drawing no. RT-6922: Total 2760 Meter rails of 60 Kg

3.1 (a) Where any raw material is procured for the execution of contract with the assistance of the Government rendered in the form of permit or license of quote certificate / essentiality certificate or release order issued by or on behalf of or under the authority of the Government or by any officer empowered in that behalf or

(b) Where the raw material is issued to the contractor from government stock or

(c) Where advance payment is made to the contractor to enable him to purchase the raw material or

(d) Where the raw material is arranged by the Government, the contractor:

i) Shall hold such materials as trustee for the Government.

ii) Shall use such material economically and solely for the purpose of the contract.

iii) Shall not dispose of the same without the previous permission in writing of the purchaser and

iv) Shall render the due account of such materials and return to the Government at such place as the Purchaser may direct all surplus or unserviceable material that may be left after the completion of the contract or its termination for any reason whatsoever.

(a) On returning such material, the contractor shall be entitled to such price therefore as the purchaser may fix having regard to the condition of such material. The freight charges for the return of the materials according to the direction of the purchaser shall be borne by the contractor in the event of contract being cancelled for any default on his part. The decision of the Govt. shall be final and conclusive.

3.2 The contractor shall also invariably give the following declaration on obtaining the rails from the Railways:

"I/We hereby solemnly declare that the rails obtained are required for the purpose of manufacturing

_____against DFCCIL Contract No_____Dated

_____and the rails will be consumed at_____. The rails will not be utilized for any other purpose of otherwise disposed of without the prior approval of the purchaser of his nominee."

3.3 In the event of breach of the aforesaid conditions the contractor shall in addition to throwing himself open to action for contravention of terms of the licence/s or the permits/s and or criminal breach of trust be liable to account of Govt. for all moneys, advantages or profits resulting or which in the usual course would have resulted to him by reasons of such breach.

3.4 The purchaser however, render assistance in respect of the following to the extent of making necessary recommendations without undertaking any financial or other liabilities thereof.

(a) For allotment of required quantity of any inputs raw materials which are under statutory control of the Govt. of India.

(b) For allotment of quota for light diesel oil, furnace oil, if under statutory control of the Govt. of India.

(c) For allotment of quota for electricity required for manufacture of goods.

3.5 The supplier shall be responsible for safe custody of raw materials procured with the assistance of this Railway and the latter will have the right to inspect, verify and satisfy that the quantities of raw materials procured with this railway have been solely used for the tendered material and left over quantity, if any has to be accounted for the disposal of as directed by this railway.

3.6 Excess rails lifted /received by the contractor and not utilized due to modification of the contract or because any other reason should be returned to the railway as per the direction of purchaser.

4 Guarantee of Stores

The contractor guarantees that the stores which he supplies shall be manufactured fully in accordance with the specifications. In all cases, the contractor guarantees that its design shall strictly follow the "as made" detailed drawing with such modifications as are notified in respect of each type.

4.1 The contractor further guarantees that the stores shall be free from defects in material and workmanship provided that the contractor's liability in this respect shall be limited to arranging the necessary replacement of the defective supplies free of any charge only to the extent that such replacements are attributable to or arise from faulty workmanship or material or in the manufacture of the stores. All replacements shall be made free of the cost at destination. If the contractor so desires, the replaced stores can be taken over by him for disposal as he deems fit,

within a period of three months from the date of receipt of replacement of stores. At the expiry of this period no claim whatsoever shall lie on the purchaser.

4.2 The guarantee herein contained shall not apply to any material, which shall have been repaired or altered by the Purchaser, or on his behalf in any way so as to affect its strength, performance or reliability or any defect to any part due to misuse, negligence or accident.

4.3 All replacements that the Purchaser shall call upon the Contractor to deliver under this guarantee shall be delivered by the Contractor within three months from the date on which the purchaser calls upon him for the replacements of the defective stores. If the contractor fails to replace defective stores within the said period, the cost of the said stores at the rate stipulated in the contract shall be recovered from payment due to the contractor including the amount of security deposit made and maintain against this contract.

4.4 Any approval or acceptance by the Purchaser of the stores or of the materials incorporated therein shall not in any way limit the contractor's liability hereunder.

4.5 The decision of the purchase in regard to contractor's liability under this guarantee shall be final and conclusive.

SECTION-F

Instructions for tenderers on LC mode of Payments

Scheme of Letter of Credit for Domestic Supplies (including all service and maintenance contracts) tenders having estimated value of Rs.10 lakhs and above:

a. All Tenders invited by Zonal Railways and Production Units, having estimated value of Rs.10 lakhs and above, shall have an option for the supplier /contractor to take payment from DFCCIL through a letter of credit (LC) arrangement.
b. The LC will be a sight LC.
c. The bidder, at the time of bidding itself, shall exercise an option , in favour of taking payment due against the said tender, through LC arrangement. The option so exercised, shall be an integral part of the bidder's offer.
d. Option once excercised shall be final and no change shall be permitted, therafter , during execution of contract.
e. The incidental cost @ 0.15% of LC value, towards issue of LC and operation thereof shall be borne by the supplier /contractor and shall be recovered from their bills.
f. The arrangement would cover all such contract finalized against tender issued during the said period and shall extend till final execution of these contracts.
g. The schedule of payment liability arising in the contract shall be established by the DFCCIL based on the prescribed delivery schedule/ stages of supply.
h. The acceptable, agreed upon document for payments to be released under the LC so opened, shall be a Document of Authorization.
i. The Supplier /contractor shall submit their bills for completed supply to the bill processing authority mentioned in supply/ contract agreement to issue Document of Authorisation to enable supplier/contractor to clain the authorized amount from their Banker.
j. Accounts Officer responsible for passing the claim will issue the Document of Authorization.
k. The supplier/ contractor shall take print out of the document of Authorization available on IREPS portal and present his claim to his banker (advising bank) for necessary payments as per LC terms and conditions. The claim shall comprise LC document of Authorisation Bill of Exchange and invoice.
l. The bank shall also recover any amount as may be advised by DFCCIL against the contractor supplier.
m. The Contractor /vender shall indemnity and save harmless the Raiwlay from and against all losses, claims and demands of every nature and description brought or recovered against the Railway by reason of any act or omission of the Contractor/ Vender, his agents or employees, in relation to the Letter of Credit (LC). All sums payable/ borne by Railways on his account shall be considered as reasonable compensation and paid by Contractor/Vender.

Annexure 10

Format of letter from Executive branch to Account Office for opening of LC

Office of CGM/Ajmer unit

No._____ Date:

_____

Chief General Manager
DFCCIL/Ajmer

Sub: Opening of LC
Ref: Supply Order/ Contract Agreement No.

***

It is requested to open a sight LC against the above referred Supply Order/ Contract Agreement No. in favour of _____. The detail of beneficiary are as under:

(i) Name of Contractor / Supplier
(ii) Vender Code
(iii) Address
(iv) Tender No.
(v) Contract Agreement No.
(vi) Description of Goods/ Service
(vii) Value of Contract
(viii) Stage of Payment
(ix) Validity period of LC
(x) Expected payment within 6 months (LC Amount)
(xi) Beneficiary Bank details:
    a) Bank Name
    b) Address
    c) Account No.
    d) IFSC Code

It is certified that the supplier / contractor has exercised the option of taking payment due against the tender, through LC arrangement in IREPS portal at the time of bidding itself and the option has been flagged in the IREPS. This has the approval of _____.

(Signature)
Name: _____
Designation :_____
(Official Seal)

Section G

TENDER CONDITIONS FOR STORES TENDERS

Reverse auction shall be the preferred method for procurement for tenders valued more than Rs 5 Cr. in each case (Please check NIT for applicability of reverse auction in a particular tender).

Tenders being floated by DFCCIL with reverse auction shall be governed by following conditions, with all other tender conditions attached with tender and are deemed as accepted by vendor on participation in the bid event.

1.0 A reverse auction system is a two packet system.

2.0 After initial evaluation of technical bids, convener of the tender committee shall fix the following, on case to case basis depending upon the nature of item. This shall be indicated in tender for e-RA itself.

a) **Initial e-RA period**:- This shall be the initial time interval for e-RA. E RA shall be open for this duration.
b) **Auto extension Period**:- In case of any offer is received in the time period equal to auto extension period before close of initial e-RA period, The e-RA shall be extended for time equal to auto extension period from the time of last bid. There shall be no upper limit on no. of auto extensions. When no offer is received in the last auto extension period e-Ra shall be closed.
c) Minimum decrement in percentage of value of the last successful bid.

3.0 Date and time for start of e-RA will be communicated to qualified tenderers after evaluation of the technical bids.

4.0 After submission of initial price bid, tenderers will not be allowed to revise the taxes and other levies and all other cost/price elements may be varied.

5.0 Minimum Admissible bid value will be last bid value minus minimum decrement as specified by the tendering authority before starting of reverse auction. Starting point of RA shall be the lowest initial price bid of tenderer eligible for award of contract.

6.0 After close of RA, tabulation of last (minimum) bids received from all tenderes will be generated and made visible to Railways and participating tenderers.

7.0 Bidders will not be allowed to withdraw their last offer.

8.0 L-1 will be defined as the lowest bid of obtained after the closer of RA for Goods, Works and Service Tenders.

9.0 Bidder shall be simultaneously required to electronically submit technical and commercial bid and initial price offer. Offers found eligible for bulk order shall be categorized as qualified for bulk order and offer found for developmental order shall be categorized as qualified for development order for the purpose of RA.

10.0 Offers not complying with essential technical and commercial requirement of the tender shall be declared as ineligible for award of contract.

11.0 Initial price for only those bidders categorized as qualified for development order or qualified for bulk orders shall be opened and tabulated by system separately category wise. Extant instructions for electronic tabulation shall apply for tabulation of initial price offers.

12.0 **Financial Bids:-** Financial bid shall comprise of final price offer obtained through reverse auction.

A. Selection of vendors for Reverse Auction for bulk orders in Store Tenders

Number of tender qualified for award of bulk order	Numbers of tenders to be selected for reverse auction	Remarks
<3	Nil*	The bids disallowed from participating in the reverse auction shall be the highest bidders in the tabulation of initial price offer. In case the highest bidders quotes the same rates, the initial price offers received last, as per time log of IREPS , shall be removed first, on the principle of last in first out, by IREPS system itself
3 to 6	3	
More than 6	50% of vendor qualified for bulk order (rounded off to next higher integer).	

*If number of tenders qualified for bulk order is less than three RA shall not be done and tender may be decided on the basis of initial price offers.

B. Selection of vendors for Reverse Auction for Developmental ordering in Store Tenders:

All bids found qualified for developmental order shall participate in reverse auction for development orders.

C. The final tabulation statement should include the initial price offer of a firm who has not participated in the RA process.

13.0 **MSEs Criteria:** All MSEs qualified for bulk order but could not be selected for RA as per criteria stipulated in Para 12(A) above, but are within the range of 15% of lowest initial price bid shall be permitted to participated in the reverse auction, irrespective of their inter se ranking on the basis of initial price bid. Such MSEs shall be over and above the numbers of vendors selected for RA as per para 12(A). For this purpose lowest initial price bid shall mean lowest initial price bid of vendor qualified for bulk order.

14.0 **Make in India Criteria**:- All bidders eligible for benefits under public procurement (Preference to Make in India) order 2017, Found qualified for bulk order and are within the specified range of price preference of lowest initial price bid shall be permitted to participate in the RA, irrespective of their inter se ranking on the basis of initial price bid. For this purpose lowest initial price bid shall mean lowest initial price bid of vendor qualified for bulk order.

15.0 During RA process, bidders shall not be allowed to bid a higher rate than the lowest initial price offer.

16.0 The quantity to be covered on developmental orders shall be limited to 20% net procurable quantity. Development order shall be placed in terms of Railway board letter no. 99/RS(G)/709/1/Pt dated 13.01.2015. The quantity covered on development orders may be within or outside NPQ which will be decided by TC/TAA before conduct of reverse auction

17.0 After obtaining the final bid of reverse auction tenders shall be finalized as per existing policy (Including price preference to MSEs and Make in India Order 2017, (wherever applicable) and procedure based on the eligibility and quantity distribution criteria as pre defined in tender documents. All the relevant policies of Government of India at the relevant time shall be applicable.

18. Neither DFCCIL/ Railways nor CRIS can be held responsible for consequential damages such as no power supply, system problem, inability to use the system, loss of electronic information, power interruptions, UPS failure etc.

19. The DFCCIL-Ajmer shall however, be entitled to cancel the procurement through Reverse Auction process, if in its view procurement through reverse auction process is not leading to the benefit of the DFCCIL.

On any issue or area of material concern respecting Reverse Auction not specifically dealt within these Rules, the decision of the DFCCIL shall be final and binding on all concerned.

Annexure-11

DELETED

Annexure-12

AFFIDAVIT

TO WHOM SO EVER IT MAY CONCERN

We declare and certify that we have requisite machinery and manufacturing facility and will establish requisite testing facility within 60 days of award of contract, to provide the rails as per specification of this document.

(To be executed by the authorized signatory of the Firm/Company with seal on a Non Judicial Stamp Paper of Rs 100/- and affirmed before a notary public).

(Note : To be submitted by tenderer quoting for developmental order.)

SECTION–H
TECHNICAL SPECIFICATIONS

Technical Specifications

The Goods and Related Services shall comply with following Technical Specifications

Item No.	Name of Goods	Technical Specifications and Standards
1.	Prime Quality of 60E1, 1080 Grade Head Hardened Rails, Grade (Class "A" Rails)	a) Indian Railway Standard Specifications for flat bottom Rails IRS-T-12-2009 with all latest Addendum & Correction Slips up the period of 10 days before the date of submission of Tender and Railway Board Directions regarding Rails and enclosed as Annexure – XVI to this document

Annexure-13

Technical Proposal / Details to be submitted by the Tenderer's as a part of Technical Package.

1. Proposal for No. of change over blooms will be in terms of Clause 4.3 of IRST- 12-2009.

2. The tenderer shall furnish details of the steel making process including refining, vacuum degassing, controlled cooling of bloom/rails etc. which will be followed, in terms of Clause 5.1 of IRS-T-12-2009.

3. The Best accepted code of practice to be applied throughout manufacturing process to ensure that the rails meet the stipulations of this specification. The tenderer shall furnish the measures adopted for ensuring the same as per Clause 5.3 of IRS-T-12-2009. The Chemical Composition of Rails for 1080 Grade HH shall be as per with up to date correction slips/corrigendum of IRST- 12-2009.

4. Furnish the method of heat treatment adopted by the manufacturer. The Hardness is to be achieved by heat treatment process only.

5. Furnish details of on line ultrasonic testing of rails to be followed as per Clause 10.3 of IRS-T12-2009.

6. Furnish the Clause-by-clause compliance/commentary on the provisions of IRS-T-12-2009 for 1080 Grade Head Hardened Rails.

7. Furnish the proposal for the values /results obtainable for all the qualifying criteria tests mentioned in IRS-T-12-2009 for 1080 Grade HH Rails when conducted as per provisions of IRS-T-12-2009.

8. Furnish the details of testing facilities, where the rails will be tested.

9. A confirmation in regard to weld ability of 1080 HH grade rails proposed to be supplied as per IRS-T-12-2009 by short pre-heat process of Alumino - Thermic welding technique as specified in Indian Railway Specification IRS-T-19 (latest version) for Fusion welding of rails by Alumino - Thermic process duly following the provisions of Indian Railway Manual for Alumino - Thermic welding.

10. A confirmation in regard to use of 1080 Grade HH Rails supplied as per IRST- 12-2009 for radius up to 90 m.

11. Any other pertinent technical information /detail, the tenderer may like to furnish

SERIAL NO. T-12-09

This specification was initially adopted in 1934 and subsequently revised in 1939, 1950, 1953, 1955, 1958, 1960, 1964, 1988 and 1996.

The present version has been adopted in 2009 specifying the requirements of the Prime rail and IU rails having ultimate tensile strength (UTS) of 880 MPa, 1080 MPa CR and 1080 MPa HH .This specification also specify the requirements of special class of rail steel such as Niobium (NB), Vanadium (VN), corrosion resistant rail steel Copper Molybdenum (CM), Nickel Chromium Copper (NC)

1. SCOPE

This specification applies to Flat bottom Railway Rails. It specifies quality of the steel, manufacturing process, chemical composition, acceptance tests/ retests, qualifying criteria and other technical conditions of supply.

2. RAIL SECTION

The Section of the flat bottom rails shall be in accordance with the section profiles shown in Appendix-I, II, IIA, III, unless otherwise specified by the purchaser.

3. TEMPLATES AND GAUGES

The manufacturer shall submit, at his own expenses, two sets of templates (internal and external) made of stainless steel for each section of rail ordered or contracted for as per approved drawings. Two sets of plus and minus limit gauges made of stainless steel, in accordance with the stipulated maximum and minimum tolerances, shall also be submitted for approval of the Purchaser or his Authorised Inspecting Agency. The approval of purchaser or his authorised inspecting agency shall be obtained before the rolling of rails is commenced. The templates and gauges shall be stamped by the Purchaser/Authorised Inspecting Agency as a token of approval.

One set of templates of plus and minus limit gauges (called hereinafter master gauges) shall remain in possession of the Purchaser/Authorised Inspecting Agency during the period of acceptance. Only gauge bearing the stamp of the Purchaser/Authorised Inspecting Agency shall be valid for checking purpose.

Each template/gauge shall be suitably engraved with the manufacturer's name and the number of the rail section together with such other marks as the Inspecting Agency or the purchaser may direct.

4. DEFINITIONS

4.1 Sequence-continuous casting

This term is used when a sequence of casts of the same grade of steel is poured through a continuous casting machine without interruption in flow of liquid steel into the moulds and strands. The pouring of the next cast from ladle into the tundish begins before the steel from the previous cast is completely poured off from tundish to the mould, leading to an inter-mixing of some liquid steel from the two successive casts.

4.2 Main cast

Blooms that are known to be entirely composed of steel from the same liquid steel melt.

4.3 Changeover, Overlap or Intermediate Bloom

Blooms that may contain steel from more than one cast i.e. material arising during the Changeover from one cast to the next in the sequence. Number of change over bloom will be mutually decided by manufacturer/Purchaser depending upon casting practice adopted by the manufacturer.

4.4 Classification of rails

52 kg/m , 60 kg/m ,68 kg/m & ZU-1-60 rails shall be classified as class 'A' and class 'B' based on tolerance in end straightness as specified in Clause 9.4.2.

5 MANUFACTURE

5.1 The steel used for the manufacture of rails shall be made by basic oxygen or electric arc furnace process and continuously cast. Any other method of casting shall have prior approval of the Purchaser. For molten steel secondary ladle refining is mandatory. The manufacturer in his offer shall furnish details of the steel making process including refining, vacuum degassing.

5.2 The cross sectional area of the bloom shall not be less than ten times that of the rail section to be produced.

5.3 The manufacturer shall apply the best accepted code of practice throughout manufacturing process to ensure that the rails meet the stipulations of this specification. The manufacturer shall, on request, inform the purchaser of the measures adopted for ensuring the above.

5.4 For head hardening, rails should be suitably heat treated to meet the requirements of this specification. The method of heat treatment adopted by the manufacturer should be made available to the purchaser and prior approval of the purchaser shall be taken before execution of the order.

6 INFORMATION TO BE SUPPLIED BY THE PURCHASER

The purchaser shall provide the following information to the supplier when inviting tender for supply of rails according to this specification:

i) Rail steel grade (Table 1)
ii) Rail Section profile (Appendix I to III)
iii) Class of rail
iv) Length of rail.
v) Undrilled or drilled rails ends.
vi) Colour code requirements (Appendix IV)

7 GRADE, CHEMICAL COMPOSITION AND MECHANICAL PROPERTIES

The steel for rails shall be of fully killed quality and shall conform to chemical composition and mechanical properties given in Table 1. These limits for chemical composition are applicable both for tests on ladle samples and for check analysis of finished rails. The ladle and check analysis of the steel, when carried out by the method specified in the relevant part of IS: 228 or any other established instrumental/chemical method, shall be as specified in table-1.In case of any dispute, the procedure given in the relevant part of IS: 228 shall be referred to Table 1.

8 MARKING

8.1 Brand Marks

Brand marks shall be rolled in relief on one side of the web of each rail at least every 3.0 meters. The brand marks on the rails shall be clearly legible and shall be rolled in letters in relief at least 20mm in height and minimum 1.0 mm above surface of the web of the rail.

The brand mark shall include:

a) The rail section.

b) The grade of steel, i.e.

Grade 880	-	880
Grade 1080 HH	-	1080 HH
Grade 1080 Cr	-	1080 CR
Grade 880 Cu-MO	-	880 CM
Grade 880 Ni Cr Cu	-	880 NC
Grade 880 Vanadium	-	880 VN
Grade 880 Niobium	-	880 NB

c) Identification mark of the manufacturer

d) Month (using roman numbers) and last two digits of year of manufacture.

e) Process of steel making: -

i) Basic oxygen - O

ii) Electric - E

TABLE-1

Grade	Chemical Composition (percentage)											Mechanical Properties			
	C	Mn	Si	S (max)	P (max)	Al (max)	Mo (max)	Cr	V (max)	10^{-4} (ppm) max by mass O	Hydrogen content in liquid steel (max.)	UTS (MPa) (Min)	Yield Strength *** (MPa)(Min.)	Elongation % on gauge length – 5.65√So (min)	Running surface hardness (BHN)
880	0.60-0.80	0.80-1.30	0.10-0.50	0.030*	0.030*	0.015	-	-	-	-	1.6 ppm	880	460	10.0	Min 260**
1080 Cr	0.60-0.80	0.80-1.20	0.50-1.10	0.025	0.025	0.004	0.20	0.80-1.20	0.20	20	1.6 ppm	1080	560	9.0	320-350
1080 HH	0.60-0.80	0.80-1.30	0.10-0.50	0.030*	0.030*	0.015	-	-	-	-	1.6 ppm	1080	460	10.0	340-390

So = Cross sectional area of tensile test piece in mm^2

* 0.035 maximum for finished rail

The chemical compositions specified as above are applicable to Ladle analysis and Product Analysis. Manufacture shall ensure that chemical composition at ladle analysis should be such that product analysis also satisfies the requirement of chemical composition as above.

** Desirable Value.

*** Frequency to be mutually agreed by purchaser and manufacturer.

SPECIAL RAIL STEEL

TABLE 1 –Contd...

Grade	Chemical Composition (percentage)												Mechanical Properties			
	C	Mn	Si	S (max)	P (max)	Al (max)	Mo (max)	Cr	V (max)	Nb (min)	10^{-4}% (ppm) max by mass O	Hydrogen content in liquid steel (max.)	UTS (MPa) (Min)	Yield Strength (Min)	Elongation % on gauge length – 5.65√So (min)	Running surface hardness (BHN)
NIOBIUM (NB)	0.60-0.80	0.80-1.30	0.10-0.50	0.030*	0.030*	0.015	-	-	-	0.04	-	1.6 ppm	880	540	10.0	Min 260**
VANADIUM (VN)	0.60-0.80	0.80-1.30	0.10-050	0.025*	0.030*	0.015	-	-	0.20	-	20	1.6 ppm	880	630	9.0	Min 260

CORROSION RESISTANT RAIL STEEL

Grade	Chemical Composition (percentage)												Mechanical Properties			
	C	Mn	Si	S (max)	P (max)	Al (max)	Mo (max)	Cr	Cu	Ni	10^{-4}% (ppm) max by mass O	Hydrogen content in liquid steel (max.)	UTS (MPa) (Min)	Yield Strength (MPa)(Min)	Elongation % on gauge length – 5.65√So (min)	Running surface min hardness (BHN)
Copper- Molybdenum (CM)	0.60-0.80	0.80-1.30	0.10-0.50	0.030 *	0.030*	0.015	0.2-0.3	-	0.25-0.35	-	-	1.6 ppm	880	460	10.0	260
Nickel Chromium Copper (NC)	0.60-0.80	0.80-1.30	0.10-0.50	0.030 *	0.030*	0.015	0.25	0.50-0.65	0.3-0.4	0.25-0.40	-	1.6 ppm	880	520	10.0	260

So = Cross sectional area of tensile test piece in mm^2

* 0.035 maximum for finished rail

The chemical compositions specified as above are applicable to Ladle analysis and Product Analysis. Manufacture shall ensure that chemical composition at ladle analysis should be such that product analysis also satisfies the requirement of chemical composition as above.

