REASONED DOCUMENT IN RESPONSE TO UPLOADED DRAFT INDIAN RAILWAY STANDARD SPECIFICATION FOR ELASTIC RAIL CLIPS S.No.T-31- 2021

Para No.	Existing provision in Specification (IRST-31) of ERC	Modified provision in Specification of ERC (Modification shown in red)	Comments /Suggestions by approved vendors	RDSO's Remarks
0. 0	**FOREWORD:**			
0.1	This specification was first adopted in 1976 and was revised in 1984, when new clause for the 'toe load' test was included. Subsequently the specification was amended in 1987 when the range of toe-load value of Elastic Rail Clip was changed from 645-775kg to 645-800kg. Subsequently in April 1988, the scope of specification was extended to flat toe Elastic Rail Clips. In 1989 the specification was further revised to enhance its scope to cover all types of Elastic Rail Clips such as ERC MK-II, ERC MK-III and amendment no.1 of September 1990 for ERC MK-IV.	This specification was first adopted in 1976 and was revised in 1984, when new clause for the 'toe load' test was included. Subsequently the specification was amended in 1987 when the range of toe-load value of Elastic Rail Clip was changed from 645-775kg to 645-800kg. Subsequently in April 1988, the scope of specification was extended to flat toe Elastic Rail Clips. In 1989 the specification was further revised to enhance its scope to cover all types of Elastic Rail Clips such as ERC MK-II, ERC MK-III and amendment no.1 of September 1990 for ERC MK-IV.	Nil	No Change proposed
0.2	To improve the quality and serviceability of clips, the specification was revised as third revision and issued in 1992 with a view to cover the specification and sources for raw material for use by the manufacturer of Elastic Rail Clips and to exercise checks on inclusion rating, grain size and heterogeneity of steel. Further, in this revision the sampling plan was also revised for tests under clause No.7.2, 7.6, 7.7 and 7.8 for which reference was drawn from IS:2500 (Part I)-1973.	To improve the quality and serviceability of clips, the specification was revised as third revision and issued in 1992 with a view to cover the specification and sources for raw material for use by the manufacturer of Elastic Rail Clips and to exercise checks on inclusion rating, grain size and heterogeneity of steel. Further, in this revision the sampling plan was also revised for tests under clause No.7.2, 7.6, 7.7 and 7.8 for which reference was drawn from IS:2500 (Part I)- 1973.	Nil	No Change proposed
0.3	Subsequently, Corrigendum no. 1 to the specification was issued in 1998 for amendment in clause 7.4.3. Later on, Corrigendum no. 2 to the specification was issued in 1999 in which drawing number, type of clip, diameter, approximate weight of clip, toe deflection, toe-load range and other relevant parameters for ERC Mk-V was added in Annexure-V. Clauses 3,	Subsequently, Corrigendum no. 1 to the specification was issued in 1998 for amendment in clause 7.4.3. Later on, Corrigendum no. 2 to the specification was issued in 1999 in which drawing number, type of clip, diameter, approximate weight of clip, toe deflection, toe-load range and other relevant parameters for ERC Mk-V	Nil	No Change proposed