** Desirable Value.

8.2 Hot Stamping

Each rail shall be identified by a numerical, alphabetical or combined alphabetical and numerical code which will be distinctly hot stamped at least once every 4.0m on the web in figures and letters at least 15mm high from which following information can be obtained:

i) The number of the cast from which the rails has been rolled with letter 'C'
ii) Number of the strand.
iii) For rails from change over bloom, cast number should be the preceding cast number with prefix letter 'B'.

8.3 Cold Punching

8.3.1 Following should be cold punched on one of end face of each rail
a) Inspecting Agency Id and Group ID
b) Shift No in which product inspected
c) Date of Inspection

8.3.2 For IU rails

In addition to marking mentioned in this Specification, the letter "IU" (Industrial Use grade) as the case may be in 15 mm size shall be stamped on both end faces of rails.

8.4 Colour code

Rails shall be painted as per colour code given in Appendix-IV to distinguish grade, class, length and other special requirements. Paint of good quality should be used with the prior approval of the Inspecting Agency.

9 SECTIONS AND DIMENSIONS

Each section of rails shall be accurately rolled to its respective template within the tolerances specified in this clause.

9.1 Permissible Variations in Dimensions

The tolerances in sectional dimensions shown here under shall be allowed, provided,

For Prime quality rail the actual weight computed by weighing short pieces of rails, not less than 300mm each in length, shall fall within 0.5 percent below and 1.5 percent above the calculated weight shown in Appendix I, II and III for each rail section.

For IU Rail the actual weight computed by weighing short pieces of rails not less than 300 mm each in length is not less than the calculated weight shown in Appendix I ,II, II-A & III of this specification for each section of rail by more than 1.5%.

9.1.1 Tolerances in sectional dimensions (For Prime Quality rails)

Dimention	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 minimum thickness
	-0.5 mm	
Verticality/Asymmetry	± 1.2mm	Measured by gauge shown in App. V)
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.	

9.1.2 Tolerances in sectional dimensions (for IU rails)

Dimension	Tolerance	Remarks
Overall Height of Rails	+2.0 mm -1.0 mm	
Width of Head	+2.0mm	This will be measured 14mm below the rails top
	-2.0mm	
Thickness of web	+2.0 mm	This will be measured at the point of minimum thickness
	-1.0 mm	
Width of flange	+1.5 mm	
	-2.0mm	
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.	

All other requirements as regards variation in dimensions, length and falling weight test shall be as per Prime Quality rail (Para 9.1.1).

9.2 Length of rails

The standard length of rails shall be 13m or 26m. However, in case rails are to be procured in longer lengths, the same shall be prescribed by the purchaser.

The manufacturer shall be entitled to supply in pairs short lengths up to 10% by weight of the quantity contracted for or ordered. Such shorter lengths shall not be less than 10.0 m in lengths for standard length of rails of 13m and shall not be less than 24 m

in lengths for standard length of rails of 26m. The short lengths shall be in multiples of 1.0m.

Type of Rail	Tolerance in length	
Prime Quality Rail	+20 mm	-10 mm
IU Grade	+30 mm	-30 mm

9.3 End Squareness

The deviation from square in both horizontal and vertical directions shall not exceed 0.60 mm on a length of 200mm.

9.4 Straightness

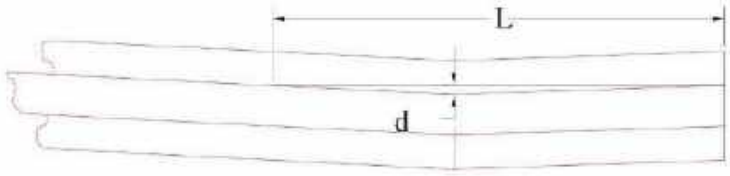
9.4.1 The straightness of the whole rail shall be judged by naked eye but in case of doubt or dispute, the affected portion shall be checked using 1.5 meters straight edge. The maximum permissible deviation shall be 0.7mm measured as the maximum ordinate on a chord of 1.5m. Wavy, kinky and twisted rails shall not be accepted.

9.4.2 End Straightness

The tolerances for end straightness shall be as indicated in Table 2 and as illustrated in figure 1 and 2.

Table –2

Sl. No	Straightness	Tolerance		
		Class 'A' rails	**Class 'B' rails**	**I U Grade rails**
1.	**Horizontal**	Deviation of 0.5 mm measured as maximum ordinate from the chord of 2.0 meters standard straight edge.	Deviation of 0.7 mm measured as maximum ordinate from the chord of 1.5 meters standard straight edge	Deviation of 1.5 mm measured as maximum ordinate from the chord of 1.5 meters standard straight edge
2.	**Vertical a) Up sweep**	Deviation of 0.4 mm measured as maximum ordinate from the chord of 2.0 meters standard straight edge.	Deviation of 0.5 mm measured as maximum ordinate from the chord of 1.5 meters standard straight edge.	Deviation of 1.5 mm measured as maximum ordinate from the chord of 1.5 meters standard straight edge.
	b)Down Sweep	NIL	NIL	NIL



L= Length of straight edge specified in Table 2
d= Maximum tolerance specified in Table 2.

Fig.1 TOP VIEW OF HORIZONTAL TOLERANCE AT RAIL ENDS

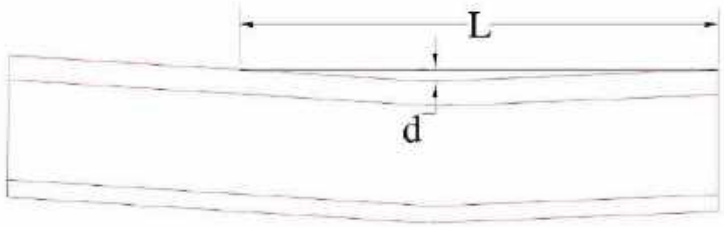


Fig.2: SIDE VIEW OF VERTICAL TOLERANCE AT RAIL ENDS

Any rail not complying with these requirements may be rectified once by the Manufacturer and offered for re-inspection.

10 FREEDOM FROM DEFECTS

10.1 The rails shall be free from all detrimental defects such as cracks of all kinds, flaws, piping or lack of metal etc. having an unfavorable effect on the behavior of the rail in service.

10.2 The absence of harmful internal defects shall be ensured by the continuous on-line ultrasonic examination. This examination shall be carried out for all rails under the responsibility of the manufacturer to the satisfaction of the Inspecting Agency.

10.3 The manufacturer in his offer shall furnish the detailed method of on-line ultrasonic testing of rails to be followed by him. The limits of permissible defects for ultrasonic testing of rails shall be as follows and the standard test piece shall be as shown in appendix-VI.

Head	:	1.5 mm dia through hole
Web	:	2.0 mm dia through hole
Web & foot junction	:	2.0 mm dia through hole
Foot	:	0.5mm deep, 12.5mm long and 1.0mm wide notch (inclined at 20° with vertical axis)

All Flash Butt Welds executed by the manufacturer for welding of rails in to long panels shall be subjected to ultrasonic testing along with other acceptance criteria as per provisions of Manual for Flash Butt Welding of Rails .

10.4 EDDY CURRENT TESTING:

The manufacturer should have eddy current testing covering bottom area of the rail as also the top surface and sides of surface head. The ECT probes should cover complete area of rail bottom and at least 80% area of top surface and sides of the head. The system should be capable of detecting the defects more than or equal to 0.5 mm depth and more than 10 mm long.

10.5.1 SURFACE QUALITY

10.5.1.1 Surface quality for Prime Quality Rail

10.5.1.2 Hot marks

Depth of rolling guide marks anywhere on the rail should not exceed 0.5mm. A maximum of two guide marks are allowed per rail. The width of each rolling guide mark should not exceed 4.0mm.

Depth and width of guide marks must conform to the following:

Depth	Minimum width	Maximum width
mm	mm	mm
0.5	1.5	4.0
0.4	1.2	4.0
0.3	0.9	4.0

10.5.1.3 Cold Marks

Depth of longitudinal or transverse cold formed scratches anywhere on the rail should not exceed 0.5mm.

10.5.1.4 Seams

Rails with seams greater than 0.2 mm in depth are not acceptable and shall be ground. On the running surface of the rail, dressing shall be limited to 0.3mm deep and in other places; it shall be limited to 0.5 mm deep.

10.5.2 Surface Quality for IU rail

The rails shall be of uniform section throughout and shall be generally sound and free from twists, cracks and major surface defects.

The following maxima of dimensions of surface defects in the rail shall, however, be acceptable:-

Type of defect	Location	Permissible dimensions of defects
Seams	(a) Table of rails, side of the head of rail, bottom and side of the foot of rail (excepting middle third of the foot). (b) Middle third of the bottom surface of the foot of the rail.	Up to 3mm in depth Up to 2mm in depth
Scabs	Table of rail and side of the head of the rail.	75 mm x 25 mm not to exceed 3 mm in depth.

Number of scabs shall not be more than 3 in the standard rail lengths and shall be separated from each other by at least six times the length of the scab. There shall be no scab within 200mm from the end of the rail.

10.5.3 Protrusions

All protrusions in the head or foot of the rail shall be ground to match the parent contour. Protrusions on web greater than 1.5mm high and 20mm square shall be ground. All protrusions affecting the fitment of the fishplate shall be ground.

10.6 During examination on the inspection banks, any shrinkage cavity, inclusion & segregation visible to the naked eye shall result in rejection of such rail or cutting out of the defective portion and re-examination.

10.7 Any operation carried out either in the hot or cold state with the object of hiding a defect is strictly forbidden.

11 Finishing

11.1 Cold straightening shall be effected by means of gradual pressure without impact. The rails may be roller straightened only once in each direction. The markings must be protected from the action of the straightening rolls.

11.2 The rails must be cut to length when cold. Burrs shall be removed without any perceptible beveling of the section.

12 TESTING FACILITIES

The manufacturer shall, at his own expense, supply all templates and gauges, prepare and supply test pieces and sample of steel, sample rails and drillings, and supply

labour and apparatus/equipment, for testing which may be required by the Inspecting Agency for carrying out all the tests and render reasonable assistance in execution of such tests as desired by the Purchaser/Inspecting Agency.

13 QUALIFYING CRITERIA

The following test shall be done for each rail section, grade and class after any change in the process of manufacture which may affect the results or annually for first three years after adoption of the revised specification. If results of these three years are consecutively found satisfactory, this frequency may be relaxed to three years by Purchaser. The test shall be undertaken by the supplier to demonstrate compliance with the qualifying criteria. If so desired, the purchaser /Inspecting Agency should be provided all facilities to check the sample and witness the test.

a) Residual stress measurement.
b) Fracture toughness measurement
c) Fatigue test

The samples for these tests shall be collected from finished rails. These samples shall not be subjected to any further mechanical or thermal treatment. The tests shall be carried out by an accredited/recognised laboratory approved by the purchaser and the test results shall be reported to the purchaser. The purchaser shall have access to all test records, calibrations and calculation which contribute to the final results.

In case any sample fails to meet the requirement laid in the qualifying criteria the manufacturer shall review its process of manufacturing within six months to eliminate any shortcomings and fresh qualifying criteria test shall be undertaken under intimation to the Purchaser.

14 NATURE OF TESTS

All tests shall be carried out as per latest version of reference specifications mentioned in this document.

14.1 ACCEPTANCE TESTS

14.1.1 Following acceptance tests shall be conducted for Grade 880, 1080 CR , 880 CM, 880 NC, 880 VN & 880 NB Rails:

a) Chemical Analysis
b) Tensile Test
c) Sulphur Print
d) Hardness test (for information and record)
e) Falling Weight Test
f) Hydrogen content
g) Inclusion Rating Level

14.1.2 For Grade 1080 Head Hardened (1080 HH) Rails all the tests stipulated in Para 14.1.1 above shall be conducted except tensile test and hardness test, prior to heat treatment. Following tests shall be carried out after heat treatment:

a) Tensile Test
b) Hardness Test
c) Macroscopic Test

14.2 The choice of the test sample location within the cast and strand shall normally lie with the manufacturer. The test sample position within the bloom/rail shall be selected at the discretion of the Inspecting Agency.

14.3 The initial test pieces and also the samples intended for retest must not be taken from the change over or intermediate blooms. Tests will only be carried out on these blooms when part or the whole of the adjacent cast has been withdrawn as not conforming to specification, or for supplying supplementary information, if required by the purchaser.

14.4 The test methods and the conditions, under which the tests are carried out, shall conform to the standard in force in the country of manufacture, in so far as they are not defined in the present specification.

15 TEST SAMPLE

15.1 The samples drawn for preparation of the test pieces shall be marked and stamped under the supervision of the Inspecting Agency.

15.2 If during the preparation of test pieces, any marks have been removed, they shall be replaced on the actual test pieces in the presence of the Inspecting Agency.

15.3 The test pieces shall be machined in the cold state and must not be subjected to any cold or hot working or heat treatment except for stress relieving treatment at 100° C for two hours for tensile test pieces at the option of the manufacturer.

16 CHEMICAL ANALYSIS

16.1 The manufacturer shall, at his own expense, make a complete ladle sample analysis of each cast from which the rails are to be rolled and shall submit an authenticated copy of the results to the Inspecting Agency in the proforma at Appendix-VII. The percentage of each specified element shall conform to the limits specified in table-1 of clause 7.

16.2 Extent of test (Product)

For casts	≤	150t, one test per cast.
For casts	>	150t, two tests per cast, one sample taken from first half of the cast and the other from the second half and different strand.

16.3 If chemical analysis of any cast fails to conform to the provisions of clause 7, the cast shall be subjected to the retest as per provisions of clause 16.4.

16.4 Retest

Two additional chemical analyses shall be made. If both analyses pass, the casts shall be considered as complying with clause 7. If one or both of the analyses fail, the cast shall be rejected.

16.4.1 If a cast does not satisfy the conditions of the specification, the intermediate metal belonging to preceding and succeeding cast shall be rejected or subjected to a retest.

16.5 The chemical analysis for specified elements shall also be made either from drillings taken from a hole drilled in the rail, or by spectrography or any other approved method from the position shown (in fig.3), rolled from the same cast or from the tensile test piece or piece selected by the Inspecting Agency and the percentage of each specified element shall be within the range specified in table 1 of clause 7.

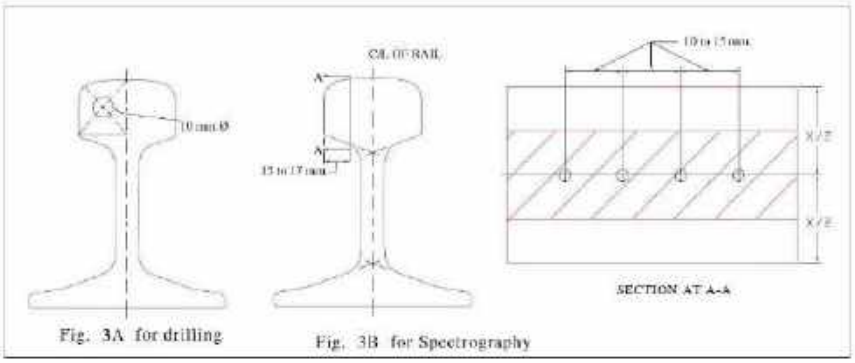


Fig. 3A for drilling

Fig. 3B for Spectrography

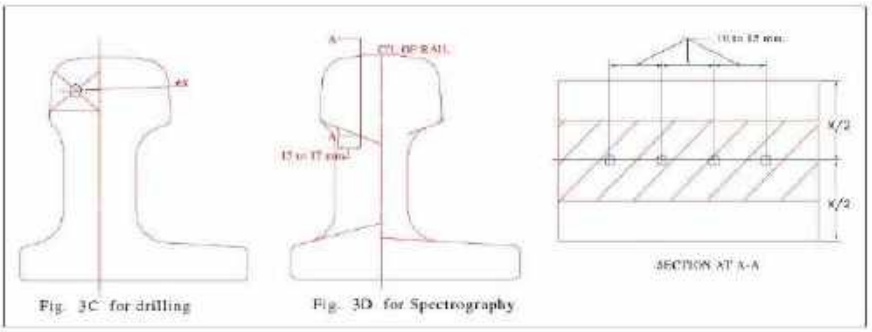


Fig. 3C for drilling

Fig. 3D for Spectrography

Fig. 3 Location Of Sample For Chemical Analysis

17 TENSILE TEST

17.1 For 880,1080 CR , 880 CM, 880 NC, 880 VN, And 880 NB grade Rails:

17.1.1 Nature of Tests

The manufacturer shall determine the tensile properties of the steel in accordance with the requirements of IS: 1608. Such tests shall be made on standard test pieces taken from position shown in figure 4.

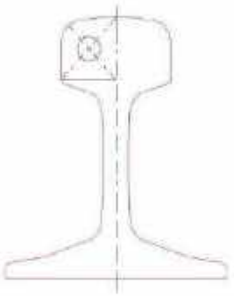


Fig .4 LOCATION OF TENSILE TEST PIECE

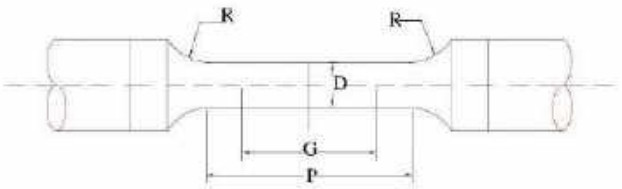


Fig . 5 STANDARD ROUND TENSILE TEST PIECE

Three sizes of the standard test piece, as shown in fig.5 are given in table 3, any of which may be adopted.

Table-3

Diameter	Area of cross section	Gauge length	Parallel length	Radius at Shoulder
D mm	A mm^2	G mm	P mm	R mm
20.64	333.33	100	120	18
14.56	166.67	75	90	13
10.00	78.50	50	55	10

17.1.2 Extent of Tests

For casts	≤	150t, one test per cast.
For casts	>	150t, two tests per cast, one sample taken from first half of the cast and the other from the second half and different strand.

17.1.3 Results to be obtained

The tensile strength obtained shall not be lower than the minimum value given in table 1, clause 7. Should the test piece break outside the middle half of the gauge length , it may be discarded and such breaks should not be considered as a failure of the test. A fresh test or fresh tests may be made by the manufacturer with a test piece or test pieces taken from rail from the same cast from which the discarded test piece was taken.

17.1.4 Retests

When the first tensile test does not give satisfactory result, three retests shall be made. The two retests shall be made on any of the rails from the same strand and the third retest on any of the rails from another strand of the same cast.

The check tests must not be carried out on rails produced from intermediate blooms of a sequential continuous cast.

If all the three retests are satisfactory, all the rails of the cast shall be accepted.

If any of the two retests from original strand does not give satisfactory result and the third retest from the other strand gives satisfactory result, all the rails of the original strand shall stand rejected and rest of the rails of the cast shall be accepted.

If third retest does not give satisfactory result, further retest shall be made strand by strand as above up to 50% of strands.

For sequential continuously cast material, in the event of rejection or withdrawal of rails from one or more strands of a cast, the rails rolled from the change over blooms between the ends of these strands of the previous and next cast in the sequence shall either be deemed not to comply with the requirements or shall be subjected to retest which shall be carried out, one on rail from the strand represented by the original test and the other from another strand. In the event of failure of either of these retests, rails rolled from change over blooms shall be rejected.

17.2 For 1080 HH (Head Hardened) Grade Rails

17.2.1 Nature of Test

The manufacturer shall determine the tensile properties of the steel in accordance with the requirements of IS: 1608.
Such test shall be made on standard test pieces taken from position as shown in fig.6 given below.

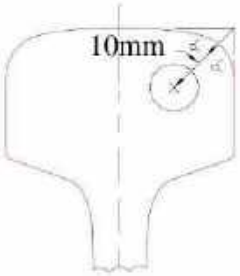


Figure -6

The diameter of the test piece shall be 6 mm with gauge length 3.54D or 21 mm.

17.2.2 Extent of Tests

One test per 1000 meter of heat treated rail from one heat.

17.2.3 Results to be Obtained

The minimum tensile strength after heat treatment shall not be less than 1080 MPa with a minimum elongation of 10% and 0.2% proof stress shall be measured and record maintained. If the test piece breaks outside the middle half of the gauge length, it may be discarded and such breaks shall not be considered as failure of the test. A fresh test or fresh tests may be made by the manufacturer with a test piece or test pieces taken from a rail from the same lot from which discarded test piece was taken. If the tests fail to meet the above requirements, the rails may be retreated at the option of the manufacturer and such rail may be retested as above.

18 Sulphur Print Test

18.1 For Grade 880/1080 Cr/1080 HH /880 CM/ 880 NC/ 880 VN & 880 NB Rails

18.1.1 Nature of test

A Baumann-type impression is obtained by the application of bromide paper, previously impregnated with a solution of Sulphuric acid, to the clean rail sections drawn from a location within the cast at the discretion of the Inspecting Agency.

The sections intended to be used for these tests are cold sawn and are then sufficiently cleaned on one surface in order to eliminate completely all machining marks and to obtain a sharp impression.

The initial samples and also those intended for the retests must not be taken from rails of changeover blooms. Tests will only be made on these rails when part or whole of the adjacent cast has been withdrawn as not conforming to specification.

18.1.2 Extent of Tests

Sulphur print tests shall be carried out at the rate of one each per cast for casts ≤ 150 t and two per cast for casts > 150 tones.

18.1.3 Results to be Obtained

The prints obtained must not reveal macrographic defects more marked than those of the limit prints shown in (or equivalent to those shown in) the album of macrographic prints given in Appendix-VIII.

18.1.4 Retests

If Macrographic examination (Sulphur print) conducted according to 18.1.3 does not give satisfactory results, three further samples, two from the same strand and one from the other strand shall be tested.

If all the retests are satisfactory, all the rails of the cast shall be accepted.

If any of the two retests from the original strand does not give satisfactory result but the third retest from the other strand gives satisfactory result, all the rails of the original strand shall stand rejected and rest of the rails of the cast shall be accepted.

If the third retest from the other strand does not given satisfactory result, further retest shall be conducted strand by strand.

For rails from sequential continuously cast blooms, in the event of rejection or withdrawal of rails from one or more strands of a cast as a result of macrographic test, the rails rolled from the change over blooms at the end of these strands of the next cast in sequence shall either be deemed not to comply with requirements or shall be subjected to retest which shall be carried out one on the rails from the strand represented by the original test and the other from any other strand. In the event of failure of either of these retests, the rails rolled from change over blooms shall be rejected.

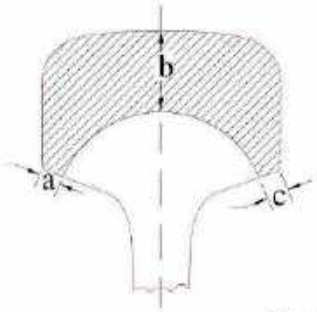
18.2 Inclusion Rating Level

18.2.1 The inclusion rating level, when examined as per IS: 4163, shall not be worse than 2.5 A, B, C, D thin or 2.0 A,B,C,D thick. Reporting for a parameter is to be in either thin series or thick series.

18.2.3 This test shall be done once every day at random .The record of the test results shall be communicated to purchaser.

18.3 Macro-Structure Test (For 1080 HH grade Rails)

One macro structure test of hardened layer per 1000 meter of heat treated rails shall be performed. Macro structure of heat affected zone shall confirm to figure 7.



a,c	≥	10 mm
b	≥	15 mm

Figure -7

19 Brinell Hardness Test

19.1 For 880/1080 CR ,880 CM, 880 NC, 880 VN & 880 NB Rails

19.1.1 Nature of Test

For carrying out this test, impression shall be made on the running tread of a test piece drawn at the discretion of the manufacturer. The test shall be performed in accordance with IS: 1500.