	4.8.2, 4.9, 5.1, 5.2, 6.1 were also revised. In addition to above, Annexure-I was deleted and Annexure-IV was re-worded. Subsequently, Corrigendum no. 3 to the specification was issued in January' 2016 to reword the clause 7.4.3 for bringing clarity.	was added in Annexure-V. Clauses 3, 4.8.2, 4.9, 5.1, 5.2, 6.1 were also revised. In addition to above, Annexure-I was deleted and Annexure-IV was re-worded. Subsequently, Corrigendum no. 3 to the specification was issued in January' 2016 to reword the clause 7.4.3 for bringing clarity.		
0.4	This specification was revised and Fourth revision was issued in 2018 to cover the entire corrigendum issued to this specification till date and to enhance the scope for manufacturing process of raw material, inclusion rating values, freedom for surface defects, inspection of raw material, magnetic particle flaw detection of bars, fatigue test, alternative packing of clips in polythene bags, and renaming of Annexure. ERC Mk-IV was removed from the scope of specification. In the reference documents, the IS codes were updated. The sampling plan was also incorporated as per the latest IS: 2500 (Part-1):2000 and reproduced in Annexure-III.	This specification was revised and Fourth revision was issued in 2018 to cover the entire corrigendum issued to this specification till date and to enhance the scope for manufacturing process of raw material, inclusion rating values, freedom for surface defects, inspection of raw material, magnetic particle flaw detection of bars, fatigue test, alternative packing of clips in polythene bags, and renaming of Annexure. ERC Mk-IV was removed from the scope of specification. In the reference documents, the IS codes were updated. The sampling plan was also incorporated as per the latest IS: 2500 (Part-1):2000 and reproduced in Annexure-III.	Nil	No Change proposed
0.5	This specification has been issued in 2021 under Fifth Revision with certain modifications in clause 1.1, 4.10, 6.2, 7.4.1, 7.6.2, 7.7, 7.8, 8 & Annexure-V in the present form. A new clause 7.10 (Stress test) and Annexure-XIV (Test scheme for the Stress test) has also been incorporated to have more clarity of this test. The specification of ERC-J (Provisional) Rev.-1994 along with latest corrigendum 2 of October 2016 has now been merged with this specification.	This specification has been issued in 2021 under Fifth Revision with certain modifications in clause 1.1, 4.10, 6.2, 7.4.1, 7.6.2, 7.7, 7.8, 8 & Annexure-V in the present form. A new clause 7.10 (Stress test) and Annexure-XIV (Test scheme for the Stress test) has also been incorporated to have more clarity of this test. The specification of ERC-J (Provisional) Rev.-1994 along with latest corrigendum 2 of October 2016 has now been merged with this specification.	Nil	No Change proposed
1.0	**SCOPE:**			
1.1	This standard covers the specification and the approvedsources for the raw material for the production of Elastic Rail Clips for the guidance of clip manufacturers. This standard also covers	This standard covers the specification and the approvedsources for the raw material for the production of Elastic Rail Clips for the guidance of clip manufacturers. This	Nil	No Change proposed

<table>
<tr><td></td><td>the technical requirement, inspection and testing procedure of the different designs of Elastic Rail Clips viz. ERC round, ERC flat, ERC MK-II, ERC MK-III, ERC Mk-V and ERC-J, hereinafter referred as ‘clips’ which call for stricter control in the quality of raw material, testing standards for implementation of quality assurance programme by the manufacturer. Contract awarding party has been referred as ‘purchaser’ and its nominated inspection agency/representative as ‘inspection agency/officer’. The firm entrusted with manufacture and supply of clips, is referred to as ‘manufacturer’.</td><td>standard also covers the technical requirement, inspection and testing procedure of the different designs of Elastic Rail Clips viz. ERC round, ERC flat, ERC MK-II, ERC MK-III, ERC Mk-V and ERC-J, hereinafter referred as ‘clips’ which call for stricter control in the quality of raw material, testing standards for implementation of quality assurance programme by the manufacturer. Contract awarding party has been referred as ‘purchaser’ and its nominated inspection agency/representative as ‘inspection agency/officer’. The firm entrusted with manufacture and supply of clips, is referred to as ‘manufacturer’.</td><td></td><td></td></tr>
<tr><td>1.2</td><td>All the provisions contained in RDSO’s ISO procedures laid down in Document No. QO-D-7.1-11 dated 19.07.2016 (titled “vendor-changes in approved status”) and subsequent versions/ amendments thereof, shall be binding and applicable on the successful vendor/vendors in the contracts floated by Railways to maintain quality of products supplied to Railways.</td><td>All the provisions contained in RDSO’s ISO procedures laid down in Document No. QO-D-8.1-11 ver. 3.3 dated 02.01.2025 (titled “vendor-changes in approved status”) and subsequent versions/ amendments thereof, shall be binding and applicable on the successful vendor/vendors in the contracts floated by Railways to maintain quality of products supplied to Railways.</td><td>Nil</td><td>ISO document numberupdated as perlatest ISO document.</td></tr>
<tr><td>2.0</td><td colspan="4">REFERENCE DOCUMENTS:</td></tr>
<tr><td>2.1</td><td>This standard refers to the following Indian Standards of the BIS. These should be available at the manufactures’ works for reference:
<table>
<tr><td>S No.</td><td>IS Code No.</td><td>TITLE</td></tr>
<tr><td>1</td><td>IS:77-1976 (Re-affirmed 2019)</td><td>Specification for Linseed oil, boiled, for paints. (Second Revision0</td></tr>
<tr><td>2</td><td>IS:1500-2005 (Re-affirmed</td><td>Method for Brinell Hardness test for metallic materials. (Third Revision)</td></tr>
</table></td><td>This standard refers to the following Indian Standards of the BIS. These should be available at the manufactures’ works for reference:
<table>
<tr><td>S No.</td><td>IS Code No.</td><td>TITLE</td></tr>
<tr><td>1</td><td>IS:77-1976 (Re-affirmed 2019)</td><td>Specification for Lins oil, boiled, for pai (Second Revision0</td></tr>
<tr><td>2</td><td>IS:1500-2005 (Re-</td><td>Method for Bri Hardness test for met</td></tr>
</table></td><td>Nil</td><td>No Change proposed</td></tr>
</table>