19.1.2 Extent of Test

Test on 10% of the casts shall be carried in case of 880 grade rails and 1080 grade rails for the purpose of records and for any corrective action as required. The hardness values should preferably be as under:

Grade 880 rails	Minimum 260 BHN
Grade 1080 HH	340 - 390 BHN
Grade 1080 Cr	320- 360 BHN

Results of the test should be average of five observations on the same test piece.

19.2 For 1080 Grade (Head Hardened) Rails

19.2.1 Nature of Test:

The hardness test on the rail head surface shall be carried out for 10% of rails, at one end of the rail (after removing the decarburised surface), at regular interval of heat treatment and the hardness should be in the range of 340-390 BHN for 1080 HH Grade Rails. In case of non-conformance of any rail, 9 consecutive rails on either side of the rails having non- conformed value shall be checked for hardness in the sequence. Rails

not meeting the hardness stipulations maybe retreated only once at the option of the manufacturer and such rails may be retested as above."

19.2.2 Results to be obtained:

Hardness of rail head surface after heat treatment shall be within Brinell Hardness No. 340 to 390.

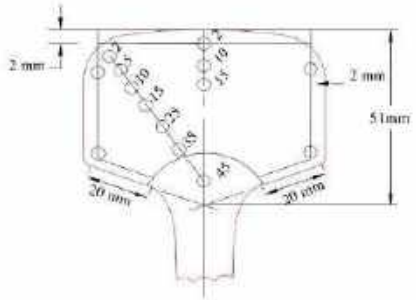


Figure -8 Hardness Distribution

19.2.3 Hardness Distribution Test

The hardness distribution test shall be conducted on transversely cut rail sections as shown in figure 8. Hardness value at any point shall not exceed 390BHN. The cross sectional hardness distribution of heat treated rails shall slope towards the inside. No sharp drop in hardness should be present. The hardness at 10 mm below, the rail head table at centre shall be 340 BHN minimum.
The hardness at 15 mm below, the rail head table at centre shall be between 315-325 BHN.

19.2.4 Extent of Test:

One hardness distribution test per 1000 m length of heat treated Rail shall be performed.

19.2.5 Microstructure :

Test piece for microstructure should be taken from the top of rail head. Test piece should be polished, etched and viewed under microscope X100 and X500 magnification. The microstructure shall be fine pearlite without formation of any martensite and Bainite. One test per 1000m of heat treated rail from one heat to be carried out.

20. FALLING WEIGHT TEST

20.1 Nature of Test

20.1.1 Falling weight test piece 1.5 meters long shall be cut from a location as per choice of the Inspecting Agency. For heat treated rails, the sample shall be taken after heat treatment. The test piece shall be placed in horizontal position with the head up on two iron or steel supports resting on a solid metal anvil. The weight of the metal anvil block shall not be less than 12 t and the area of the base not less than 4.2 sq.m. The

metal anvil block shall be supported direct on a concrete or masonry foundation weighing not less than 25 metric tons and having an area of not less than 9.3 sq.m. No timber or spring shall be permitted between the rail supports and the anvil or between the anvil and the foundation. Block guides shall be provided which shall permit free fall of the weight. The upper surface of the supports shall be curved to a radius of not more than 75mm.

One blow shall be delivered midway between the supports, by means of a freely falling iron weight or 'TUP', the striking face of which shall be rounded to a radius of not more than 125mm. the weight of the "TUP", the distance between the centre of the bearings , the height between the surface of the rail and the bottom of the "TUP", before the latter is released shall be as specified in table-4.

Table-4

Rail Section	Weight of Tup (kg)	Distance between centers of bearers (m)	Height of drop (m)
52 kg	1270	0.85	6.4
60kg	1270	0.85	7.4
ZU-1-60	1270	0.85	7.4
68 kg	1270	0.85	8.4

20.2 Extent of Tests

One Test per cast shall be carried out. Sample for 20% (minimum) of the fresh casts rolled per day shall be selected at random from straightened rails and the remaining samples shall be hot sawn. No retest shall be permitted on account of sample from straightened rails failed in Falling weight test. However, present provision of retests shall be applicable to rest 80% of samples taken from un-straightened rails. Choice of the test sample location within cast and strand shall normally lie with the manufacturer. The test sample position within bloom/ rail shall be selected at the discretion of the inspecting agency.

20.3 Results to be Obtained

20.3.1 The blow shall be sustained without fracture, and the permanent set resulting from the blow shall be measured after every test, over the specified distance between the centers of the bearer and recorded and advised to the purchaser.

20.3.2 The Inspecting Agency shall be entitled to test to destruction any rail piece subjected to the falling weight test or carry out any other test/examination/analysis in order to confirm that the rails are sound.

20.4Retest

Test sample shall be selected at random from the finished rails at the discretion of the Inspecting Agency.

If a falling weight test piece gives unsatisfactory result, three retests shall be made on two rails from the same strand and one from any other strand. If all the three tests are satisfactory, all the rails of the cast shall be accepted.

If either of the two tests from original strand gives unsatisfactory result and the third test from the other strand gives satisfactory results, all the rails of the original strand shall be rejected and other rails of the cast shall be accepted.

If the third test from the other strand gives unsatisfactory result, further retest shall be conducted strand by strand. For sequential continuous cast, if rails are rejected or withdrawn from one or more stands of a cast, the rails rolled from the changeover bloom at the end of the same strands of the previous and next cast in the sequence shall either be withdrawn or subjected to two retests, failure of either of retest shall result in rejection of the rails rolled form the changeover blooms of the same strand.

21 DETERMINATION OF HYDROGEN CONTENT

Vacuum degassing of liquid steel shall be done to reduce the hydrogen content. For this purpose RH degasser shall be used. The vacuum level and the duration for which liquid steel shall be kept under this vacuum level shall be decided mutually by the purchaser and the manufacturer. All measurement of hydrogen shall be done for the liquid steel in tundish or mould. Any other method of sampling or determination of hydrogen will require prior approval of the purchaser.

21.1 The measurement of hydrogen shall be done by following method:

21.1 (a) On-Line/Instantaneous Method-

HYDRIS is approved as method of on-line instantaneous measurement. The method of measurement as prescribed by the manufacturer of HYDRIS system shall be adopted with approval of the purchaser. Any other alternate method of determination of hydrogen will require prior approval of the purchaser.

(b) Pin Sample Method-

In case, the manufacturer has not installed the facility for on-line/instantaneous facility for measurement of hydrogen as described in Para (a) above, this method may be adopted with prior approval of the purchaser.

In this method, sample of liquid steel shall be taken by plunging the sampler 300 mm below the molten slag-metal interface. The sample should be held for 2 to 3 seconds and then quenched in cold water so that sample temperature falls to below 150^0C within 5 seconds.

The sample should be removed from cold water and packed in dry ice if analysis is carried out within 48 hours of sampling or placed in liquid nitrogen if analysis is to be carried out beyond 48 hours after sampling. Sampling should be done by 6 mm dia vacuum tube of Pyrex glass with wall of thickness of 1.0mm and approximately 0.5 mm thick in the fill-end. The tube should have desired vacuum of 10^{-3} mm of Hg.

The hydrogen sample can be analysed by inert gas fusion technique in which sample is to be fused at approximately 1900^0 C in an induction heating graphite crucible. A nitrogen carrier gas transports the released hydrogen to thermal conductivity cell. The amplified and integrated output of the cell is to be calibrated for hydrogen in ppm.

LECO – RH –2 Hydrogen Analyser may be used for Hydrogen determination.

Any other size and material of tube and method of hydrogen determination will require prior approval of the purchaser.

21.2 The level of hydrogen measured by the method described under Para 21.1 above shall be as under for acceptance of a heat for production of rail:

i) When measured by the method described under Para 21.1 (a) = 1.6 ppm max.

ii) When measured by the method described under Para 21.1 (b) = 2.0 ppm max.

22 QUALIFYING CRITERIA TESTS

22.1 Residual Stress Measurement

22.1.1 Residual stresses are measured by attaching electrical strain gauge at various locations on the rail surface. The surfaces to which the strain gauges are attached are progressively isolated from the rail and the relaxed strain are then used to estimate the stresses which have been relieved whilst the original residual stresses are taken to be these values but with a change of sign.

22.1.2 Procedure of Measurement of Residual Stresses

A test piece of 1.0 m length shall be cut from the sample rail. A 150 mm long area in the centre of the test piece shall be ground by hand using fine stones. During grinding it shall be ensured that the surface does not get overstressed. Final finishing shall be done using emery-paper. Strain gauges shall be fixed on minimum 7 & 12 locations on the rail as shown in figure 9.

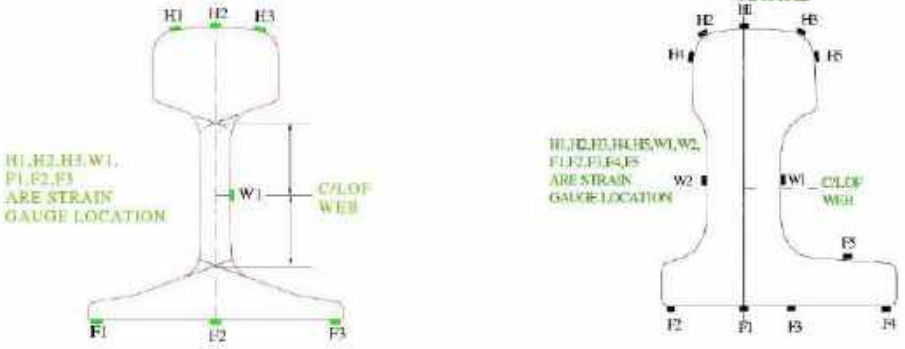


Fig 9-A Fig 9-B

Figure 9 : Location of strain Gauges to measure surface longitudinal residual stresses

The strain gauge location shall be accurately marked and these locations shall be cleaned with the help of Acetone and cotton. Rust shall be cleaned by acid and the acid cleaned locations shall be treated by basic solutions. Strain gauges shall be fixed using

proper adhesive and then connecting wires and terminals are soldered. Null balancing of strain shall be done and reading of each strain gauge brought to zero using balancing bridge and strain indicator. The wires shall be disconnected from the balancing bridge and 60 to 80 mm length of samples shall be cut containing all the strain gauges. Wires shall be connected to the balancing bridge and reading of strain gauge taken using same setting of balancing bridge as was before cutting the samples. The reading of strain at the corresponding locations shall be converted to stress by multiplying with Young's modulus of elasticity for steel (2.05×10^6 Kg/cm^2). Residual stress will have same value as relieved stress with opposite sign.

22.1.3 Results to be obtained

Residual tensile stress anywhere in the rail section shall not exceed 190 MPa, anywhere in the section.

22.2 Fracture Toughness K_{1c}

22.2.1 Test pieces and test methods

Tests shall be performed in accordance with **APPENDIX-XI**

22.2.2 Qualifying Criteria:

The values of K1c shall comply with table given below:

Steel grade	Minimum single value K_{1c}(MPa m ½)	Minimum Mean K_{1c}(MPa m ½)
880	26	29
1080 Cr	24	26
1080 HH	30	32

Note: In some circumstances K_Q values can be used for the purpose of qualification – see B.6 of appendix XI.

22.3 Fatigue Test

22.3.1 The constant amplitude fatigue test shall be carried out in accordance with ASTM E606.

22.3.2 Test Pieces

The test pieces shall be machined from the sample rail at a location at least 2m from the rail ends.

22.3.3 Number of Tests and Test Conditions

A minimum of three tests shall be performed under the following conditions:-

Test temperature = Ambient

Control variable shall be axial strain amplitude.

Note:- Load control during the test is acceptable provided the requirements of ASTM E606, clause 10.2.1 are complied with.

The strain cycle shall be symmetrical about the initial zero load strain level.

22.3.4 Each sample should endure 10 million cycles at strain of 0.00135. For rails of Grade 1080 HH the each sample should endure 10 million cycles at strain of 0.00166.

23 INSPECTION

23.1 The purchaser/Inspecting Agency shall have free access to the works of the manufacturer at all reasonable times. The Inspecting Agency shall be at liberty to inspect at every stage the process of steel manufacture and rail production and cross check the results of the stipulated tests when so desired by it.

23.2 Rails rolled from passed heats only shall be inspected by the Inspecting Agency or as mutually agreed by purchaser and Inspecting Agency . The acceptance procedure should not interfere with the normal manufacturing process. When a cast is rolled in several batches, tests carried out on the first part of the cast may be considered valid for the remaining parts of the cast in agreement with the Inspecting Agency.

23.3 Before the rails are submitted to the Inspecting Agency, these rails shall be properly examined by the manufacturer's inspectors and all defective rails shall be conspicuously marked and segregated. Rails passed in internal inspection should only be offered for examination by the Inspecting Agency.

23.4 The analysis of all casts rolled together with a report on the manufacturer's rejections shall be submitted in proforma as appendix IX and X to the Inspecting Agency.

23.5 After inspection, every accepted rail shall be clearly stamped with the Inspecting Agency's stamp at one end in the presence of the Inspecting Agency and painted as per colour code specified in clause 8.4. Cast numbers shall be cold stamped on the faces of the rails at one end.

23.6 Passed rails should be properly stacked on leveled and well drained stacking area. Rails shall be stacked in head up position with 100 x 25mm mild steel flats as spacers at a distance of 3.0 meters between successive layers.

23.7 For lifting rails, single point slinging is not permitted. For 13m long rails, there should be two lifting point spaced at 6 to 7.5 m apart and the maximum rail end overhang beyond the lifting point should not be more than half of the distance between the lifting point. For lifting longer rails the spacing between lifting points shall not be more than 7.5 m. Lifting of rails using magnetic chucks shall be preferred.

23.8 Sudden impact on rails during loading, unloading, stacking or transferring from one point to the other shall be avoided.

24 METHOD OF PAYMENT

24.1 The calculated weights of rails given in appendix I , II , II-A and III of this specification shall be regarded as actual weights and payment shall be made on these weights unless otherwise agreed to.

25 SHIPMENT

25.1 No rail shall be loaded or dispatched until notification has been received from the Inspecting Agency that it has been inspected and has satisfactorily passed all specified tests.

25.2 Industrial Use (IU) rails should be loaded in one wagon and should not be mixed with other rails for dispatch.

25.3 Import Shipment

The rails shall be loaded in bundles of three rails each bundle containing one rail upside down placed in between two rails snugly fitting and suitable tied by M.S. straps at four or more places along the length of rails so that they will not get loosened during their transportation from manufacturer's place to site of work.

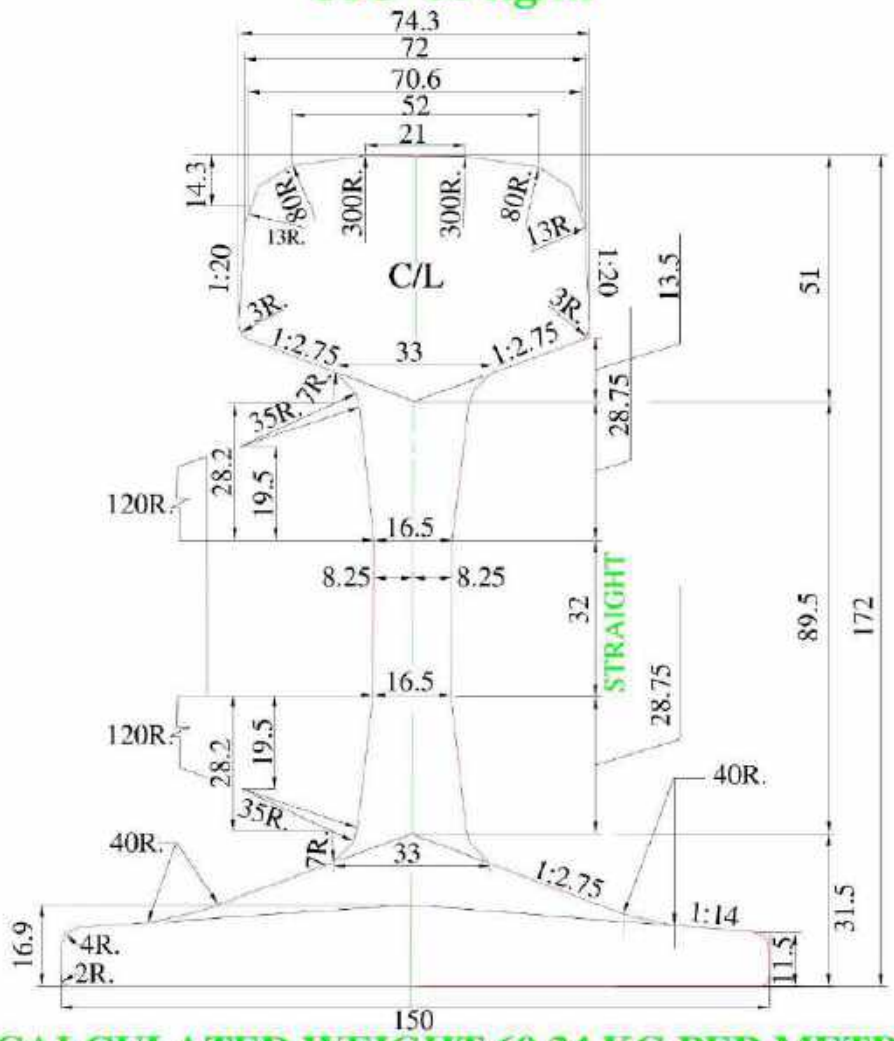
25.4 Rail Transport

Transportation within the country

Rails shall be loaded in wagons in layers with wooden/steel spacer flats between them so that the rails do not get damaged during transportation. Any missing bolster in BFRs/BRHs/BRNs shall be replaced by the manufacturer at his expense. The rails shall be tied as per the extant instructions.

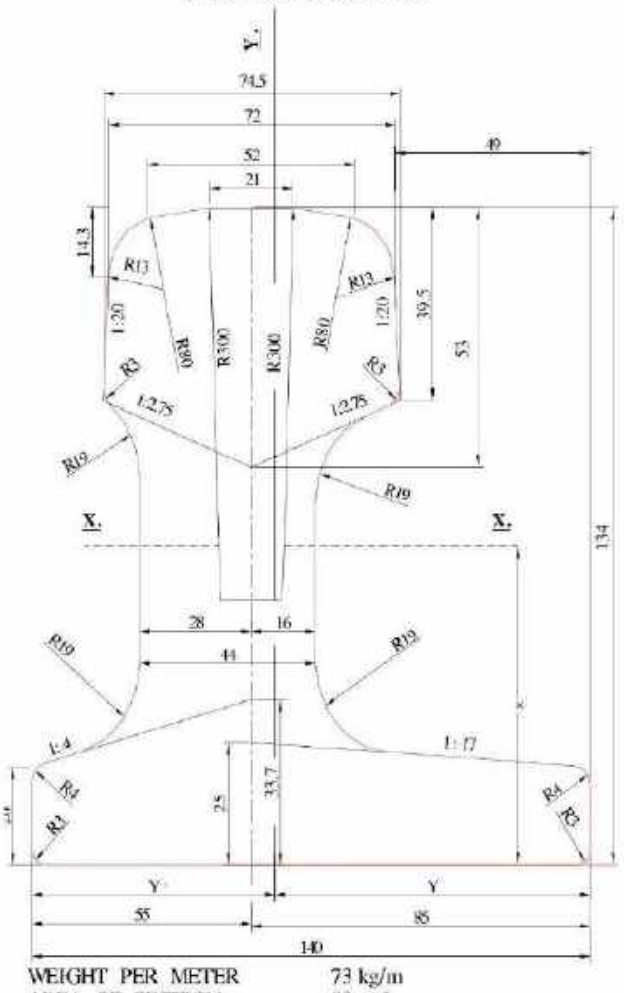
APPENDIX-II

UIC 60 kg/m



CALCULATED WEIGHT 60.34 KG PER METRE
CROSS SECTION AREA 76.86 sqcm

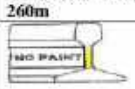
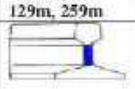
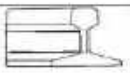
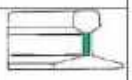
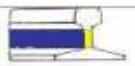
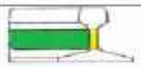
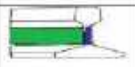
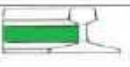
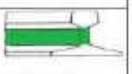
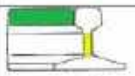
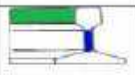
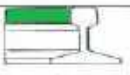
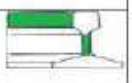
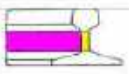
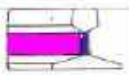
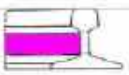
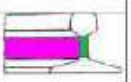
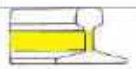
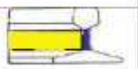
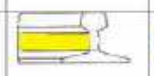
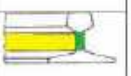
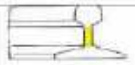
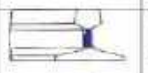
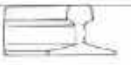
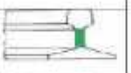
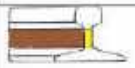
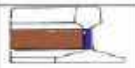
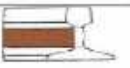
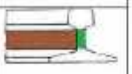
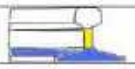
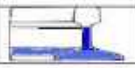
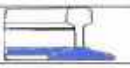
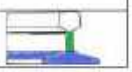
ZU 1-60 PROFILE



WEIGHT PER METER	73 kg/m
AREA OF SECTION	93 cm²

COLOUR CODE FOR RAILS

APPENDIX – IV

S. No.	Grade	Colour Code	13m, 26m, 130m, 260m	12m, 25m, 129m, 259m	11m, 24m	10m
1	GR. 880	Only common length wise colour code and no paint on web surface				
2	GR.1080 H.H.	In addition to common length wise colour code, **Blue** paint on both sides of web surface for a distance of 500 mm from each end.				
3	Gr 1080 Cr	In addition to common length wise colour code, **Green** paint on both sides of web surface for a distance of 500 mm from each end.				
4	CLASS'A' RAIL	In addition to common length wise colour code, grade code as 1, 2 & 3 and **Green** paint on gauge/non gauge face for a distance of **500 mm** from each end.				
5	NIOBIUM 880 NB	In addition to common length wise colour code, **Purple** paint on both sides of web surface for a distance of 500 mm from each end.				
6	VANADIUM 880 VN	In addition to common length wise colour code, **Yellow** paint on both sides of web surface for a distance of 500 mm from each end.				
7	Copper-Molybdenum 880 CM	In addition to common length wise colour code, **White** paint on both sides of web surface for a distance of 500 mm from each end.				
8	Nickel Chromium Copper 880 NC	In addition to common length wise colour code, **Brown** paint on both sides of web surface for a distance of 500 mm from each end.				
9	IU	In addition to common length wise colour code, **Blue** paint on end face of flange and both sides of flange for a distance of 500mm from each end.				

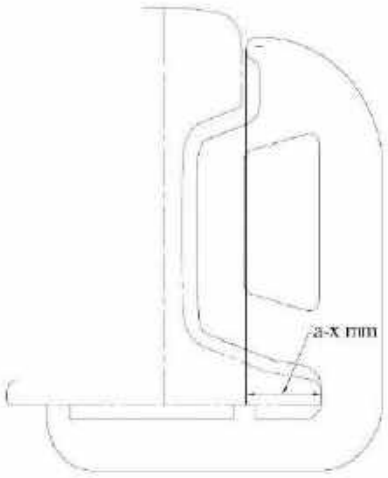
Common lengthwise colour code

1. No paint on gauge/non-gauge face indicates class 'B' rails.
2. Yellow paint on each end face on web region indicates **13m, 26m, 130m, and 260m** length.
3. Blue paint on each end face on web region indicates **12m, 25m, 129m, and 259m** length.
4. White paint on each end face on web region indicates **11m, 24m** length.
5. Green paint on each end face on web region indicates **10m** length.

Note: - This colour code is for new rails, for second hand rails Para 321 of IRPWM-1986 may be referred to.