		2010)			affirmed 2010)	materials. (Third Revision)		
	3	IS:1501:2002 (Re-affirmed 2007)	Method for Vickers Hardness Test for Metallic Materials. (Third Revision)	3	IS:1501:2002 (Re-affirmed 2007)	Method for Vickers Hardness Test for Metallic Materials. (Third Revision)		
	4	IS:1586 (Part-2) : 2012 2018 (Fifth Revision)	Metallic Materials - Rockwell Hardness Test, Part 2 verification and calibration of testing machines and indenters (Fifth Revision)	4	IS:1586 (Part-2) : 2012 2018 (Fifth Revision)	Metallic Materials - Rockwell Hardness Test, Part 2 verification and calibration of testing machines and indenters (Fifth Revision)		
	5	IS:2500(Part 1)-2000 (Re-affirmed 2016)	Sampling procedure for Inspection by 3 Attributes, Part 1sampling scheme indexed by acceptance quality limit (AQL) for lot by lot inspection. (Third Revision)	5	IS:2500(Part 1)-2000 (Re-affirmed 2016)	Sampling procedure for Inspection by 3 Attributes, Part 1sampling scheme indexed by acceptance quality limit (AQL) for lot by lot inspection. (Third Revision)		
	6	IS:4748-2009 (Re-affirmed 2017)	Steels-Micrographic determination of the apparent grain size.(Second Revision)	6	IS:4748-2009 (Re-affirmed 2017)	Steels-Micrographic determination of the apparent grain size.(Second Revision)		
	7	IS:3195-1992 (Re-affirmed 2017)	Steel for the manufacture of volute and helical springs (For Railway Rolling stock)-specification. (Third Revision)	7	IS:3195-1992 (Re-affirmed 2017)	Steel for the manufacture of volute and helical springs (For Railway Rolling stock)-specification. (Third Revision)		
	8	IS:4163-2004 (Re-affirmed 2017)	Steels-determination of content of nonmetallic inclusions micrographic method using standard diagrams. (Third Revision)	8	IS:4163-2004 (Re-affirmed 2017)	Steels-determination of content of nonmetallic inclusions micrographic method using standard diagrams. (Third Revision)		
	9	IS:6396-2000 (Re-affirmed 2018)	Method of measuring decarburized depth of steel. (Second Revision)	9	IS:6396-2000 (Re-affirmed 2018)	Method of measuring decarburized depth of steel. (Second Revision)		
	10	IS:7739 Part 5-	IS:7739 Part 5-1976 (Re-affirmed 2018)	10	IS:7739	IS:7739 Part 5-1976 (Re-		