GAUGE FOR CHECKING THE ASYMMETRY

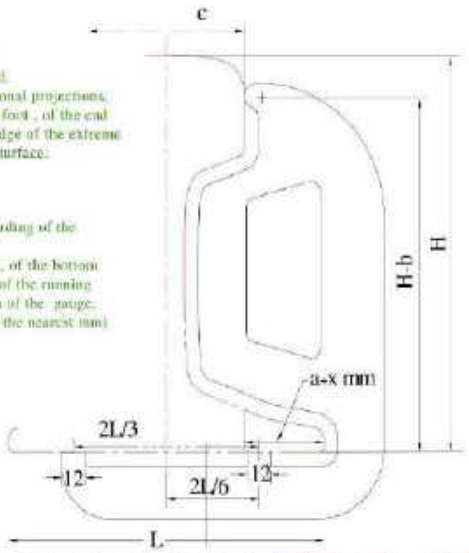
APPENDIX-V



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.

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

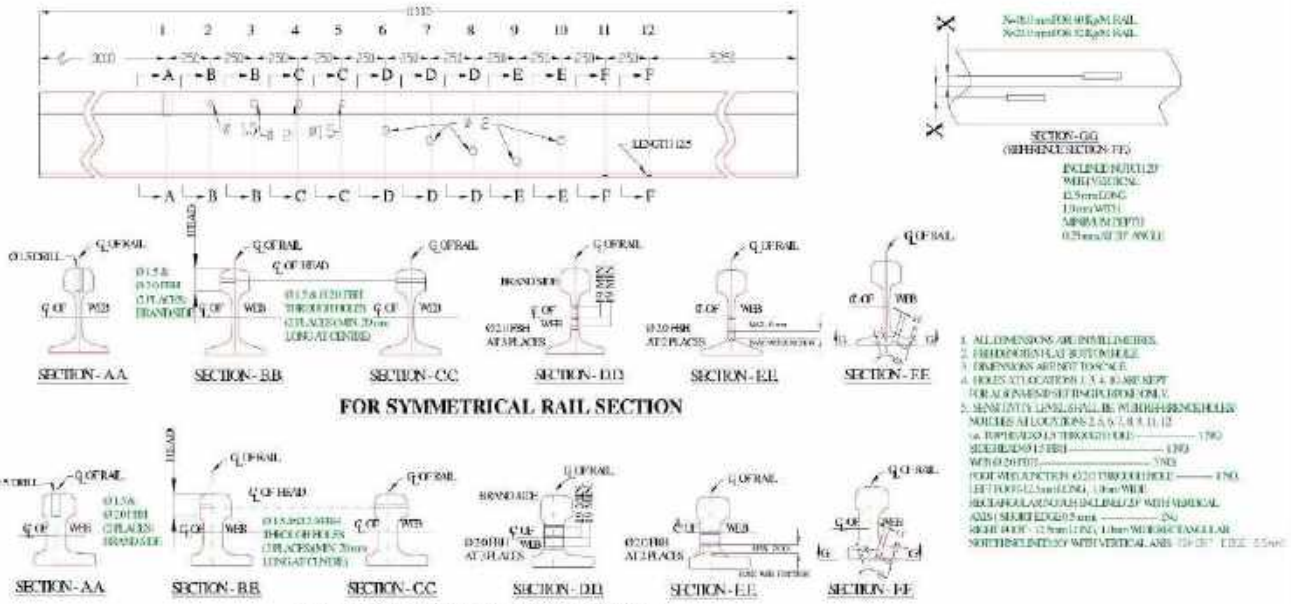
x = Depends on the section, according of the general table of tolerance.
b = Height ,relative to top of rail, of the bottom of the extreme rounding all of the running surface (for the construction of the gauge. H - b may be rounded off to the nearest mm)



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.

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.

APPENDIX-V


SECTION-GG
SECTION-AA
SECTION-BB
SECTION-CC
SECTION-DD
SECTION-EE
SECTION-FF
FOR SYMMETRICAL RAIL SECTION
FOR ASYMMETRICAL RAIL SECTION

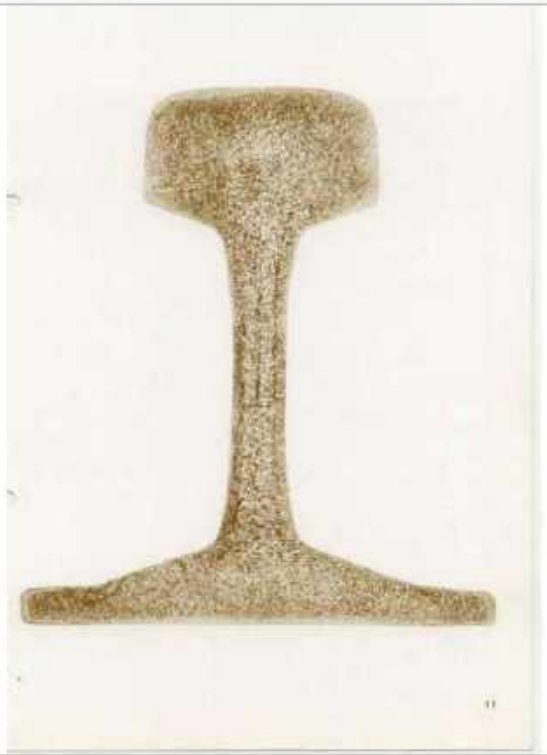
APPENDIX- VII

LADLE ANALYSIS OF RAIL STEEL

Date	HEAT NO	PERCENTAGE											H_2 PPM	O_2 PPM
		C	Mn	Si	S	P	Mo	Cr	V	Ni	Cu	Al		

APPENDIX- VIII

ALBUM
OF
MACROGRAPHIC PRINTS



APPENDIX- IX

MECHANICAL PROPERTIES

DATE	HEAT NO	SPECIMEN		BEFORE FRACTURE	AFTER FRACTURE	% ELONGATION	BREAKING LOAD kg	YS MPa	UTS MPa	HARDNESS (BHN)	FALLING WEIGHT TEST	
		DIA mm	AREA mm^2	INITIAL GAUGE LENGTH mm	FINAL GAUGE LENGTH mm						BROKEN/ NOT BROKEN	DEFLECTION mm
1	2	3	4	5	6	7	8	9	10	11	12	13

APPENDIX- X

DETAILS OF RAILS OFFERED FOR INSPECTION

Date	Heat no	No of blooms produced from the heat	Wt. Of blooms produced from the heat	No of rails of length										No of rails found o.k. after internal inspection										No of rails rejected during internal inspection									
1	2	3	4	5										6										7									
				260 M	259 M	130 M	129 M	26 M	25 M	24 M	13 M	12 M	11&10 M	260 M	259 M	130 M	129 M	26 M	25 M	24 M	13 M	12 M	11&10 M	260 M	259 M	130 M	129 M	26 M	25 M	24 M	13 M	12 M	11 &10M

APPENDIX -XI

Standard test method for the determination of the plane strain fracture toughness (K_{Ic}) of rails

B.1 Test methods

This test shall be performed in accordance with the requirements of ASTM E399 except where superseded by the requirements specified in this part of IRS T 12. The requirements specified in this part of the IRS T 12 apply only to the determination of plane strain fracture toughness of railway rail steels covered by the definitions and requirements of this standard.

B.2 Test pieces

B.2.1 The location of the test piece in the rail's transverse section is shown in Figure B.1.

B.2.2. The thickness "B" of all test pieces shall be 25 mm. For any rail head transverse profile the test piece width "W" shall be the maximum achievable of the following dimensions:

40 mm;
45 mm;
50 mm.

B.3 Number of tests

A minimum of 5 tests from each sample shall be performed.

B.4 Test conditions

B.4.1 Fatigue pre-cracking shall be carried out in the temperature range + 15° C to + 25° C using a stress ratio in the range > 0 <+0.1. Fatigue pre-cracking shall be carried out at a cyclic frequency in the range 15 Hz to 120 Hz. The final crack length to test piece width ratio shall be in the range 0.45 to 0.55.

B.4.2 The single edge notched bend test piece shall be loaded under displacement control using three point bending with a loading span (S) equal to four times the test piece width (W)

B.4.3 Tests shall be performed at a test temperature of -20° C ± 2° C. Test piece temperature shall be measured using a beadless thermocouple spot welded to the test piece at the location shown in figure B.2.

---

1) It is recommended that the chevron notch in ASTM E399 is used to avoid crack front curvature problems.

B.5 Analysis of test data

B.5.1The calculation of K_Q shall be in accordance with ASTM E399. The checks made to establish whether this value is a valid K_{1c} shall be in accordance with ASTM E399 except for the requirements of B.5.2 to B.5.6.

B.5.2 P_{max} / P_Q shall be less than 1.10 for force-crack mouth opening curves where pop-in does not occur before the intersection of the curve with the 95 % secant. There shall be no P_{max} / P_Q .criterion for other types of curve.

B.5.3 The linearity of force-crack mouth opening curves Ia. Ib. IIa and III (see figure B.3) shall be checked in the following manner.

Measure the distance (υ_1) between the tangent OA and the force-crack mouth opening curve at a constant force of 0.8 P_Q Measure the distance (υ) between the tangent OA and the force-crack mouth opening curve at a constant force of P_Q .for a test result to be valid... $\upsilon_1 \leq 0.25\upsilon$

B.5.4 The linearity of force – crack mouth opening curves IIb and IIc (see Figure B.3) shall be checked in the following manner.

Measure the distance between the tangent OA and the force-crack mouth opening curve at constant forces of 0.8 P_Q.and P_Q.recording these values as υ_1 *and υ*..respectively.

Measure the crack mouth opening values arising from all "pop-ins" that occur up to P_Q.this is done by measuring the horizontal distance travelled along the crack mouth opening axis between the start and finish of each "pop-in". Sum the values for "pon-ins" occurring below 0.8 P_Q.and for those occurring between 0.8 P_Q.and P_Q.recording them as $\sum\upsilon_{1p1}$ and $\sum\upsilon_{p1}$.respectively.

For a test result to be valid ...[. $\upsilon_1 - \sum\upsilon_{1p1}$] $\leq 0.25[\upsilon - (\sum\upsilon_{p1} + \sum\upsilon_{1p1})]$

B.5.5 The linearity criterion cannot be applied to force-crack mouth opening curve IV.

B.5.6 For all force-crack mouth opening curves the K_Q value shall be subjected to the validity check that the test piece thickness (B) and crack length (a) are equal to, or greater than, the value of $2.5(K_Q / R_{p0.2})^2$, where $R_{p0.2}$ ..is the 0.2% proof stress at the fracture test temperature of – 20°C.

B.6 Reporting of results

All measurements required to calculate the test result and to show that the test conditions were as specified in the test procedure shall be recorded.

All results shall be reported as either K_{1c} values K_{Q^*}.values or K_Q.values; where K_{Q^*}.values are those K_Q values which failed the validity criteria due only to one or more of the following:

i) $P_{MAX} / P_Q > 1.1$;
ii) Exceedence of the $2.5(K_Q / R_{p0.2})^2$ criterion;
iii) Crack mouth opening displacement-force relationship.

The mean and standard deviation of both $K_{1c}$and K_{Q^*}results shall be recorded. For each grade of rail tested these results shall be included in a table giving the following information.

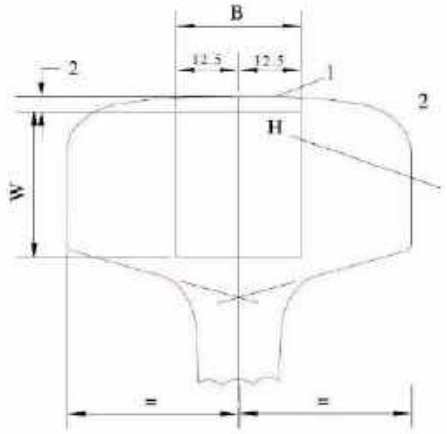
Steel Grade	0.2% proof stress at -20^0CMPa	Mean K_{1c} (MPa $m^{1/2}$)	Number of K_{1c} results	Samples standard deviation (MPa $m^{1/2}$)	Mean (K_Q) (MPa $m^{1/2}$)	Number of K_{Q^*} Results	Sample standard deviation (MPa $m^{1/2}$)

The value to be used for the acceptance criteria is that of the mean K_{1c} and shall be based on a minimum of five K_{1c} values.

When five K_{1c} values have not been obtained any K_Q *.values shall be included with any K_{1c} values in the mean value to be used for the acceptance criteria. In this event the number of test results shall be at least ten.

All values of K_{1c} And K_{Q^*} shall be above the minimum value specified in Table 2.

Dimension in millimetre



Figure

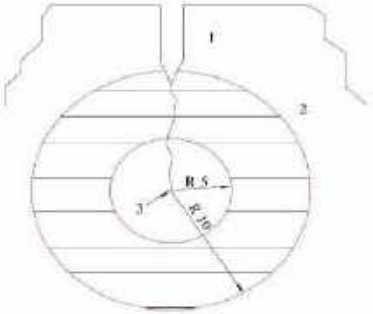
Key

1. Notch machined in this face
2. Section through rail heat
3. Letter 'H' to be stamped on end face of test piece as shown

B = 25
W = see B.2.2
For all other test piece proportions See ASTM E399

Figure B.1-Location and section of fracture toughness test pieces

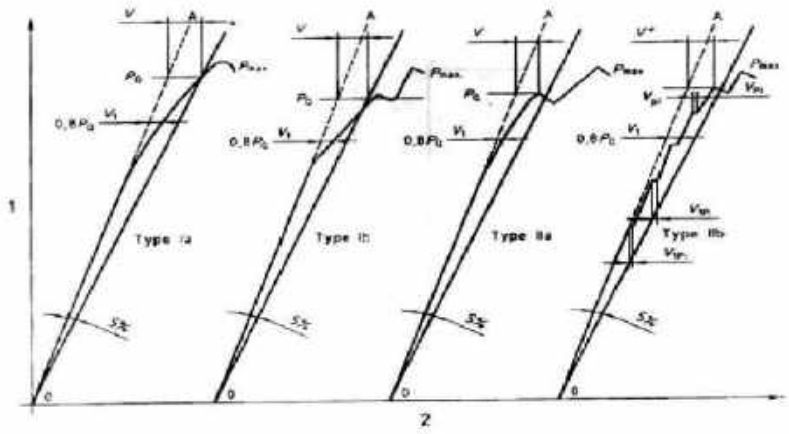
Dimension in millimetres



Key

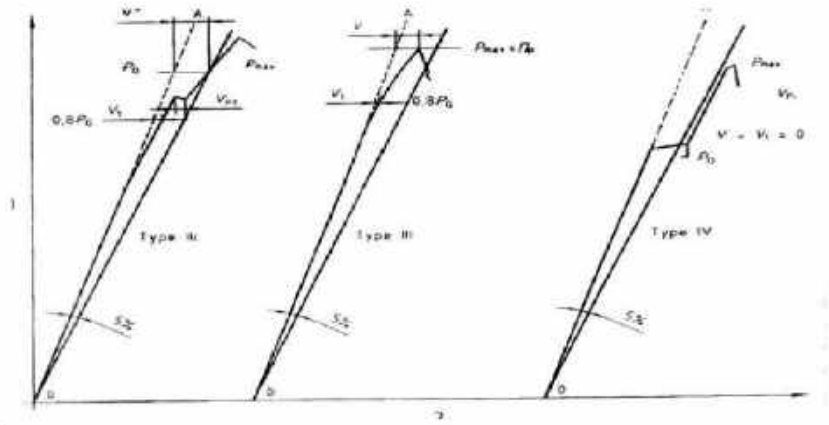
1. Notch
2. Thermocouple to be placed in the shaded zone
3. Fatigue crack tip

Figure B.2-Location of thermocouple on fracture toughness specimens



Key

1. Force, P
2. Crack mouth opening displacement (v)



Key

1. Force, P
2. Crack mouth opening displacement (v)

Figure B.3 – Force-Crack mouth opening curves

भारत सरकार - रेल मंत्रालय
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Government of India-Ministry of Railways
Research Designs & Standards Organisation
Lucknow - 226 011
DID (0522) 2460116
DID (0522) 2465310

No. CT/Specification/T-12 Dated: 29.09.2011.

As per list enclosed.

Sub: Addendum and Corrigendum Slip to Specification for Flat Bottom Rails – IRS T-12:2009.

विषय: समतल आधार रेलों के विशिष्टि – आई0 आर0 एस0 टी0 12 : 2009 में संशोधन।

Ref: (i) Railway Board's letter no. Track/21/2010/0513/7 dated 14.09.2011.
(ii) This office letter of even no. dated 22.07.2011.

संदर्भ: (i) रेलवे बोर्ड के पत्र संख्या ट्रेक/21/2010/0513/7 दिनांक 14/9/2011।
(ii) इस कार्यालय के सम संख्या पत्र दिनांक 22/07/2011।

****

Please find enclosed herewith Addendum and Corrigendum Slip No. 1 to Indian Railway Specification for Flat Bottom Rails, IRS T-12:2009.

This has the approval of competent authority.

DA: 05 Pages

(सुनवीर सिंह)
(कार्यकारी निदेशक/रेलपथ –1)
कृते महानिदेशक/ रेलपथ

ADDENDUM & CORRIGENDUM SLIP NO. 1
TO
INDIAN RAILWAYS STANDARD SPECIFICATION FOR FLAT BOTTOM RAILS
IRS T-12:2009

I. In Table No. 1 of chemical composition and mechanical properties corresponding to Clause 7 for corrosion resistant rail is replaced as per table enclosed herewith as Annexure-A.

II. Following note below table of Para 9.1.2 is deleted.
"All other requirements as regards variation in dimensions, length and falling weight tests shall be as per prime quality rail 9.1.1"

III. Appendix V (wrongly written) at Page no. 34 is replaced with Appendix VI and VI-A for test rail for USFD testing of rails referred in Clause10.3. Details of test rail for symmetrical rail section is shown in Appendix VI and details of test rail for asymmetrical rail section is shown in Appendix VI-A.

IV. Clause 23.6 at is to be replaced as under: -

"23.6 Passed rails should be properly stacked on leveled and well drained stacking area. Rails shall be stacked in head up position with 100 x 25 mm mild steel flats as spacers at a distance of 4.0 m between successive layers. Recommended arrangement for stacking of rails shall be as per RDSO drawing no. RDSO/T-6219, as Appendix XII."

TABLE 1 – Contd...

CORROSION RESISTANT RAIL STEEL

Grade	Chemical Composition (percentage)												Mechanical Properties			
	C	Mn	Si	S (max)	P (max)	Al (max)	Mo (max)	Cr	Cu	Ni	10^{-4}% (ppm) max by mass O	Hydrogen content in liquid steel (max.)	UTS (MPa) (Min)	Yield Strength (MPa)(Min.)	Elongation % on gauge length – 5.65√So (min)	Running surface min hardness (BHN)
Copper-Molybdenum (CM)	0.60-0.80	0.80-1.30	0.10-0.50	0.030*	0.030*	0.015	0.2-0.3	-	0.25-0.35	-	-	1.5 ppm	880	460	10.0	260
Nickel Chromium Copper (NC)	0.60-0.80	0.80-1.30	0.10-0.50	0.030*	0.030*	0.015	0.25	0.50-0.65	0.3-0.4	0.25-0.40	-	1.5 ppm	880	550	10.0	260

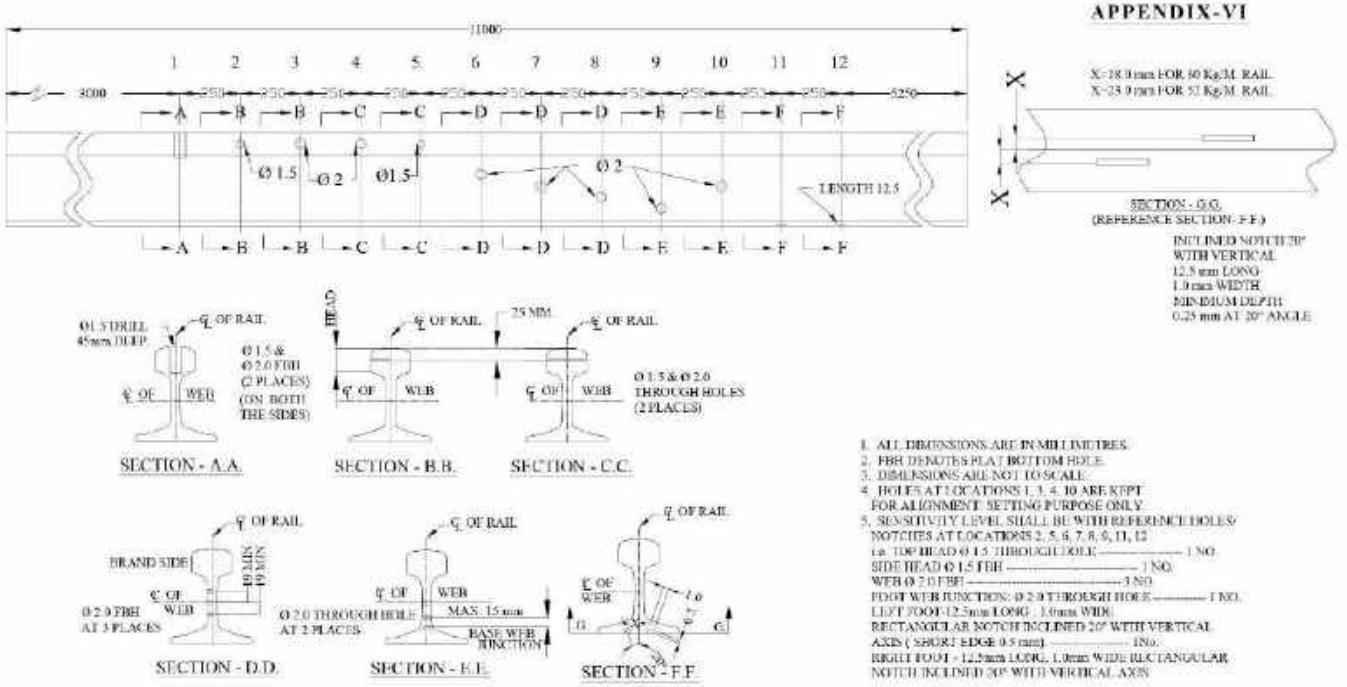
So = Cross sectional area of tensile test piece in mm^2

* 0.035 maximum for finished rail

The chemical compositions specified as above are applicable to Ladle analysis and Product Analysis. Manufacture shall ensure that chemical composition at ladle analysis should be such that product analysis also satisfies the requirement of chemical composition as above.