	<table><tr><td></td><td>1976 (Re-affirmed 2018)</td><td></td></tr><tr><td>11</td><td>IS: 3703:2004 (Re-affirmed 2020)</td><td>IS: 3703:2004 (Re-affirmed 2020)</td></tr></table> Verification of the chemical analysis of raw as well as finished product can be done through wet analysis for the laid down elements as per relevant methods of IS codes (IS: 228 Part - 1,2,3,8,9) from outside Government laboratory or from lab accredited by Accreditation agency as per extant guideline issued by RDSO or National Test House or Regional Test Centre (RTC), if required at any stage. The latest version of IS: 228 Part - 1, 2, 3, 8, 9 should therefore be available with the firm	<table><tr><td></td><td>Part 5-1976 (Re-affirmed 2018)</td><td>affirmed 2018)</td><td></td></tr><tr><td>11</td><td>IS: 3703:2004 (Re-affirmed 2020)</td><td>IS: 3703:2004 (Re-affirmed 2020)</td><td></td></tr></table> Verification of the chemical analysis of raw as well as finished product can be done through wet analysis for the laid down elements as per relevant methods of IS codes (IS: 228 Part - 1,2,3,8,9) from outside Government laboratory or from lab accredited by Accreditation agency as per extant guideline issued by RDSO or National Test House or Regional Test Centre (RTC), if required at any stage. The latest version of IS: 228 Part - 1, 2, 3, 8, 9 should therefore be available with the firm		
2.2	A reference to the specifications quoted herein shall be taken as reference from the latest edition of the specification concerned.	A reference to the specifications quoted herein shall be taken as reference from the latest edition of the specification concerned.	Nil	No Change proposed
2.3	The specific provision in this specification will over ride those in the above specifications, where these are not in conformity with one another. Any special requirements given in the drawing of the clips will over ride the relevant provisions of this specification.	The specific provision in this specification will over ride those in the above specifications, where these are not in conformity with one another. Any special requirements given in the drawing of the clips will over ride the relevant provisions of this specification.	Nil	No Change proposed
2.4	RDSO drawings relevant to the clip under production should be available for reference at the manufacturer's works.	RDSO drawings relevant to the clip under production should be available for reference at the manufacturer's works.	Nil	No Change proposed
3.0	**RAW MATERIAL PROCUREMENT:** Quality Assurance/Mechanical Directorate of RDSO approves vendors for Spring Steel Round to grade 55 Si7 to IS: 3195. Spring Steel Round	**RAW MATERIAL PROCUREMENT:** Spring Steel Rounds of grade 55Si7 conforming to IS: 3195, for manufacture of Elastic Rail Clips (ERCs), shall be procured	**1.Bridge Track & tower pvt. Ltd.** **2.Adinath Industries INC** **3.Avdesh Track(P)Ltd**	No change has been proposed in this clause.

	shall be procured from these vendors only. Vendors list are regularly updated by QA / Mechanical Dte. of RDSO. It can be accessed through RDSO website www.rdso.indianrailways.gov.in **Corrigendum No.-2** Spring Steel Rounds of grade 55 Si7 conforming to IS: 3195, for manufacture of Elastic Rail Clips (ERCs), shall be procured from RDSO approved / developmental vendors only. Vendors list can be accessed through website www.rdso.indianrailways.gov.in or www.ireps.gov.in	from RDSO approved /Developmental vendors only. Vendors list can be accessed through website www.rdso.indianrailways.gov.in or www.ireps.gov.in	**4.Kamakashi Track Fasteners:** **5.Simplex Casting Ltd.** **6.Adinath Industries** **7.Surya Coach Builders Pvt. Ltd.** **8..R Rashmi Industries** **9. .LNVS Infra Pvt. Ltd.** **10..Vedkiran steel Industries Pvt. Ltd.** We suggest to cross check with the list of manufacturers & suppliers of spring steel round for ERC active and rolling this steel for ERC. Delete and remove the name of those firms who have not been rolled/sold this spring steel for ERC since last more than one year, as this creates unnecessarily problem with the Zonal railways to convince them that all the firms in the list are not producing this steel for ERC and zonal railways impose LD charges on ERC vendors even on the grounds of non-availability of raw material which is beyond our control. To our understanding only four firms are manufacturing this steel viz., RINL, BPSL, JSPL & Surya Alloys Pvt Ltd. Steel producers should not be ERC manufacturers. **1.M/s Vaishno Mata Track,Faridabad** **2.M/s Siddhartha Metal Fabricators** **3.M/s Fateh Chand Jain**	It has been taken from Corrigendum No.2 of existing IRS/T-31 and inserted in clause 3.0. Thesuggestion of thefirms is not accepted, as they are commercial aspects having no relation with the specifications.