** Desirable Value.

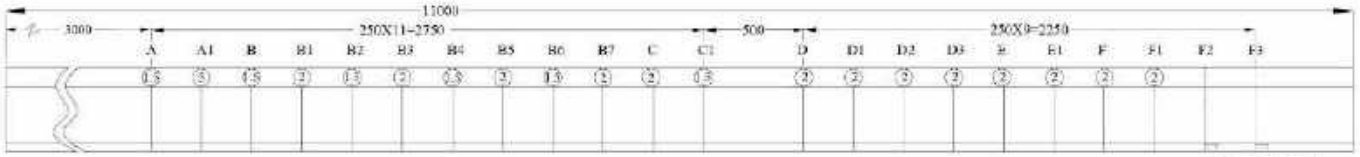
APPENDIX-VI

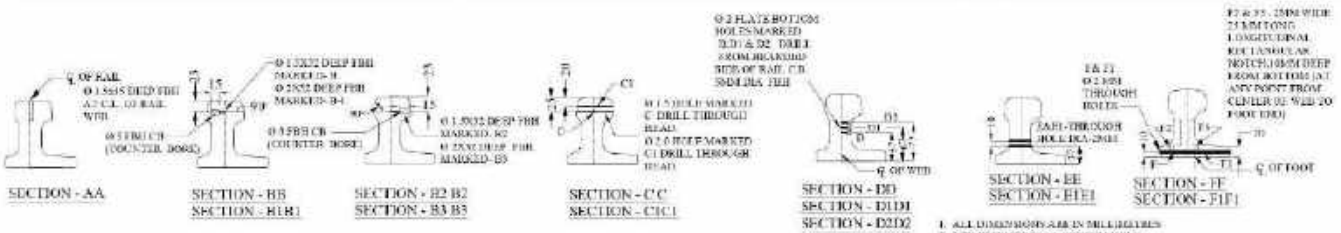


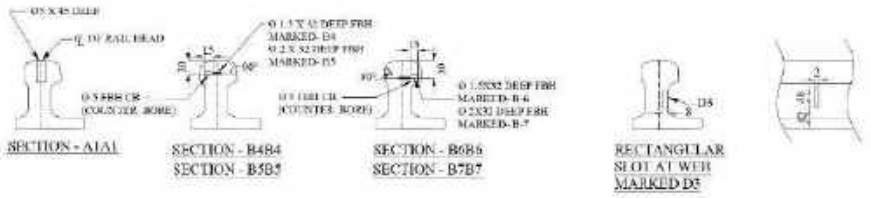
1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. FBH DENOTES FLAT BOTTOM HOLE.
3. DIMENSIONS ARE NOT TO SCALE.
4. HOLES AT LOCATIONS 1, 3, 4, 10 ARE KEPT FOR ALIGNMENT SETTING PURPOSE ONLY.
5. SENSITIVITY LEVEL SHALL BE WITH REFERENCE HOLES/ NOTCHES AT LOCATIONS 2, 5, 6, 7, 8, 9, 11, 12
   i.e. TOP HEAD Ø 1.5 THROUGH HOLE ---------- 1 NO.
   SIDE HEAD Ø 1.5 FBH ---------- 1 NO.
   WEB Ø 2.0 FBH ---------- 3 NO.
   FOOT WEB JUNCTION: Ø 2.0 THROUGH HOLE ---------- 1 NO.
   LEFT FOOT-12.5mm LONG , 1.0mm WIDE
   RECTANGULAR NOTCH INCLINED 20° WITH VERTICAL
   AXIS (SHORT EDGE 0.5 mm) ---------- 1No.
   RIGHT FOOT - 12.5mm LONG, 1.0mm WIDE RECTANGULAR
   NOTCH INCLINED 20° WITH VERTICAL AXIS

FOR SYMMETRICAL RAIL SECTION

APPENDIX-VI-A

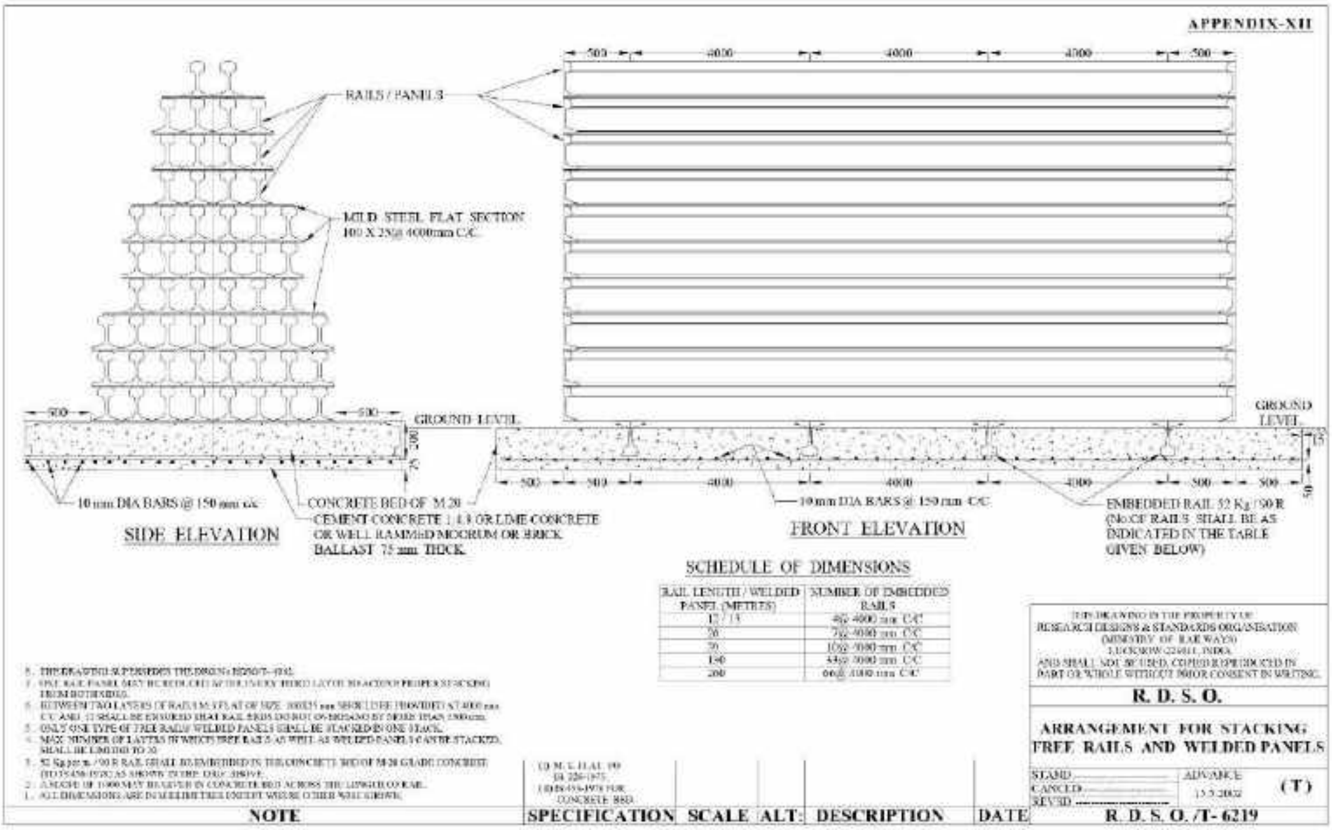






FOR ASYMMETRICAL RAIL SECTION

1. ALL DIMENSIONS ARE IN MILLIMETRES
2. ⌴ DENOTES FLAT BOTTOM HOLE
3. DIMENSIONS ARE NOT TO SCALE.
4. HOLES AT LOCATIONS A, A1, B1, B3, B4, B5, B6, B7, C1, D5 & E1 ARE KEPT FOR ALIGNMENT/ SETTING PURPOSE ONLY.
5. SENSITIVITY LEVEL SHALL BE WITH REFERENCE HOLES/ NOTCHES AT LOCATIONS B, B5, C, D, D1, D2, E, F, F1
   i.e. TOP HEAD Ø 1.5 THROUGH HOLE ---------- 1 NO.
   SIDE HEAD Ø 1.5 FBH ---------- 1 NO. EACH SIDE
   WEB Ø 2.0 FBH ---------- 5 NOS
   FOOT WEB JUNCTION Ø 2.0 THROUGH HOLE ---------- 1 NO.
6. LEFT FOOT-Ø2.0 THROUGH HOLE (LENGTH MIN 20MM)
   AT THE CENTRE OF SIDE OF FOOT (AT ONE SIDE)------1 NO.
   RIGHT FOOT-Ø2.0 THROUGH HOLE (LENGTH MIN 20MM)
   AT THE CENTRE OF SIDE OF FOOT
   (AT OPPOSITE IN SAME LINE ALONG THE LENGTHSIDE) SIDE)-----1 NO.
7. IT IS ENVISAGED THAT THE BOTTOM OF ALL BLIND HOLES ARE DRILLED FLAT FOR TWO MM.
8. SPECIFIED HOLE TOLERANCE
   1.5 MM HOLE : 1.5 TO 1.55 MM
   2.0 MM HOLE : 2.0 TO 2.06 MM
   5.0 MM HOLE : 5.0 TO 5.06 MM
   (ALL OTHER TOLERANCES OF THE ABOVE HOLES SHALL BE IN ACCORDANCE WITH ASTM E 428).
9. NOT TO SCALE.


APPENDIX-XII
RAILS / PANELS
MILD STEEL FLAT SECTION
GROUND LEVEL
10 mm DIA BARS @ 150 mm c/c
CONCRETE BED OF M 20
CEMENT CONCRETE 1:4:8 OR LIME CONCRETE OR WELL RAMMED MOORUM OR BRICK BALLAST 75 mm THICK.
SIDE ELEVATION
FRONT ELEVATION
EMBEDDED RAIL 52 Kg / 90 R (No. OF RAILS SHALL BE AS INDICATED IN THE TABLE GIVEN BELOW)
SCHEDULE OF DIMENSIONS
RAIL LENGTH / WELDED PANEL (METRES)
NUMBER OF EMBEDDED RAILS
5. ONLY ONE TYPE OF FREE RAILS/ WELDED PANELS SHALL BE STACKED IN ONE STACK.
4. MAX. NUMBER OF LAYERS IN WHICH FREE RAILS AS WELL AS WELDED PANELS CAN BE STACKED, SHALL BE LIMITED TO 20
NOTE
SPECIFICATION
SCALE
ALT:
DESCRIPTION
DATE
R. D. S. O.
ARRANGEMENT FOR STACKING FREE RAILS AND WELDED PANELS
STAND.
CANCLD.
REVSD.
ADVANCE
(T)
R. D. S. O. /T- 6219

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Government of India-Ministry of Railways
Research Designs & Standards Organisation
Lucknow - 226 011
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DID (0522) 2466310

No. CT/Specification/T-12 Dated: 03.02.2012.

As per list enclosed.

Sub: Addendum and Corrigendum Slip to Specification for Flat Bottom Rails – IRS T-12:2009.

विषय: समतल आधार रेलों के विशिष्टि – आई0 आर0 एस0 टी0 12 : 2009 में संशोधन।

Ref: Railway Board's letter no. Track/21/2010/0513/7 dated 01.02.2012.

संदर्भ: रेलवे बोर्ड के पत्र संख्या ट्रैक/21/2010/0513/7 दिनांक 01/02/20112

****

Please find enclosed herewith Addendum and Corrigendum Slip No. 2 to Indian Railway Specification for Flat Bottom Rails, IRS T-12:2009.

This has the approval of competent authority.

DA: 01 Page

(सोनवीर सिंह)
(कार्यकारी निदेशक/रेलपथ –1)
कृते महानिदेशक/ रेलपथ

ADDENDUM & CORRIGENDUM SLIP NO. 2

TO

INDIAN RAILWAYS STANDARD SPECIFICATION FOR FLAT BOTTOM RAIL

IRS T-12:2009

26.0 WARRANTY

As a warranty for supply of rails free from manufacturing defects by rail suppliers, after initial USFD testing of new rails in rail manufacturing plants, a USFD test free period of 25% of service life of rails in terms of GMT as given below (Para 302 (i) (d) of IRPWM-2004 as amended from time to time) shall be applicable. This clause of test free period of 25% of service life of rails shall also be applicable for all types of 90 UTS (grade 880) and higher grade of rails of this specification.

Rail Section	Assessed GMT service life for 90 UTS rails
60 Kg	800
52 Kg	525
90 R	375

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No. CT/Specification/T-12 Dated: 27.06.2012.

As per mailing list enclosed.

Sub: Addendum and Corrigendum Slip to Specification for Flat Bottom Rails – IRS T-12:2009.

विषयः समतल आधार रेलों के विशिष्टि – आई0 आर0 एस0 टी0 12 : 2009 में संशोधन।

Ref: Railway Board's letter no. Track/21/2008/0801/7 dated 22.06.2012.

संदर्भः रेलवे बोर्ड के पत्र संख्या ट्रैक/21/2008/0801/7 दिनांक 22/06/2012

****

Please find enclosed herewith Addendum and Corrigendum Slip No. 3 to Indian Railway Specification for Flat Bottom Rails, IRS T-12:2009.

This has the approval of competent authority.

DA: As above

(सोनवीर सिंह)
(कार्यकारी निदेशक/रेलपथ–1)
कृते महानिदेशक/ रेलपथ

ADDENDUM & CORRIGENDUM SLIP NO. 3

TO

INDIAN RAILWAYS STANDARD SPECIFICATION FOR FLAT BOTTOM RAIL

IRS T-12:2009 DATED 27.6.2012

The Rails in regard to their quality, manufacturing process, chemical composition, testing/ retesting, qualifying criteria, etc., shall be complying Indian Railway Specification IRS-T-12-2009 for Flat Bottom Rail with following amended clauses.

1. **Clause 5.4: Head Hardening Process**

   For head hardening, rails shall be suitably heat treated to meet the requirements of the specification. The method of heat treatment adopted by the manufacturer should be made available to the purchaser. In-line established deep Head Hardening methods using air quenching process would be acceptable with the prior approval of the Purchaser. Any other process of Head Hardening would also be acceptable with the prior approval of the Purchaser.

2. **Clause 7: Grade, Chemical Composition and Mechanical Properties**

   The steel for the rails shall be of fully killed quality and shall confirm to chemical composition and mechanical properties given in Table -1. Micro alloying elements of Cr(0.3% max.) & V (0.01% max.) may also be acceptable, as it helps in improving mechanical properties. The limits for chemical composition are applicable both for tests on ladle samples and for check analysis of finished rails. Ladle and check analysis of steel, will be carried out by the method specified in the relevant part of IS: 228 or by any other established instrumental/chemical method of testing with the approval of the purchaser. In case of any dispute, the procedure given in the relevant part of IS:228 shall be referred.

3. **Clause 8.1: Brand Marks**

   With the prior approval of purchasers, brand marks of suitable size clearly legible, shall be rolled in relief on one side of web at 3.0 to 4.0 meters interval.

   The brand mark shall include:

   a) The rail section.
   b) The grade of steel, i.e.
      Grade 880 - 880

Grade 1080 HH	-	1080 HH
Grade 1080 Cr	-	1080 CR
Grade 880 Cu-MO	-	880 CM
Grade 880 Ni Cr Cu	-	880 NC
Grade 880 Vanadium	-	880 VN
Grade 880 Niobium	-	880 NB

c) Identification mark of the manufacturer

d) Month (using roman numbers) and last two digits of year of manufacture.

e) Process of steel making: -
   i) Basic oxygen - O
   ii) Electric - E

4. Clause 8.2: Hot Stamping

Each rail shall be identified by a numerical, alphabetical or combined alphabetical and numerical code which will be distinctly hot stamped at least once every 5.0m on the web in figures and letters of suitable size from which following information can be obtained:

i) The number of the cast from which the rails has been rolled with letter 'C'

ii) Number of the strand.

iii) For rails from change over bloom, cast number should be the preceding cast number with prefix letter 'B'.

5. Clause 8.3: Cold Punching

8.3.1 Following should be cold punched on one of end face of each rail

a) Inspecting Agency ID and Group ID
b) Shift No in which product inspected
c) Date of Inspection

To avoid damage to the HH rails, instead of cold punching, any other method of marking can be adopted, with the prior approval of the Purchaser.

6. **Clause 8.4:Colour code**

Rails shall be painted as per colour code given in Appendix-IV to distinguish grade, class, length and other special requirements. Paint of good quality should be used with the prior approval of the Inspecting Agency. Alternatively , different colour code may also be decided by the supplier with the prior approval of purchaser.

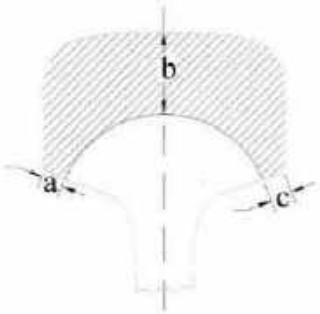
7. **Clause 9.2: Length of Rails**

The standard length of rail shall be 13 meters or 25 meters or 26 meters. The manufacturer shall be entitled to supply in pairs of short lengths up to 10% by weight of the quantity contracted for or ordered. Shorter lengths shall not be less than 10.0m in length for 13.0M and shall not be less than 23M in lengths for 25M and 24 M in lengths of rail for 26M. Short lengths shall be in multiples of 1.0M. In case of ZU 1-60, 1080 HH grade Rails, length shall be suitable for turnout design offered/proposed.

Type of Rail	Tolerance in length	
Prime Quality Rail	+20 mm	-10 mm
IU Grade	+30 mm	-30 mm

8. **Clause 18.3: Macro-Structure Test (For 1080 HH Grade Rails)**

One macro-structure test of hardened layer per 1000 meters of heat treated rails shall be performed. Macro structure of heat affected zone shall confirm to figure 7.



a,c	≥	10 mm
b	≥	15 mm

Figure -7

Due to specific process of heat treatment being adopted by the manufacturer e.g. inline air quenching method, Macro-structure of heat affected zone may not

show distinct zones, as shown above in figure-7, supplier should advise about the same to the purchaser in advance.

9. Clause 19.2.3: Hardness Distribution Test

The hardness distribution test shall be conducted on transversely cut rail section as shown in figure-8 . Hardness value at any point shall not exceed 390BHN. The cross sectional hardness distribution of heat treated rails shall

slope towards the inside. No sharp drop in hardness should be present. The hardness at 10mm below, the rail head shall be 340BHN minimum. The hardness at 15 mm below the rail head table at centre shall be minimum 315BHN.

10. Clause 21: Determination of Hydrogen Content

Vacuum degassing of liquid steel shall be done to reduce the hydrogen content. For this purpose, RH degasser or REDA (Revolutional Degassing Activator) shall be used. In case, any other method of vacuum degassing is adopted, then the same will require prior approval of the Purchaser. The vacuum levels and the duration for which liquid steel shall be kept under this level shall be decided mutually by the purchaser and manufacturer. All measurement of hydrogen shall be done for the liquid steel in tundish or mould. Any other method of sampling or determination of hydrogen will require prior approval of the purchaser.

Clause 21.1 The measurement of hydrogen shall be done by following method:

Clause 21.1 (a) On-Line/Instantaneous Method-

HYDRIS is approved as method of on-line instantaneous measurement. The method of measurement as prescribed by the manufacturer of HYDRIS system shall be adopted with approval of the purchaser. Any other alternate method of determination of hydrogen will require prior approval of the purchaser.

(b) Pin Sample Method-

In case, the manufacturer has not installed the facility for on-line/instantaneous facility for measurement of hydrogen as described in Para (a) above, this method may be adopted with prior approval of the purchaser.

In this method, sample of liquid steel shall be taken by plunging the sampler 200mm - 300 mm below the molten metal surface in mould and molten slag-metal interface in tundish. The sample should be held for 2 to 3 seconds and then quenched in cold water so that sample temperature falls to below 150^0C within 5 seconds.

The sample should be removed from cold water and packed in dry ice if analysis is carried out within 48 hours of sampling or placed in liquid nitrogen if analysis is to be carried out beyond 48 hours after sampling. Sampling should be done by 6 mm dia vacuum tube of Pyrex glass with wall of thickness of 1.0mm and approximately 0.5 mm thick in the fill-end. The tube should have desired vacuum of 10^{-3} mm of Hg.

The hydrogen sample can be analysed by inert gas fusion technique in which sample is to be fused at approximately 1900^0 C in an induction heating graphite crucible. A nitrogen carrier gas transports the released hydrogen to thermal conductivity cell. The amplified and integrated output of the cell is to be calibrated for hydrogen in ppm.

LECO – RH –2 Hydrogen Analyser may be used for Hydrogen determination.

Any other size and material of tube and method of hydrogen determination will require prior approval of the purchaser.

21.2 The level of hydrogen measured by the method described under Para 21.1 above shall be 1.6 ppm maximum for acceptance of a heat for production of rail.

11. Clause 26: WARRANTY

As a warranty for supply of rails free from manufacturing defects by rail suppliers, after initial USFD testing of new rails in rail manufacturing plants , a USFD test free period of 25% of service life of rails in terms of GMT as given below (Para 302 (1) (d) of IRPWM-2004 as amended from time to time) shall be applicable. This clause of test free period of 25%of service life of rails shall also be applicable for all types of 90 UTS (grade 880) and higher grade of rails of this specification. If any rail fracture due to suspected manufacturing defect is detected within a period of 25% service life of rail in terms of Gross Million Tonne, then investigation will be conducted jointly by purchaser and supplier to ascertain the cause of failure".

Rail Section	Assessed GMT service life for 90 UTS rails
60 Kg	800
52 Kg	525
90 R	375

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No. CT/Specification/T-12 Dated: 04.03.2019

As per list enclosed

Sub:Addendum and Corrigendum Slip to Specification for Flat Bottom Rails – IRS T-12:2009.

Ref: (i) Railway Board's letter no. Track/21/2010/0513/7/2206 dated 06.07.2018
(ii) This office letter of even no. dated 18.05.2018

*****

Please find enclosed herewith Addendum and Corrigendum Slip No. 4 to Indian Railway Specification for Flat Bottom Rails, IRS T-12:2009.

DA: 28 Pages

(Nilmani)
Executive Director/Track-I
For Director General/Track

ADDENDUM & CORRIGENDUM SLIP NO. 4

TO

INDIAN RAILWAYS STANDARD SPECIFICATION FOR FLAT BOTTOM RAIL

IRS T-12:2009 DATED 04/03/2019

The following clauses of Indian Railway Specification IRS-T-12-2009 for Flat Bottom Rail are amended as under:

Sr. no.	Clauses and Items
1.	**2 Rail section** The Section of the flat bottom rails shall be in accordance with the section profiles shown in Appendix-I, II(Revised), IIA and III, unless otherwise specified by the purchaser.
2.	**4.4 Classification of rails** 52 kg/m, 60E1, 68 kg/m & ZU-1-60 rails shall be classified as class 'A' and class 'B' based on tolerance in end straightness as specified in Clause 9.4.2.
3.	**6 INFORMATION TO BE SUPPLIED BY THE PURCHASER** The purchaser shall provide the following information to the supplier when inviting tender for supply of rails according to this specification: i) Rail steel grade (Table 1) ii) Rail Section profile (Appendix I, II(Revised), IIA and III) iii) Class of rail iv) Length of rail. v) Undrilled or drilled rails ends. vi) Colour code requirements (Appendix IV)
4.	**8.1 Brand Marks** With the prior approval of purchasers, brand marks of suitable size clearly legible, shall be rolled in relief on one side of web atleast at every 4.0 meter interval. The brand mark shall include: a) The rail section. b) The grade of steel, i.e. Grade 880 880 Grade1080HH 1080HH Grade1080Cr 1080 CR

	Grade880Cu-MO 880 CM Grade880Ni Cr Cu 880 NC Grade880Vanadium 880 VN Grade 880 Niobium 880 NB c) Identification mark of the manufacturer d) Month (using roman numbers) and last two digits of year of manufacture. e) Process of Steel making i) Basic Oxygen – O ii) Electric – E
5.	**8.2 Hot Stamping** Each rail shall be identified by a numerical, alphabetical or combined alphabetical and numerical code which will be distinctly hot stamped at least once every 5.0m on the web in figures and letters of suitable size from which following information can be obtained: i) The number of the cast from which the rails has been rolled with letter 'C' ii) Number of the strand iii) For rails from change over bloom, cast number should be the preceding cast number with prefix letter 'B'. Alternatively, the identification system employed shall be such as to enable the hot stamped marking to be collated with the: a) number of the heat from which the rail has been rolled; b) number of the strand and position of bloom within the strand; c) Position of the rail in the bloom (A, B ... Y). Further, in the event of identification marks having been removed, omitted or requiring alteration, re-identification of such marks shall be made by rotary burr.
6.	**8.3 Cold Punching** 8.3.1 Following should be cold punched on one of end face of each rail: a) Inspecting Agency ID and Group ID b) Shift No in which product inspected c) Date of Inspection Alternatively, any other method of marking/identification of rail can be adopted containing above information on one of end face of each rail. To avoid damage to the HH rails, instead of cold punching, any other method of marking/identification on one of end face of each rail containing above information can be adopted.
7.	**9.1 Permissible Variations in Dimensions** The tolerances in sectional dimensions shown here under shall be allowed, provided, For Prime quality rail the actual weight computed by weighing short pieces of rails, not less than 300mm each in length, shall fall within 0.5 percent below and 1.5percent above the calculated weight shown in Appendix I, II(Revised), IIA and

III for each rail section.
For IU Rail the actual weight computed by weighing short pieces of rails not less than 300 mm each in length is not less than the calculated weight shown in Appendix I, II(Revised), IIA and III of this specification for each section of rail by more than 1.5%.
The weight test shall be conducted for each rail section, grade and class atleast once per 5000 MT quantity.

8. **9.1.1 Tolerances in sectional dimensions (For Prime Quality rails)**

For profile as per Appendix I, II-A, III

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 -1.0 mm	For sections 60kg and above
Thickness of web	+1.0 mm -0.5 mm	This will be measured at the point of minimum thickness
Verticality/Asymmetry	± 1.2mm	Measured by gauge shown in App. V)
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.	