			We suggest to cross check with the list of manufacturers & suppliers of spring steel round for ERC active and rolling this steel for ERC. Delete and remove the name of those firms who have not been rolled/sold this spring steel for ERC since last more than one year, as this creates unnecessarily problem with the Zonal railways to convince them that all the firms in the list are not producing this steel for ERC and zonal railways impose LD charges on ERC vendors even on the grounds of non-availability of raw material which is beyond our control. To our understanding only four firms are manufacturing this steel viz., RINL, BPSL, JSPL & Surya Alloys Pvt Ltd.	
4.0	**TECHNICAL SPECIFICATION OF THE RAW MATERIAL:**			
4.1	Silico Manganese spring steel as rolled bars to Grade 55 Si7 of IS: 3195-1992 shall be used in the manufacture of clips. The technical specification of as rolled steel bars relate to supply condition of the bars in the as rolled and straightened condition for hot forming.	Silico Manganese spring steel as rolled bars to Grade 55 Si7 of IS: 3195-1992 shall be used in the manufacture of clips. The technical specification of as rolled steel bars relate to supply condition of the bars in the as rolled and straightened condition for hot forming	Nil	No Change proposed
4.2	**Manufacturing process for steel:**			
4.2.1	Steel making through basic oxygen, electric arc process shall be employed and steel made through open hearth route shall not be used. The steel shall be refined in the ladle furnace and vacuum degassed before using continuous	Steel making through basic oxygen, electric arc process shall be employed and steel made through open hearth route shall not be used. The steel shall be refined in the ladle furnace and vacuum degassed before	Nil	No Change proposed

<table>
<tr><td></td><td>process. The continuous casting machine should have the facility of electromagnetic stirring.</td><td>using continuous process. The continuous casting machine should have the facility of electromagnetic stirring.</td><td></td><td></td></tr>
<tr><td>4.2.2</td><td>The size of ingots, billets or continuous cast billets for any given size of finished steel product shall be such that a minimum reduction ratio of 16:1 from the minimum crosssectional area of the ingot billet or continuous cast billets to the maximum crosssectional area of the product is ensured.</td><td>The size of ingots, billets or continuous cast billets for any given size of finished steel product shall be such that a minimum reduction ratio of 16:1 from the minimum crosssectional area of the ingot billet or continuous cast billets to the maximum crosssectional area of the product is ensured.</td><td>Nil</td><td>No Change proposed</td></tr>
<tr><td>4.3</td><td>Chemical Composition:
The ladle analysis of the steel for the as rolled bars shall conform to following chemical composition as given in IS: 3195-1992 for grade 55 Si7 when tested spectrographically</td><td>Chemical Composition:
The ladle analysis of the steel for the as rolled bars shall conform to following chemical composition as given in IS: 3195-1992 for grade 55 Si7 when tested spectrographically</td><td>Nil</td><td>No Change proposed</td></tr>
<tr><td>4.3.1</td><td>Ladle analysis:

Carbon 0.50 - 0.60%
Manganese 0.80 - 1.00%
Silicon 1.50 - 2.00%
Sulphur 0.03(max.) %
Phosphorus 0.03(max.) %</td><td>Ladle analysis:

Carbon 0.50 - 0.60%
Manganese 0.80 - 1.00%
Silicon 1.50 - 2.00%
Sulphur 0.03(max.) %
Phosphorus 0.03(max.) %</td><td>Nil</td><td>No Change proposed</td></tr>
<tr><td>4.3.2</td><td>Product analysis:
The variation for the product analysis shall be within the following permissible range over ladle sample analysis and Permissible variations shall not be applicable both over and under the specified limits in several determinations in a heat:

<table><tr><td>Element</td><td>Permissible variation</td></tr><tr><td>Carbon</td><td>± 0.03%</td></tr><tr><td>Manganese</td><td>± 0.04%</td></tr><tr><td>Silicon</td><td>± 0.05%</td></tr><tr><td>Sulphur</td><td>+ 0.005%</td></tr><tr><td>Phosphorus</td><td>+ 0.005%</td></tr></table></td><td>Product analysis:
The variation for the product analysis shall be within the following permissible range over ladle sample analysis and Permissible variations shall not be applicable both over and under the specified limits in several determinations in a heat:

<table><tr><td>Element</td><td>Permissible variatic</td></tr><tr><td>Carbon</td><td>± 0.03%</td></tr><tr><td>Manganese</td><td>± 0.04%</td></tr><tr><td>Silicon</td><td>± 0.05%</td></tr><tr><td>Sulphur</td><td>+ 0.005%</td></tr><tr><td>Phosphorus</td><td>+ 0.005%</td></tr></table></td><td>Nil</td><td>No Change proposed</td></tr>
<tr><td>4.4</td><td>Grain Size:
The grain size of as rolled bars shall be 6 or finer</td><td>Grain Size:
The grain size of as rolled bars shall be 6 or</td><td>Nil</td><td>No Change proposed</td></tr>
</table>