For profile as per Appendix II(Revised) (Prime Quality rails)

Sr. No.	*Reference Points(see figure A1)		Profile (tolerance in mm)	Gauge/figure number(see Annex A)
	Location /property	Symbol		
1	Height of Rail[a]	*H	±0.6	A3

	2	Crown Profile -Class A straightness	*C	+0.6 -0.3	A4
		-Class B straightness		±0.6	
	3	Width of railhead	*WH	±0.5	A5
	4	Rail Assymetry	*As	±1.2	A6,A7
	5	Height of fishing	*HF	±0.6	A8
	6	Web thickness	*WT	+1.0 -0.5	A9
	7	Width of Rail foot	*WF	±1.0	A10
	8	Foot toe thickness	*TF	+0.75 -0.5	A11
	9	Foot base concavity	-	0.3 max.	-
	[a]The total height variation over any rail length shall not be greater than 1.2 mm for rails ≥ 165 mm.				

Measurement will be done as per inspection gauges at Annexure-A

9. **9.1.2 Tolerances in sectional dimensions (for IU rails)**

For profile as per Appendix I, II-A, III

Dimension	Tolerance	Remarks
Overall Height of Rails	+2.0 mm -1.0 mm	
Width of Head	+2.0mm	This will be measured 14mm below the rails top
	-2.0mm	
Thickness of web	+2.0 mm	This will be measured at the point of minimum thickness
	-1.0 mm	
Width of flange	+1.5 mm	
	-2.0mm	
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.	

For profile as per Appendix II(Revised) (IU rails)

Sr. No.	*Reference Points(see figure A1)		Profile (tolerance in mm)	Gauge/ figure number (see Annex A)
	Location/ property	Symbol		
1	Height of Rail[a]	*H	+0.6 -1.1	A3
2	Crown Profile	*C	±0.6	A4
3	Width of railhead	*WH	+0.6 -0.5	A5
4	Rail Asymmetry	*As	±1.2	A6,A7
5	Height of fishing	*HF	±0.6	A8
6	Web thickness	*WT	+1.0 -0.5	A9
7	Width of Rail foot	*WF	+1.5 -1.0	A10
8	Foot toe thickness	*TF	+0.75 -0.5	A11
9	Foot base concavity	-	0.3 max.	-

[a]The total height variation over any rail length shall not be greater than 1.2 mm for rails ≥ 165 mm.

Measurement will be done as per inspection gauges at Annexure-A

10.

10.3 The manufacturer in his offer shall furnish the detailed method of on-line ultrasonic testing of rails to be followed by him. The limits of permissible defects for ultrasonic testing of rails shall be as follows and the standard test piece shall be as shown in drawing of Appendix-VI/1 and Appendix-VI/2 for symmetric rail

Head: 1.5 mm dia FBH at two locations
1.5mm dia and 2.0mm dia through holes
Web: 2.0 mm dia FBH at four locations
Web & foot junction: 2.0 mm dia drilled hole
Foot: 2.0 mm dia horizontal hole (both side)

The limits of permissible defects for ultrasonic testing and standard test piece of asymmetric rails shall be as shown in drawing of Appendix-VI A.

All Flash Butt Welds executed by the manufacturer for welding of rails in to long

	panels shall be subjected to ultrasonic testing along with other acceptance criteria as per provisions of Manual for Flash Butt Welding of Rails, 2012 with latest amendment.
11.	**10.4 Eddy Current Testing** The manufacturer should have eddy current testing covering bottom area of the rail as also the top surface and sides of surface head. The ECT probes should cover complete area of rail bottom and at least 80% area of top surface and sides of the head. The equipment used shall be able to detect artificial imperfections on the underside of the rail foot with sizes as shown in below table. For artificial imperfections, a tolerance of ±0.1 mm shall apply:
12.	**13 QUALIFYING CRITERIA** The following test shall be done for each rail section, grade and class after any change in the process of manufacture which may affect the results or annually for first three years for each contract. The first set of tests would be conducted prior to commencement of production for supply of rail under the contract and will be witnessed by purchaser or his nominated inspecting agency. If results of these three years are consecutively found satisfactory, this frequency may be relaxed to three years by Purchaser. The test shall be undertaken by the supplier to demonstrate compliance with the qualifying criteria. If so desired, the purchaser /Inspecting Agency should be provided all facilities to check the sample and witness the test. a) Residual stress measurement. b) Fracture toughness measurement c) Fatigue test The samples for these tests shall be collected from finished rails. These samples shall not be subjected to any further mechanical or thermal treatment. The tests shall be carried out by an accredited/recognized laboratory approved by the purchaser and the test results shall be reported to the purchaser. The purchaser shall have access to all test records, calibrations and calculation which contribute to the final results. In case any sample fails to meet the requirement laid in the qualifying criteria the manufacturer shall review its process of manufacturing within six months to eliminate any shortcomings and fresh qualifying criteria test shall be undertaken under intimation to the Purchaser.

Depth (mm)	Length (mm)	Width (mm)
1.0	20	0.5
1.5	10	0.5

13	**20 FALLING WEIGHT TEST** **20.1 Nature of Test** 20.1.1 The single guided falling weight test shall be carried out, the minimum height of the drop (in m) varying in relation of the mass per unit length of the profile M_r (in Kg) and the mass of the falling weight selected M_m (in Kg) according to the formula- $$H = 150 \frac{M_r}{M_m}$$ Falling weight test piece minimum 1.3 meters long shall be cut from a location as per choice of the Inspecting Agency. For heat treated rails, the sample shall be taken after heat treatment. The test piece shall be placed in horizontal position with the head up on two iron or steel supports resting on a solid metal anvil. The weight of the metal anvil block shall not be less than 10,000 kg and its supporting base would be sufficiently rigid. No timber or spring shall be permitted between the rail supports and the anvil or between the anvil and the foundation. Block guides shall be provided which shall permit free fall of the weight. The upper surface of the supports shall be curved to a radius of not more than 125 mm. One blow shall be delivered midway between the supports, by means of a freely falling iron weight or 'TUP', the striking face of which shall be rounded to a radius of not more than 125mm. The weight of the "TUP", the distance between the centre of the bearings, the height between the surface of the rail and the bottom of the "TUP", before the latter is released shall be as specified in table-4.

Table - 4

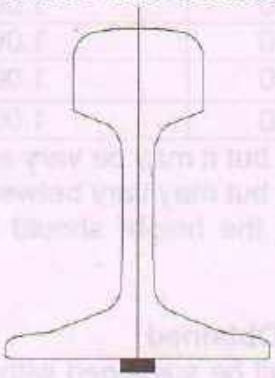
Rail section	*Weight of TUP (Kg)	**Distance between centers of bearers(m)	Height of drop (m)
52kg	1000	1.00	Measured from the top of the rail head and variable according to the above formula.
60kg	1000	1.00	
60E1	1000	1.00	
ZU-1-60	1000	1.00	
68kg	1000	1.00	

*1000Kg in principle but it may be vary according to the formula above
**1.00 m in principle but may vary between 1.00 m and 0.85 m
Note- The value of the height should be rounded to the nearest first digit of decimal.

20.3 Results to be Obtained

20.3.1 The blow shall be sustained without fracture or crack, and the permanent set resulting from the blow shall be measured after every test, over the specified distance between the centres of the bearer and recorded and advised to the purchaser.

14.	**21: Determination of Hydrogen Content** Vacuum degassing of liquid steel shall be done to reduce the hydrogen content. For this purpose, RH degasser or REDA (Revolutional Degassing Activator) shall be used. All measurement of hydrogen shall be done for the liquid steel in tundish or mould.

	21.1 The measurement of hydrogen shall be done by following method: On-Line/Instantaneous Method- HYDRIS is approved as method of on-line instantaneous measurement. The method of measurement as prescribed by the manufacturer of HYDRIS system shall be adopted. 21.2 The level of hydrogen measured by the method described under Para 21.1 above shall be 1.6 ppm maximum for acceptance of a heat for production of rail.
15	**22.1 Residual stress in rail foot** 22.1.1 Test method The residual stresses in the rail foot shall be determined in accordance with APPENDIX-XIII. 22.1.2 Test pieces For residual stress tests, there shall be 6 sample rails and the test pieces shall be taken at least 3m from each rail end. Each of the 6 test pieces from the rail section shall be 1 m in length. NOTE- Only a small part of the test piece will be destroyed for the purpose of measuring residual stress; the remainder can be used for other qualifying approval tests. 22.1.3 Measurements Longitudinal residual stress determinations shall be made on the rail foot of each of the 6 test pieces described in 22.1.2. The location of the measurements is shown in Figure 9(A) & 9(B). 'F' IS STRAIN GAUGE LOCATION  F Fig. 9A

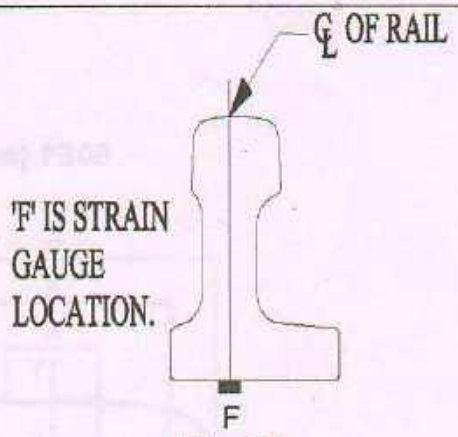
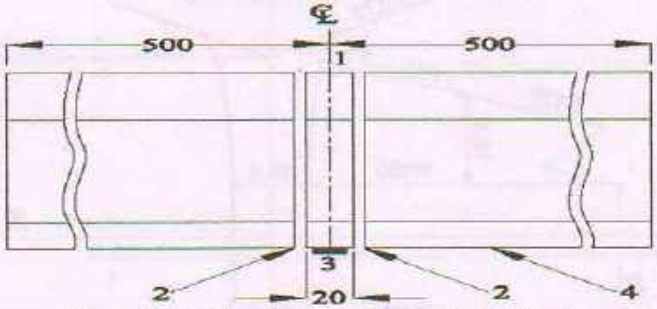


Fig. 9B

Dimensions in millimeters



Key: 1 centre line, 2 saw cut, 3 strain gauge, 4 rail foot

Fig. 9C- Slice removed from the rail

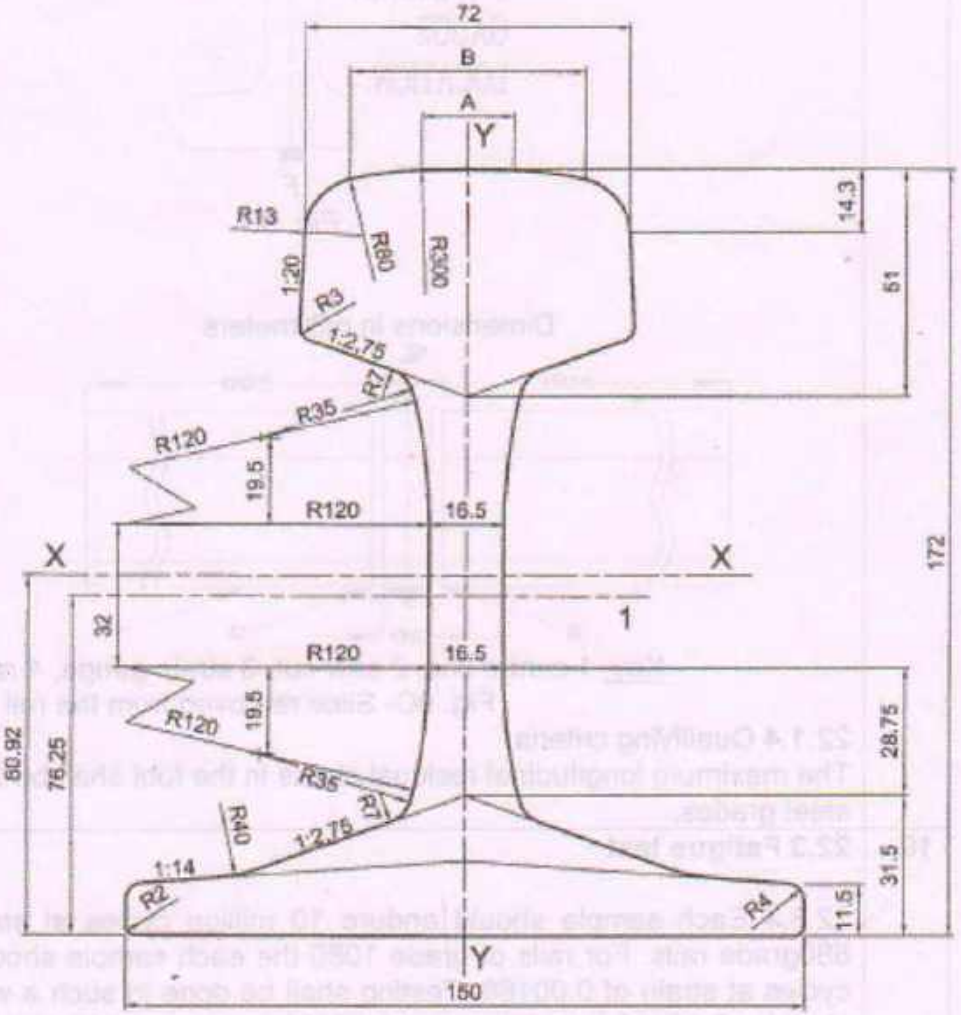
22.1.4 Qualifying criteria

The maximum longitudinal residual stress in the foot shall be 250 MPa for all steel grades.

16.	**22.3 Fatigue test** 22.3.4 Each sample should endure 10 million cycles at strain of 0.00135 for 880grade rails. For rails of grade 1080 the each sample should endure 10milion cycles at strain of 0.00166. Testing shall be done in such a way that peak strain shall be 0.00135 in tension and 0.00135 in compression for 880grade rails. For rails of grade 1080 the peak strain shall be 0.00166 in tension and 0.00166 in compression.
17.	**25.3 Import Shipment** The rails shall be loaded in bundles of three rails each bundle containing one rail upside down placed in between two rails snugly fitting and suitable tied by M.S. straps at four or more places along the length of rails so that they will not get loosened during their transportation from manufacturer's place to site of work. Alternatively, manufacturer may supply loose rails i.e. single rail without bundling. The manufacturer shall supply rail handling equipments free of charge in sufficient numbers to the satisfaction of purchaser so that unloading/ loading of rails is not delayed on this account.

Appendix II (Revised)

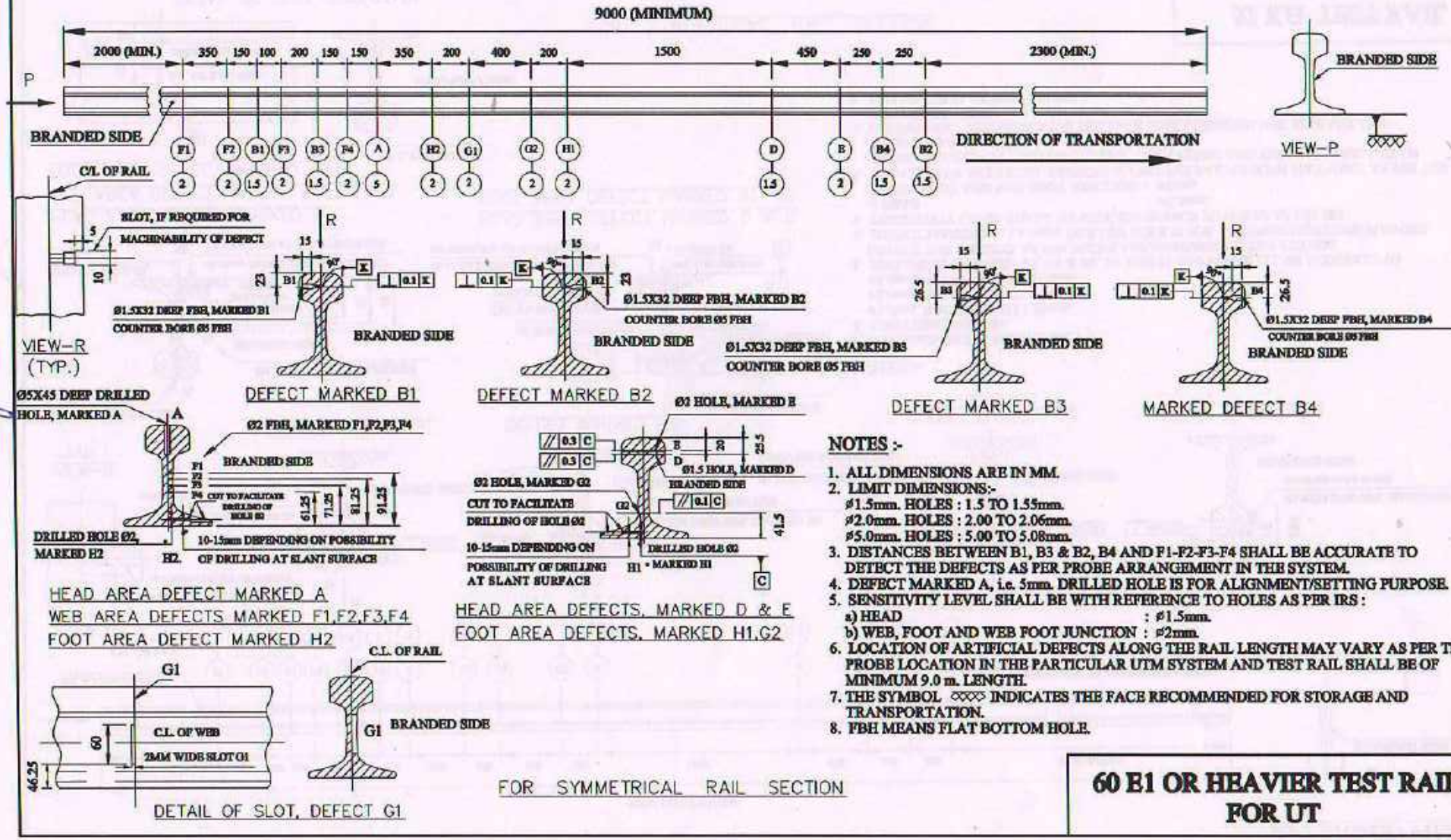
60E1 (as per EN 13674-1:2011+A1:2017(E))



Key

1 centre line of branding

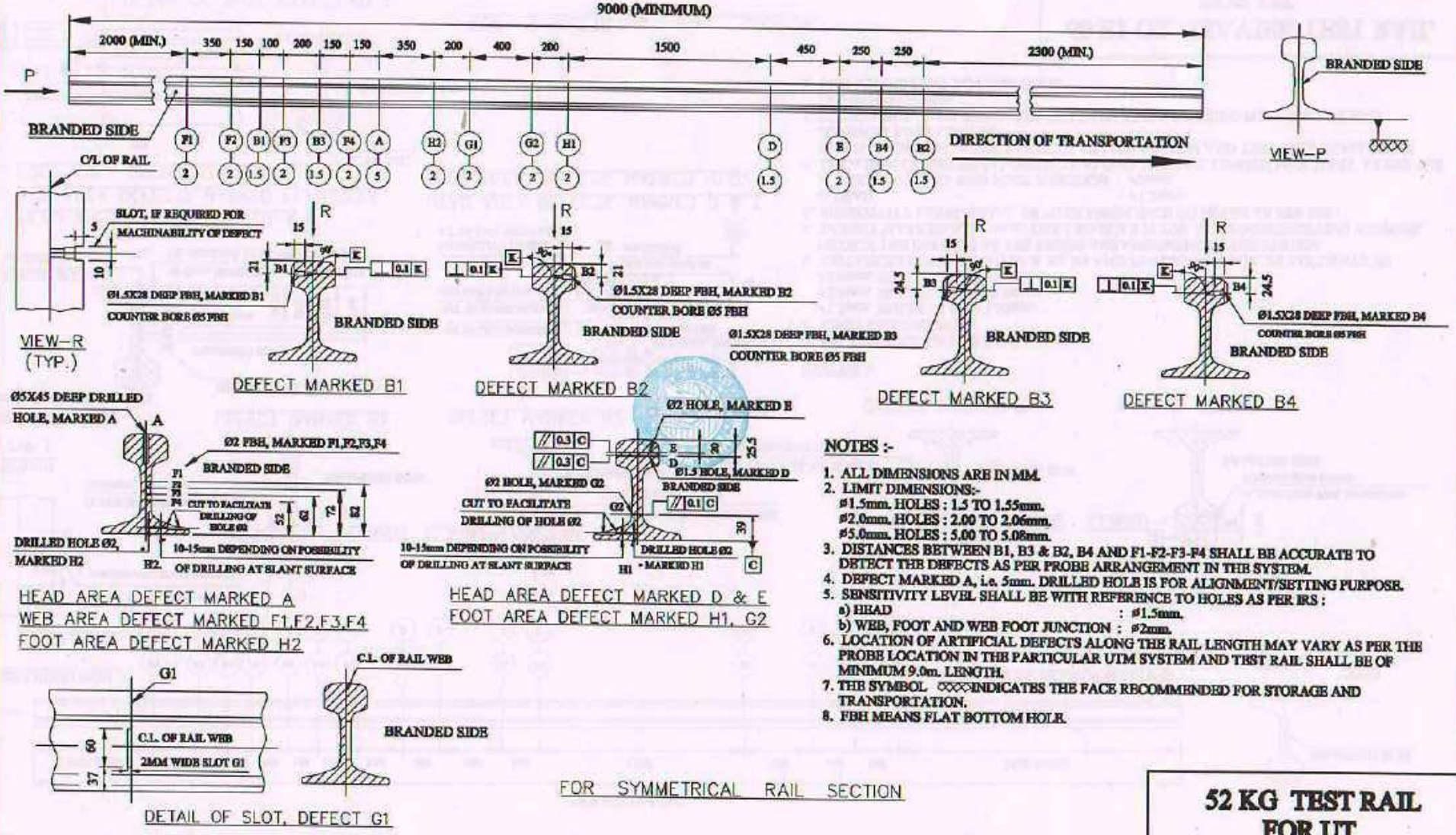
cross-sectional area	:	76,70	cm^2
mass per metre	:	60,21	kg/m
moment of inertia x-x axis	:	3 038,3	cm^4
section modulus - Head	:	333,6	cm^3
section modulus - Base	:	375,5	cm^3
moment of inertia y-y axis	:	512,3	cm^4
section modulus y-y axis	:	68,3	cm^3
indicative dimensions:		*A* = 20,456 mm	
		B = 52,053 mm	



NOTES :-

1. ALL DIMENSIONS ARE IN MM.
2. LIMIT DIMENSIONS:-
   ø1.5mm. HOLES : 1.5 TO 1.55mm.
   ø2.0mm. HOLES : 2.00 TO 2.06mm.
   ø5.0mm. HOLES : 5.00 TO 5.08mm.
3. DISTANCES BETWEEN B1, B3 & B2, B4 AND F1-F2-F3-F4 SHALL BE ACCURATE TO DETECT THE DEFECTS AS PER PROBE ARRANGEMENT IN THE SYSTEM.
4. DEFECT MARKED A, i.e. 5mm. DRILLED HOLE IS FOR ALIGNMENT/SETTING PURPOSE.
5. SENSITIVITY LEVEL SHALL BE WITH REFERENCE TO HOLES AS PER IRS :
   a) HEAD : ø1.5mm.
   b) WEB, FOOT AND WEB FOOT JUNCTION : ø2mm.
6. LOCATION OF ARTIFICIAL DEFECTS ALONG THE RAIL LENGTH MAY VARY AS PER THE PROBE LOCATION IN THE PARTICULAR UTM SYSTEM AND TEST RAIL SHALL BE OF MINIMUM 9.0 m. LENGTH.
7. THE SYMBOL ◇◇◇ INDICATES THE FACE RECOMMENDED FOR STORAGE AND TRANSPORTATION.
8. FBH MEANS FLAT BOTTOM HOLE.

60 E1 OR HEAVIER TEST RAIL FOR UT



NOTES :-

1. ALL DIMENSIONS ARE IN MM.
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   a) HEAD : ø1.5mm.
   b) WEB, FOOT AND WEB FOOT JUNCTION : ø2mm.
6. LOCATION OF ARTIFICIAL DEFECTS ALONG THE RAIL LENGTH MAY VARY AS PER THE PROBE LOCATION IN THE PARTICULAR UTM SYSTEM AND TEST RAIL SHALL BE OF MINIMUM 9.0m. LENGTH.
7. THE SYMBOL ◇◇◇ INDICATES THE FACE RECOMMENDED FOR STORAGE AND TRANSPORTATION.
8. FBH MEANS FLAT BOTTOM HOLE.

52 KG TEST RAIL FOR UT

Method for the determination of rail foot surface longitudinal residual stresses

1. Procedure

Residual stresses shall be estimated by first attaching an electrical strain gauge on the rail foot surface. The surface to which the gauge is attached shall be progressively isolated from the rail and the relaxed strains shall then be used to estimate the stresses which have been relieved whilst the original residual stresses are taken to be those values but with a change of sign.

2. Strain gauges and their location

Electrical strain gauges of the encapsulated type shall be used, 3 mm in length with gauge factor accuracy of better than ± 1 %.

The strain gauge shall be attached to the surface of the rail foot in order to measure longitudinal strain at the positions as shown in Figure Fig. 9A & Fig. 9B. The surface of the rail foot shall be prepared and the strain gauge shall be attached, in accordance with the recommendations of the strain gauge manufacturer.

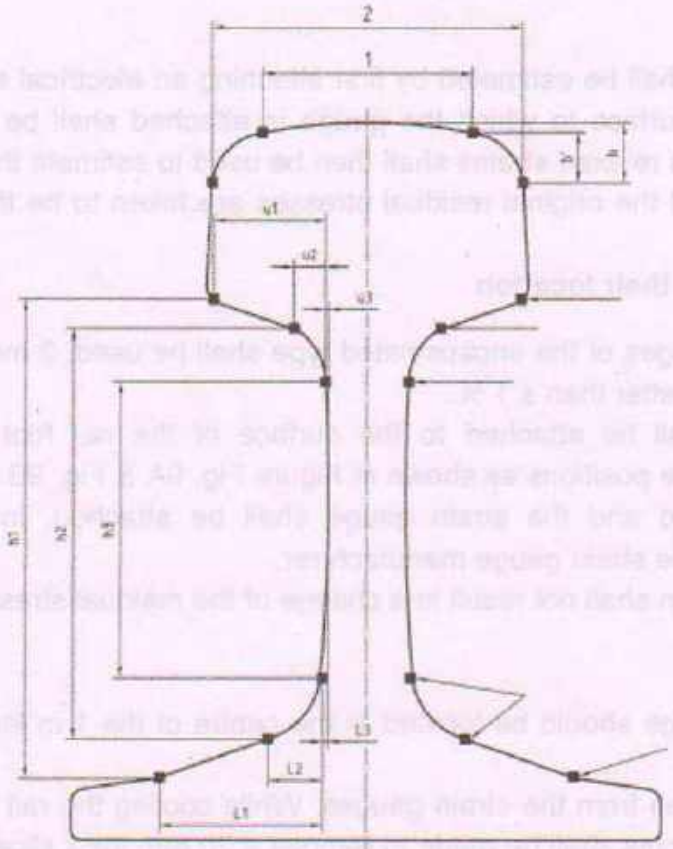
Any surface preparation shall not result in a change of the residual stresses in the rail foot.

NOTE- The strain gauge should be located at the centre of the 1 m length of the sample rail set aside for this work.

Readings shall be taken from the strain gauges. While cooling the rail to maintain a constant temperature, two saw cuts shall be made to remove a 20 mm thick slice from the centre of the rail length (Fig. 9C). A second set of measurements shall be taken.

The residual stresses shall be calculated from the differences between the first and second sets of measurements of relieved strains by multiplying with Young's modulus of elasticity for steel i.e. $2.05X10^6$ kg/cm^2.

Annexure-A



Key

■ transition point 0,01 mm

Table A- Rail transition references (see Figure A)

Rail profile	Dimension in mm												
	1	2	b	b'	h 1	h 2	h 3	L1	L2	L3	u 1	u 2	u 3
60E1	52.05	72.00	14.30	12.00	118.57	101.50	87.06	36.61	8.25	3.20	26.83	8.25	3.20

Figure A — Principal rail transition references

Gauges for inspection

The gauges for manufacture as specified in clause 9.1.1 and 9.1.2 for 60E1 profile as per appendix II (Revised) are summarised In Table A1

Table A1 — Summary of figures

Figure A1	Datum references for tolerances
Figure A2	Datum references for decision
Figure A3	Height of rail
Figure A4	Crown profile
Figure A5	Width or rail head
Figure A6 and A7	Asymmetry
Figure A8	Fishing height HF
Figure A9	Web thickness
Figure A10	Width of rail foot
Figure A11	Foot toe thickness
Figure A12 and A13	Drilling gauges

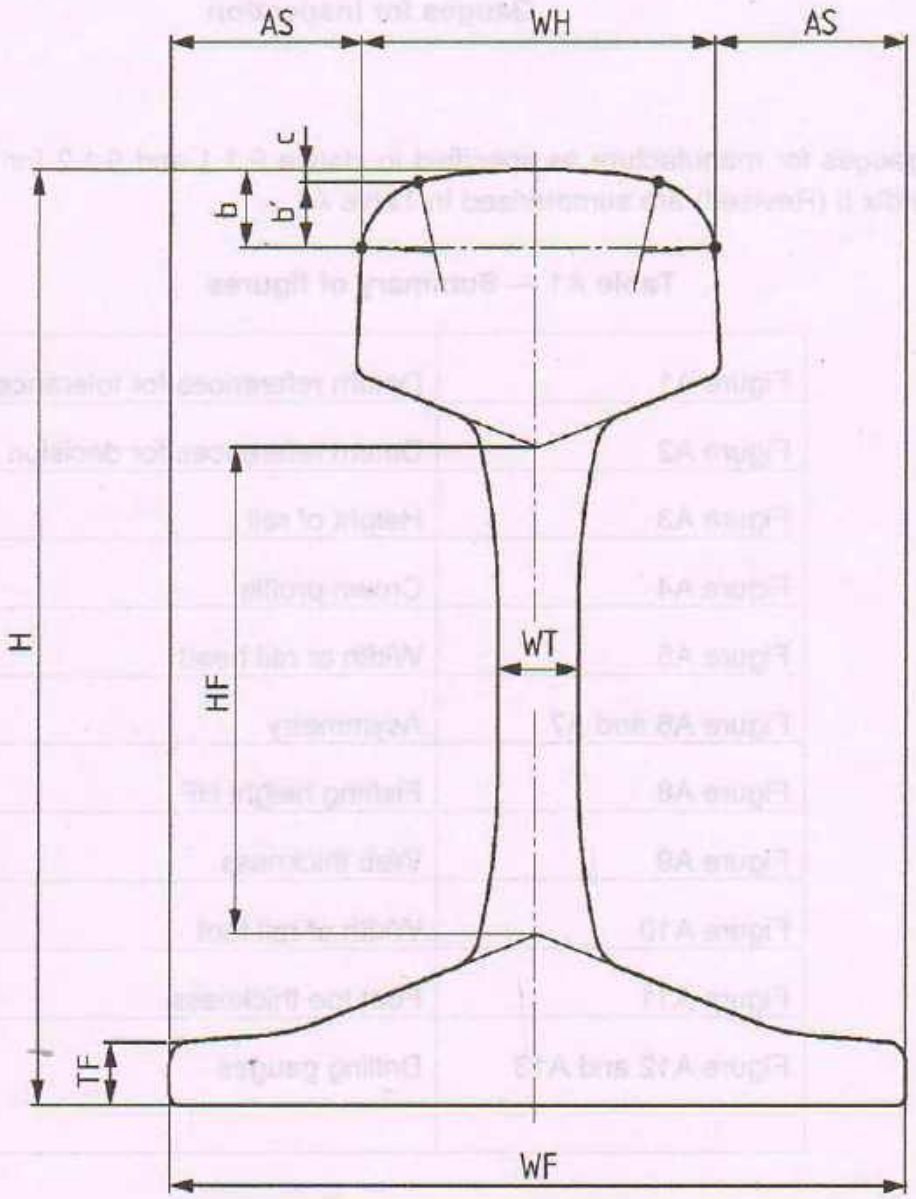
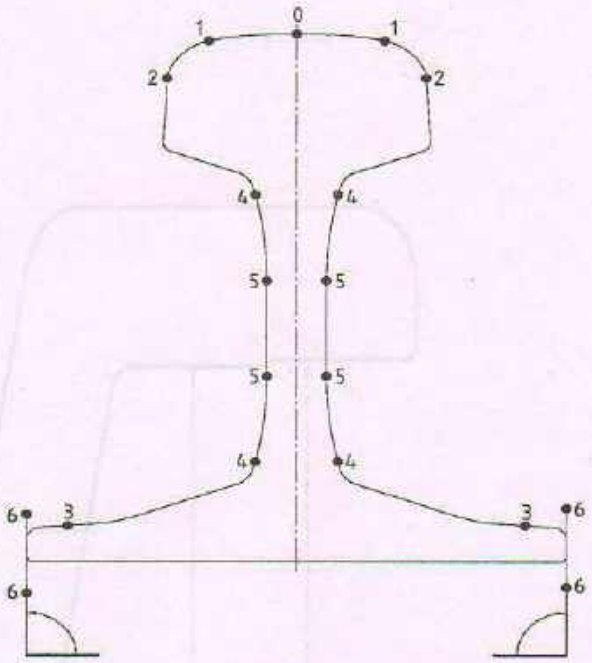


Figure A1- Datum references for tolerances (See Para 9.1.1, 9.1.2, Figure-A and Table-A)



Datum	Reference	Figure No.
0	height - must not + must pass	A3
0	crown profile - must + must not pass the wedge	A4
1	width of rail head - must not + must touch	A5
2	rail asymmetry - must not + must touch	A6, A7
4,5	height of fishplating - must + must not touch	A8
5	web thickness - must not + must pass	A9
3,6	foot toe thickness - must be within ± limits	A11
6	width of rail foot - must not + must pass	A10

Figure A2 — Datum references for decision

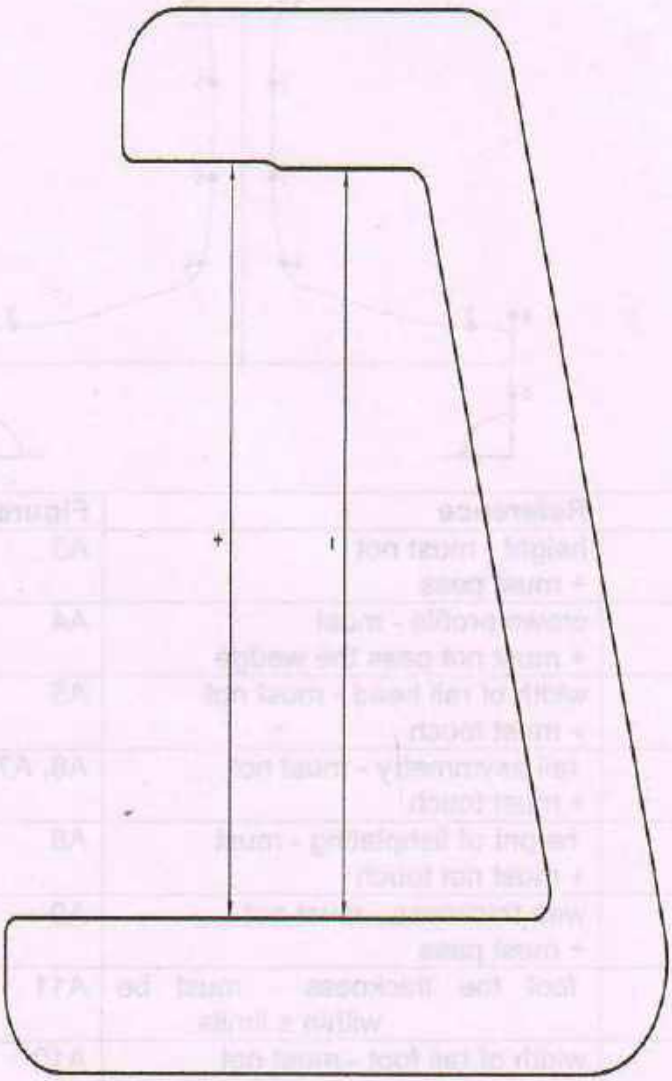
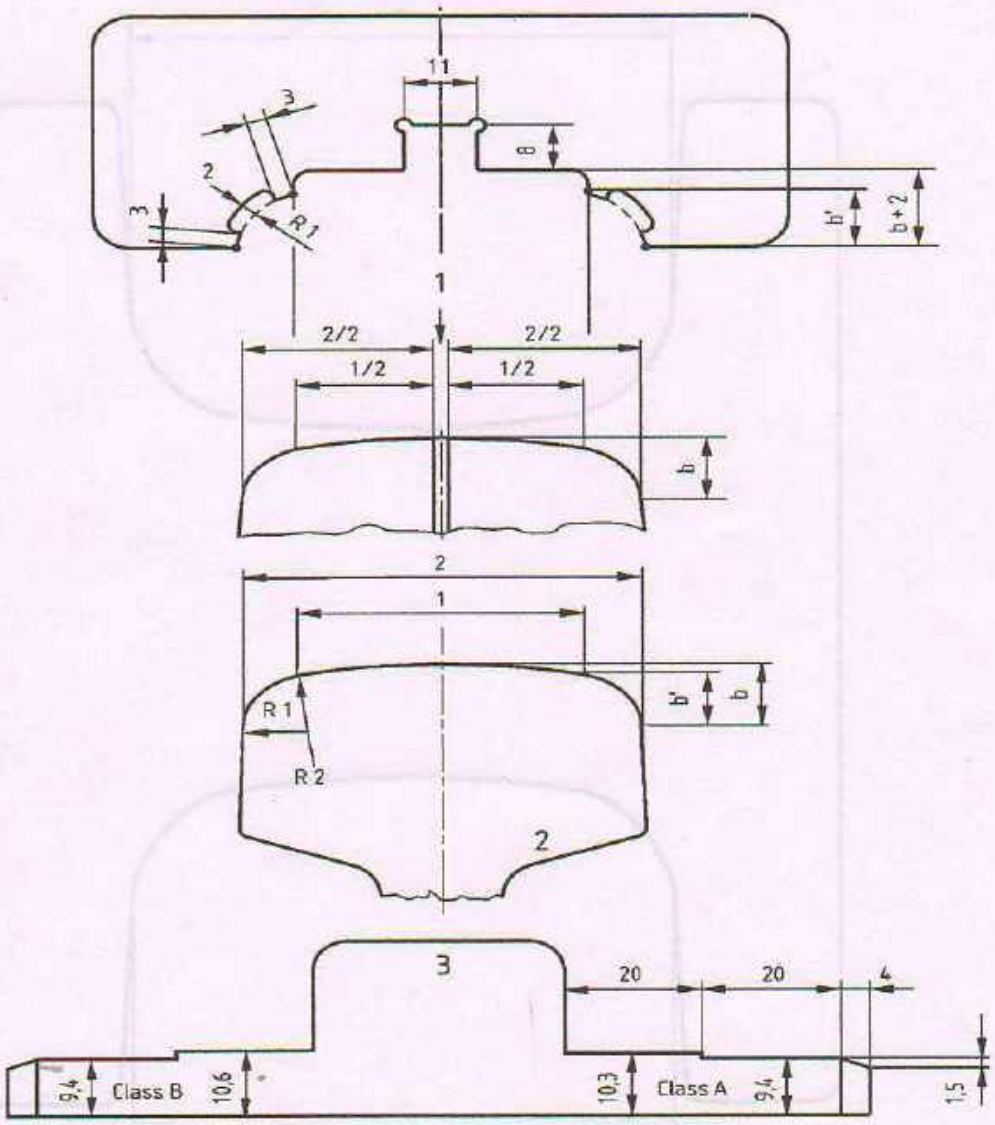