	as per IS: 4748-2009.	finer as per IS: 4748-2009.		
4.5	**Inclusion Rating:** The inclusion rating when determined as per IS: 4163-2004 shall not be worse than 2.0 (thin) and 2.0 (thick) A, B, C, D as per IS: 4163-2004.	**Inclusion Rating:** The inclusion rating when determined as per IS: 4163-2004 shall not be worse than 2.0 (thin) and 2.0 (thick) A, B, C, D as per IS: 4163-2004.	Nil	No Change proposed
4.6	**Hardness:** The hardness of as rolled bars when tested in accordance with IS: 1500-2005, the average of three readings shall be approximately 270 HBW or its equivalent in HRC or HV scales. This value is for general guidance only.	**Hardness:** The hardness of as rolled bars when tested in accordance with IS: 1500-2005, the average of three readings shall be approximately 270 HBW or its equivalent in HRC or HV scales. This value is for general guidance only.	Nil	No Change proposed
4.7	**Depth of decarburization:** The average total depth of decarburization (partial + complete) tested in accordance with IS: 6396-2000 with magnification of x100 of 5 deepest decarburized zones shall not be more than 0.15 mm.	**Depth of decarburization:** The average total depth of decarburization (partial + complete) tested in accordance with IS: 6396-2000 with magnification of x100 of 5 deepest decarburized zones shall not be more than 0.15 mm.	Nil	No Change proposed
4.8	**Freedom from defects:**			
4.8.1	The surface of the as rolled bars shall be reasonably smooth and free from distortion, twist and kinks, and shall be substantially straight.	The surface of the as rolled bars shall be reasonably smooth and free from distortion, twist and kinks, and shall be substantially straight.	Nil	No Change proposed
4.8.2	The as rolled bars shall be free from harmful defects namely folds, laps, cracks, deep pits, grooves, excessive scaling which may lead to cracking during hardening or impair the serviceability. Permissible depth of seam and lap in the rolled bar shall be d/100 or 0.25 mm whichever is less (d is bar diameter). It shall, however, to be ensured that during the inspection of the raw material, a strict vigil is maintained and the raw material is purchased by the manufacturers as stated in clause 3 only. The material shall be free from harmful internal defects, such as piping and segregation which may impair serviceability.	The as rolled bars shall be free from harmful defects namely folds, laps, cracks, deep pits, grooves, excessive scaling which may lead to cracking during hardening or impair the serviceability. Permissible depth of seam and lap in the rolled bar shall be d/100 or 0.25 mm whichever is less (d is bar diameter). It shall, however, to be ensured that during the inspection of the raw material, a strict vigil is maintained and the raw material is purchased by the manufacturers as stated in clause 3 only. The material shall be free from harmful internal defects, such as piping and segregation which may impair serviceability.	Nil	No Change proposed

4.9	**Section:** Section of as rolled bars shall be as per order. The tolerance on the diameter shall be + 1.0% and -0.8% **Corrigendum No.-1** Section of as rolled bars shall be as per order. The tolerance on the diameter of as rolled bars for 20.64mm & 23mm is as under: For dia. 20.64 mm: 20.47 mm to 20.84mm For dia. 23 mm: 22.81mm to 23.23mm The measurement of diameter shall be carried out with the help of Venire calliper with a digital display	**Section:** Section of as rolled bars shall be as per order. The tolerance on the diameter of as rolled bars for 20.64mm & 23mm is as under: For dia. 20.64 mm: -0.17 mm, +0.20 mm For dia. 23 mm: -0.19 mm, +0.23 mm The measurement of diameter shall be carried out with the help of Venire callipers with digital display	Nil	No change proposed only rewording of paragraph has been done.
4.10	**Marking:**			
4.10.1	The bars supplied shall be distinctly marked with paint or sticker at the extreme ends with different colours to be related with the heat number of material by which steel may be traced to the cast from which it has been made. The bars of different heats shall not be mixed up and shall be stored in stacks heat wise	The bars supplied shall be distinctly marked with paint or sticker at the extreme ends with different colours to be related with the heat number of material by which steel may be traced to the cast from which it has been made. The bars of different heats shall not be mixed up and shall be stored in stacks heat wise	Nil	No Change proposed
4.10.2	The bars should be supplied in bundles tied with binding wires and also with packing strips (18-33 mm width) at minimum three locations having manufacturer's seal/name/logo/code. In addition, a metal tag shall also be provided with each bundle bearing the details of firm (code, name etc), PO No., Heat No., date, grade, size and length.	The bars should be supplied in bundles tied with binding wires and also with packing strips (18-33 mm width) at minimum three locations having manufacturer's seal/name/logo/code. In addition, a metal tag shall also be provided with each bundle bearing the details of firm (code, name etc), PO No., Heat No., date, grade, size and length.	Nil	No Change proposed
4.11	**Test certificate and raw material checking:**			
4.11.1	The test certificate from the producer of steel bars showing the followingshould be available with the manufacturer. (i) Heat number & Grade (ii) Colour code (iii) Chemical analysis (iv) Inclusion rating (v) Grain size	The test certificate from the producer of steel bars showing the followingshould be available with the manufacturer. (i) Heat number & Grade (ii) Colour code (iii) Chemical analysis (iv) Inclusion rating (v) Grain size	**1.Bridge Track & tower pvt. Ltd.** **2.M/s Vaishno Mata Track,Faridabad.** **3.Adinath Industries INC** **4.Avdesh Track(P)Ltd** **5.M/s Siddhartha Metal Fabricators**	The suggestion of the firm is accepted and all approved / developmental vendors of the spring steel round will be informed.