Figure A3- Height of Rail



Key-

1 Maximum width of rail head tolerance
2 Theoretical profile
3 Step gauge to check the table shape, 10mm thickness

Figure A4- Crown Profile

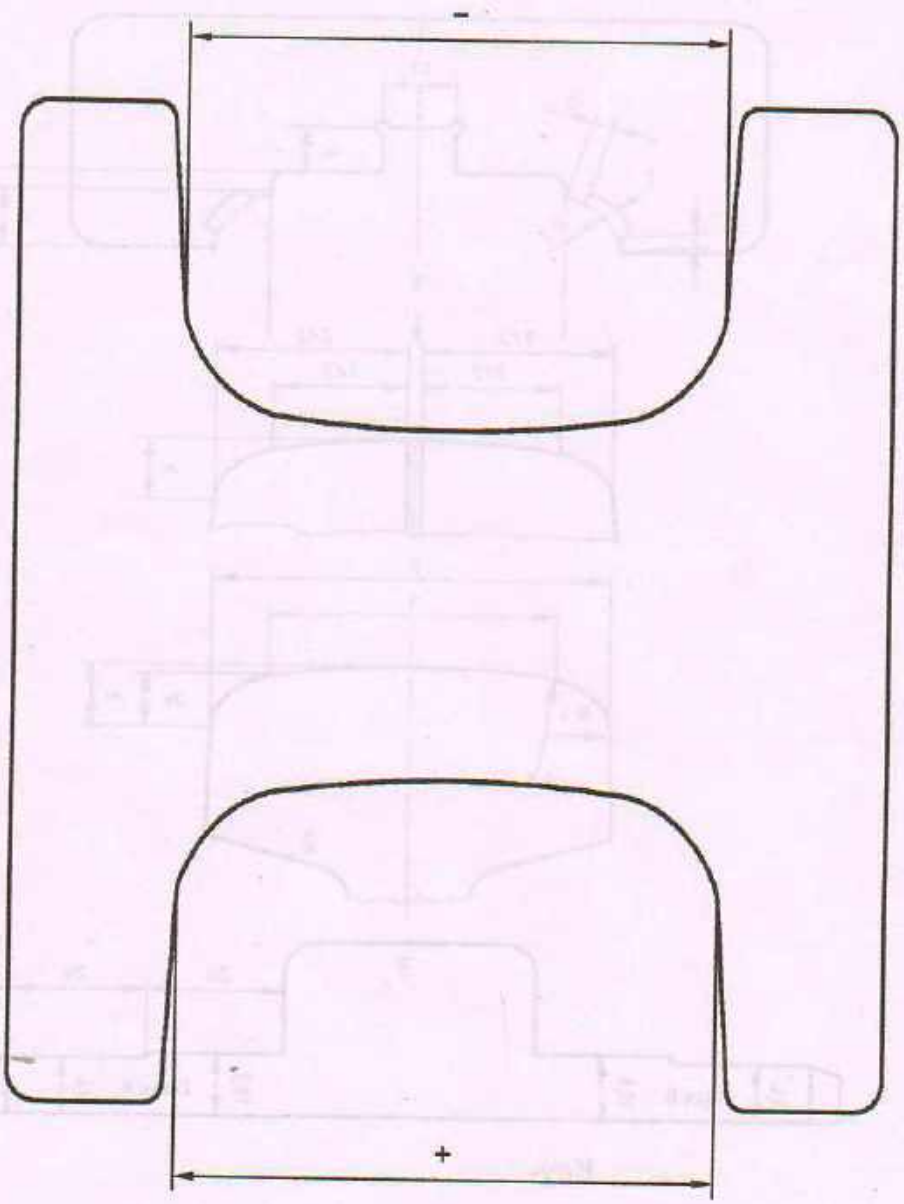


Figure A5- Width of Rail Head

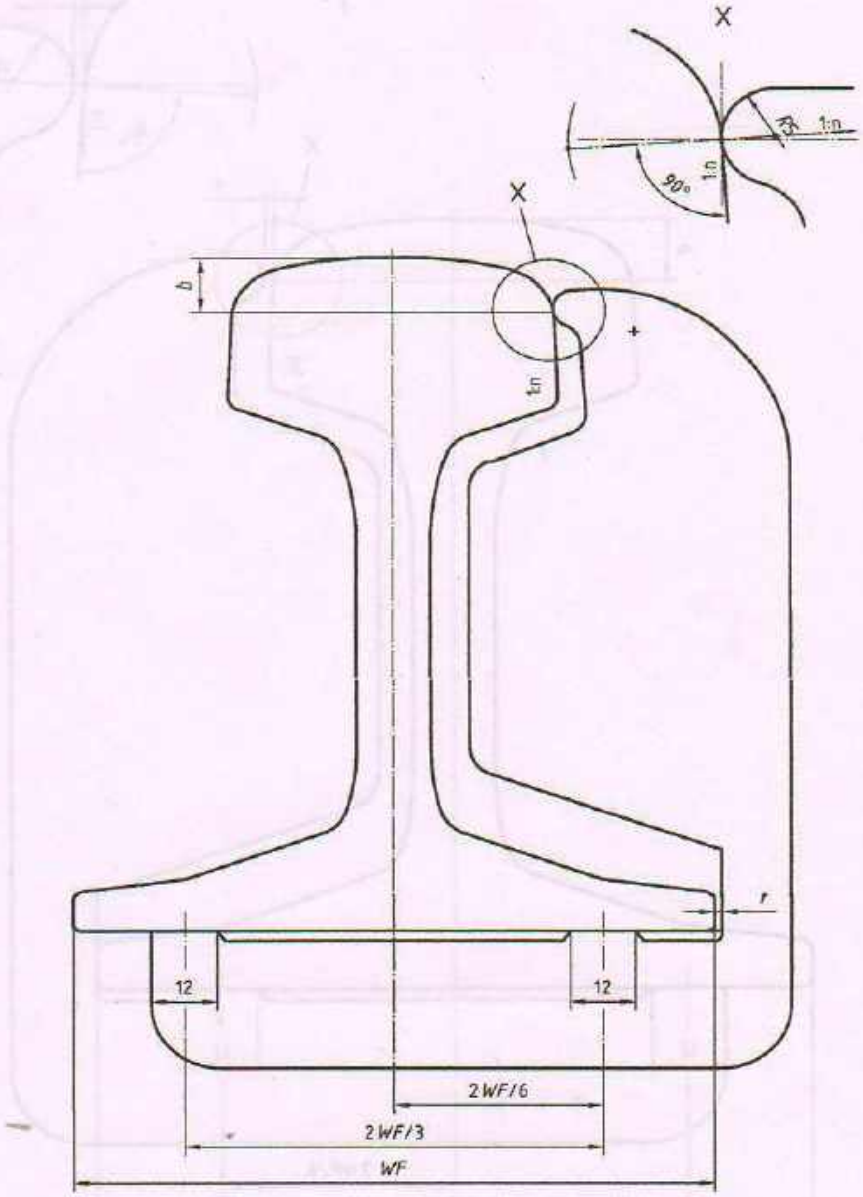


Figure A6 - Rail Asymmetry

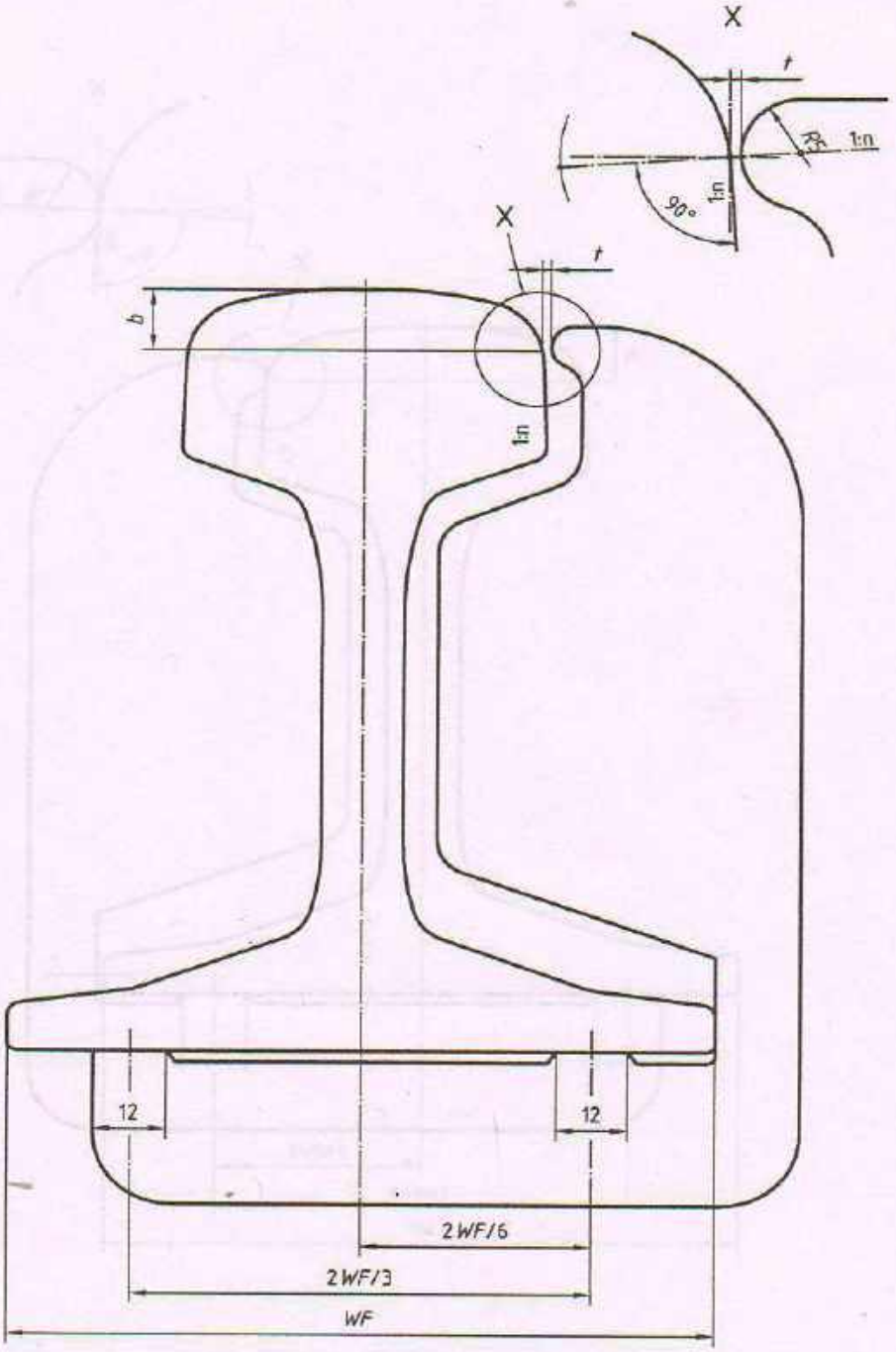
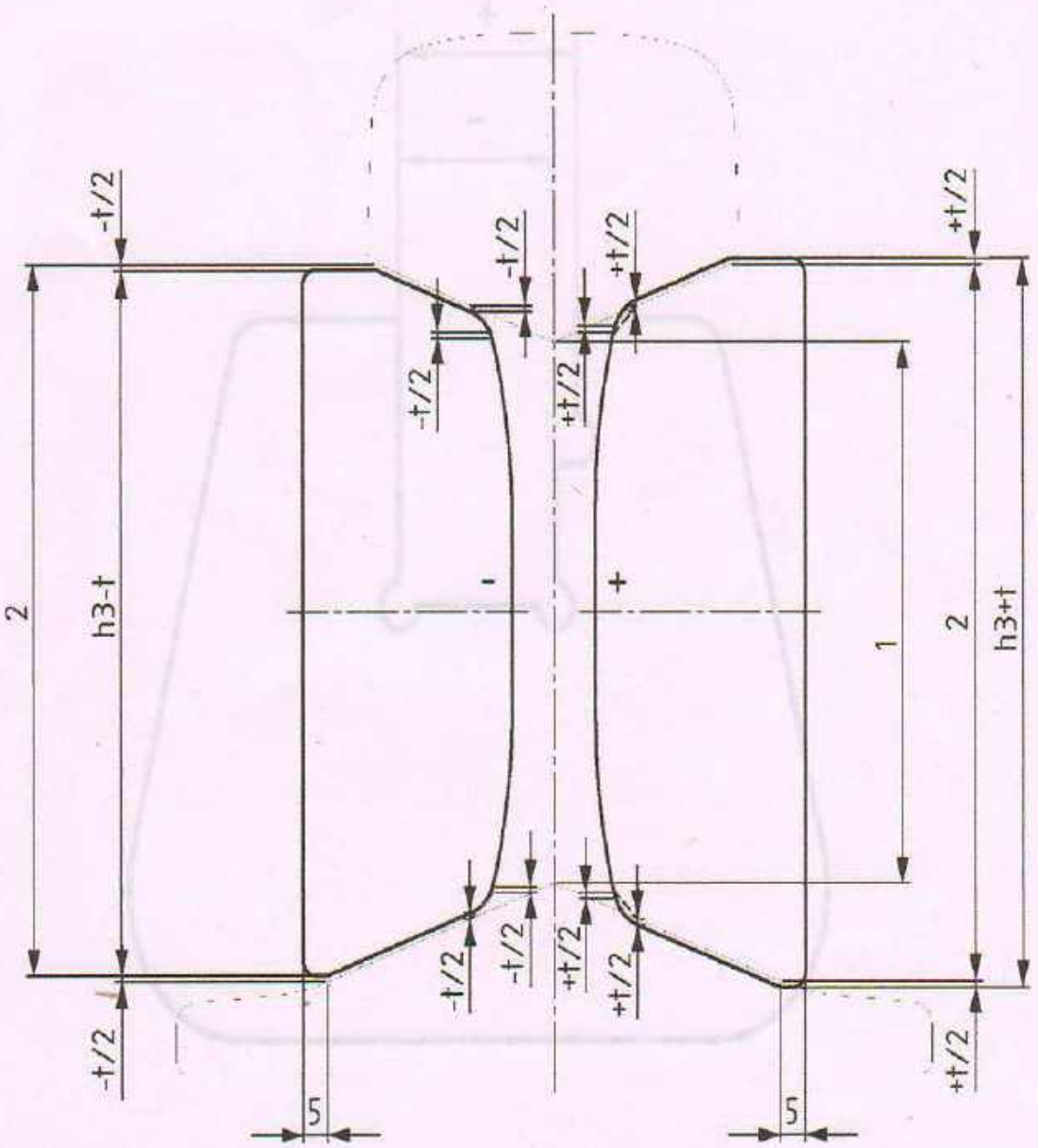


Figure A7- Rail Asymmetry



Key- 1 HF= Fishing height (see Figure A1) and
2 h 3= Theoretical

Figure A8- Fishing Height

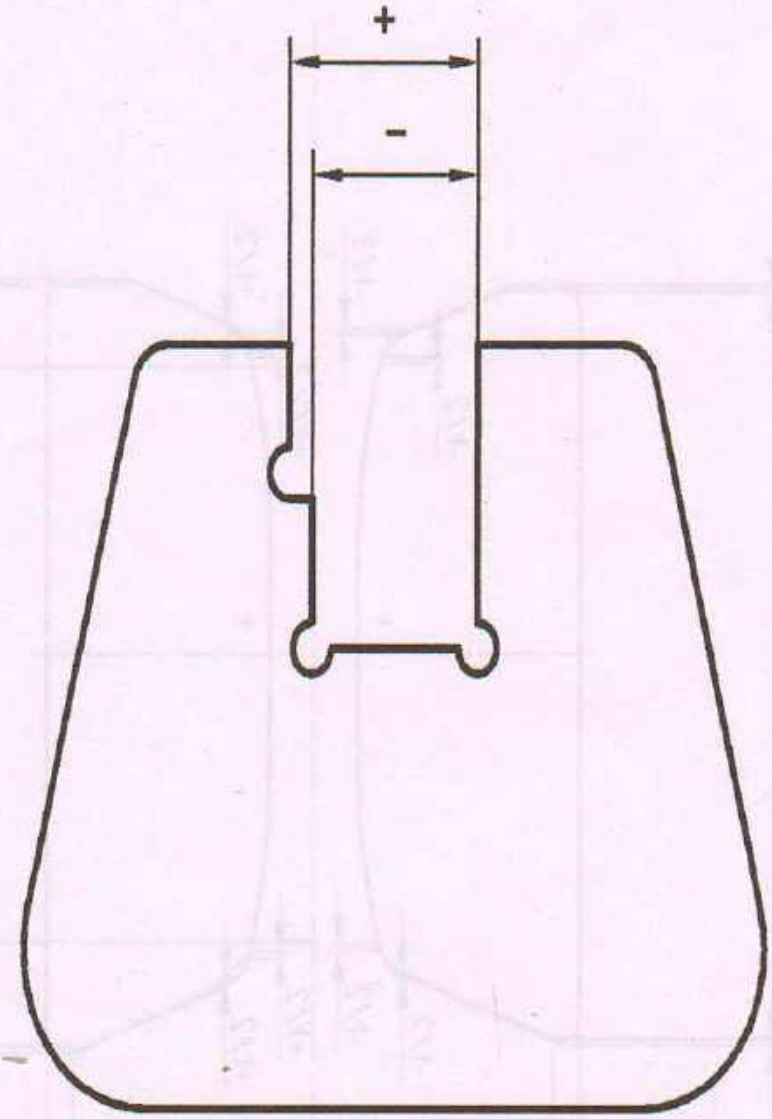


Figure A9- Web Thickness

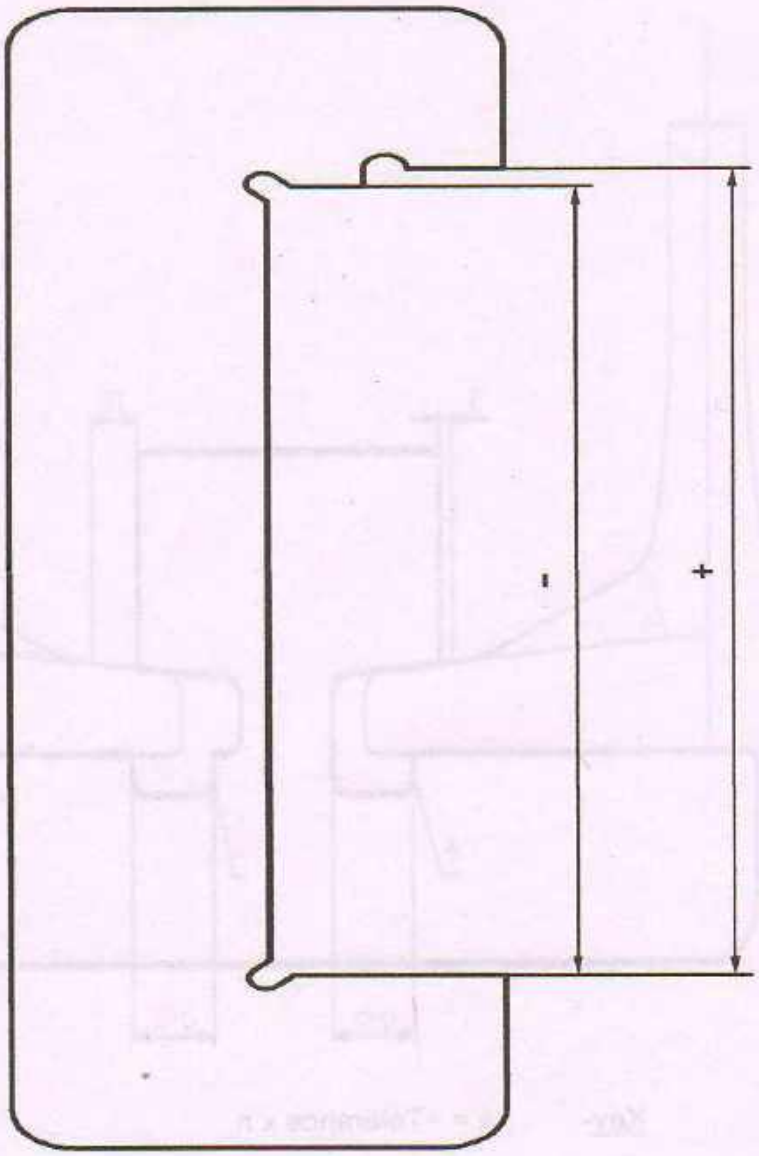
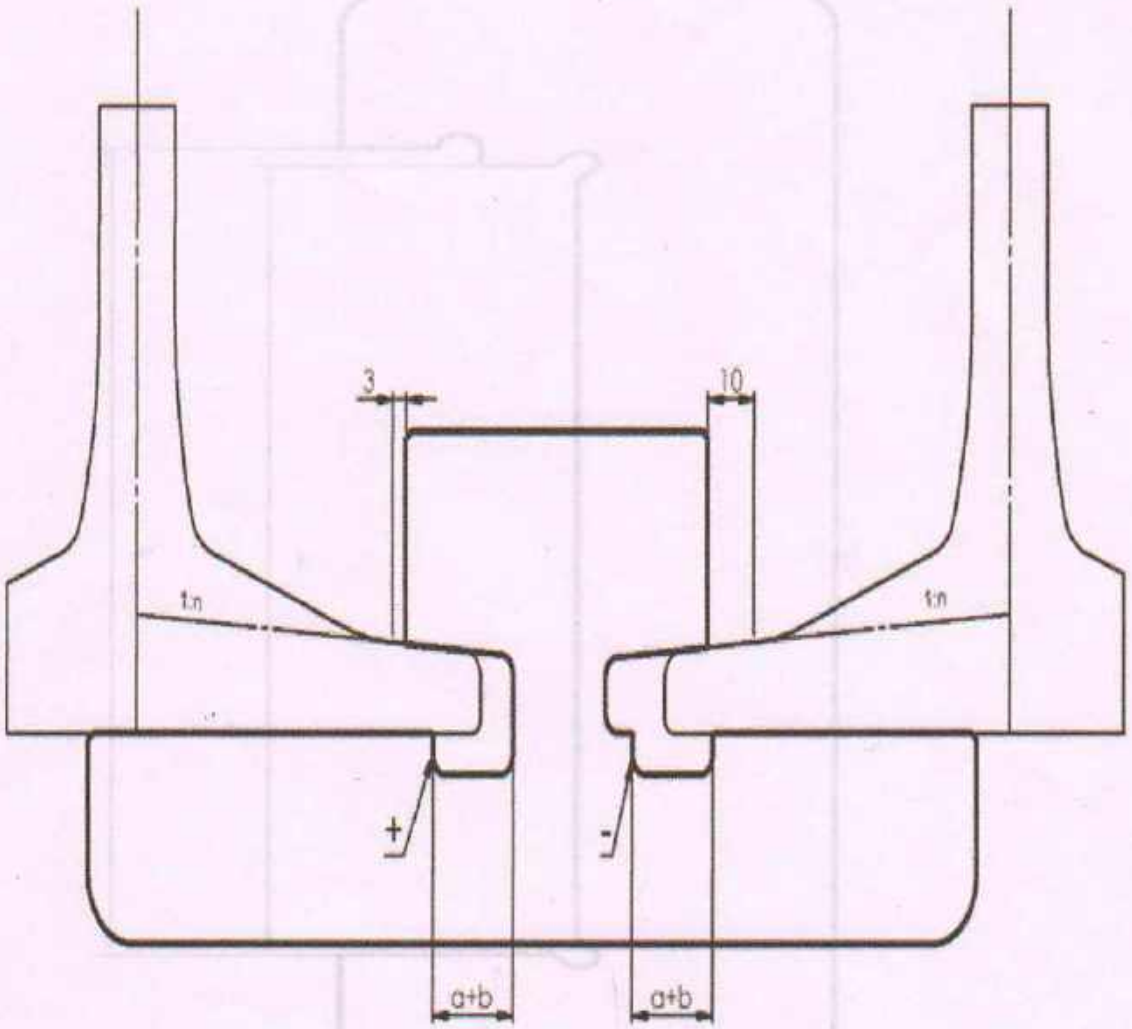


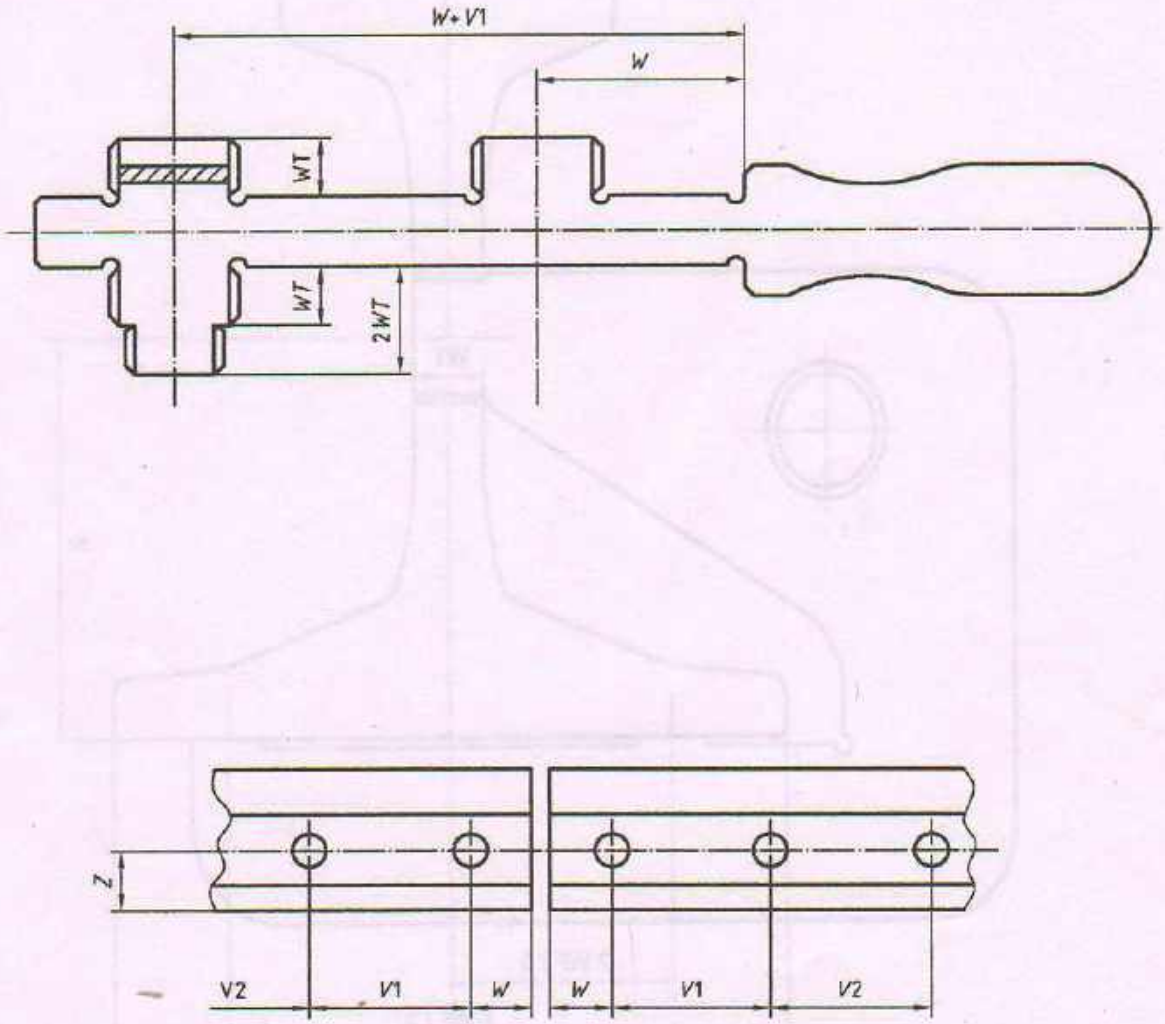
Figure A10- Width of Rail foot



Key- a = +Tolerance x n

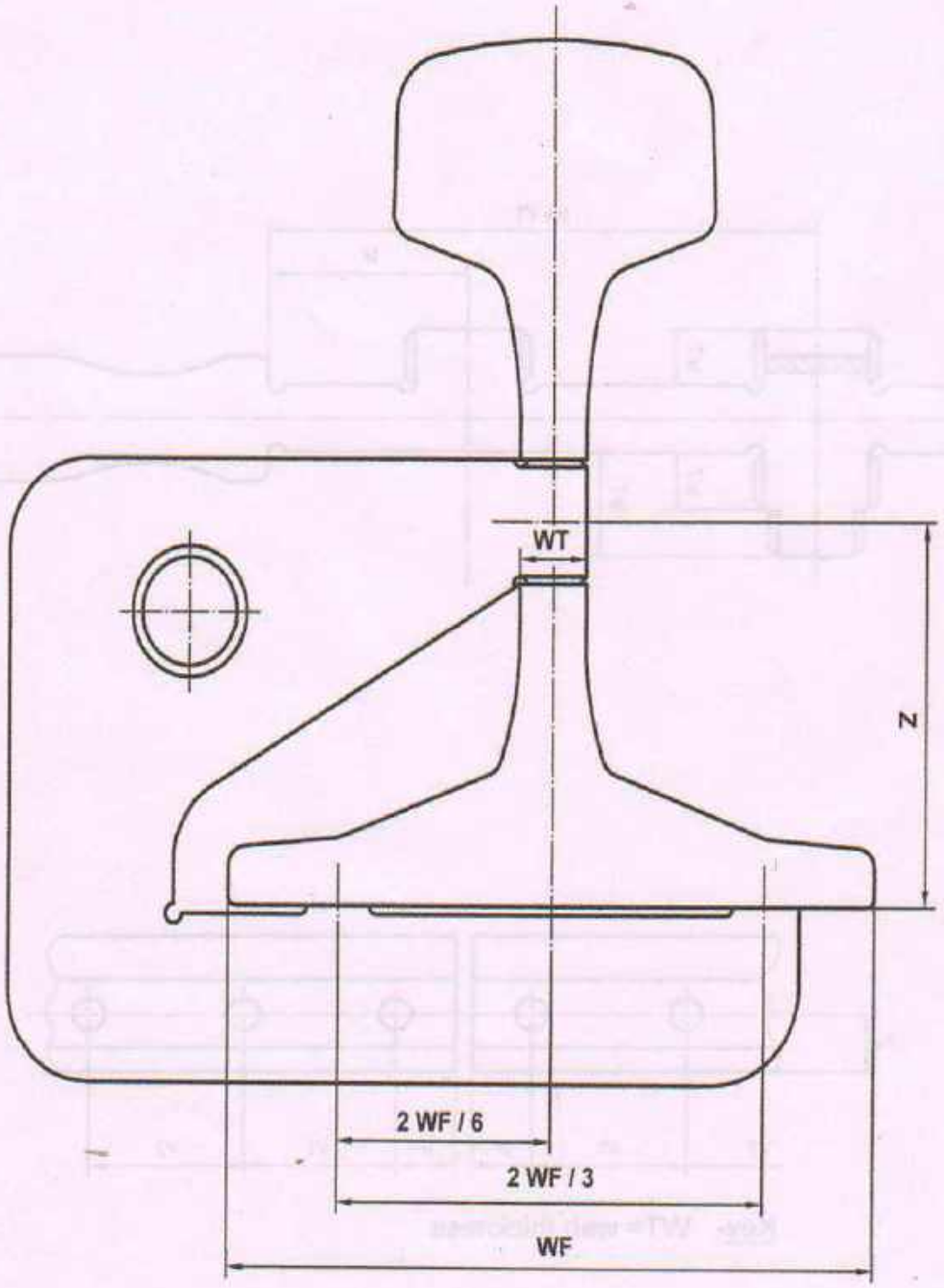
b = -Tolerance x n

Figure A11- Foot Toe Thickness



Key- WT= web thickness

Figure A12- Gauge for checking distance between holes and rail end and hole diameter



Key- WF= width of foot, WT= web thickness, Z= distance between center of the hole and base of the rail

Figure A13- Gauge for checking distance between holes and base of rail

END OF DOCUMENT