	(vi) Depth of decarburization (C, P&T) (vii) Freedom from harmful defects (viii) Section (ix) Hardness (x) Weight of consignment. The above particulars shall be furnished by the manufacturer for each heat of the raw material whenever requested by the inspecting agency.	(vi) Depth of decarburization (C, P&T) (vii) Freedom from harmful defects (viii) Section (ix) Hardness (x) Weight of consignment. (xi) Process Route (xii) MPI test (xiii) Austenite Quenched Hardness (xiv) Reduction Ratio (xv) Gas Content (O2 & H2 in ppm) The above particulars shall be furnished by the manufacturer for each heat of the raw material whenever requested by the inspecting agency	**6.M/s Fateh Chand Jain** **7.Kamakashi Track Fasteners:** **8.Simplex Casting Ltd.** **9.Adinath Industries** **10. Surya Coach Builders Pvt. Ltd.** **11.R Rashmi Industries** **12 LNVS Infra Pvt. Ltd.** **13.Vedkiran steel Industries Pvt. Ltd.** The proposed amendments in Test certificate from the producer of steel bars must be informed to all the Spring steel RDSO approved producers as per vendor list. We should not be made responsible for such requirement from steel producers as those are not in our control.	
4.11.2	The bars shall be checked by the manufacturer for the properties (iii) to (ix) of para 4.11.1 above at the rate of two sample bars per heat, (except for the diameter of the bar) and 20 sample bars per heat for the diameter. The observations shall be recorded in the proforma given in Annexure-I & Annexure-II respectively and shall be compared with the test certificate and shall be examined for acceptability with respect to specification for raw material before its use in the manufacture of clips. The chemical analysis (% value) of elements of raw material is mentioned in the Test Certificate of raw material supplier. When this chemical analysis (% value) of elements of raw material / finished product is verified / checked by the inspecting agency / firm, then the observed values shall not vary from the supplier's test certificate (ladle analysis)	The bars shall be checked by the manufacturer for the properties (iii) to (ix) of para 4.11.1 above at the rate of two sample bars per heat, (except for the diameter of the bar) and 20 sample bars per heat for the diameter. The observations shall be recorded in the proforma given in Annexure-I & Annexure-II respectively and shall be compared with the test certificate and shall be examined for acceptability with respect to specification for raw material before its use in the manufacture of clips. The chemical analysis (% value) of elements of raw material is mentioned in the Test Certificate of raw material supplier. When this chemical analysis (% value) of elements of raw material / finished product is verified / checked by the inspecting agency / firm,	Nil	No Change proposed

	value beyond the permissible limits given in clause 4.3.2 for acceptance of that heat.	then the observed values shall not vary from the supplier's test certificate (ladle analysis) value beyond the permissible limits given in clause 4.3.2 for acceptance of that heat.		
4.11.3	Inspection of raw material is mandatory for inspecting officials. The manufacturer of product shall be allowed only after inspection of raw material by inspecting authority. It shall be the responsibility of the firm to get the raw material inspected before its use for production of clips.	Inspection of raw material is mandatory for inspecting officials. The manufacturer of product shall be allowed only after inspection of raw material by inspecting authority. It shall be the responsibility of the firm to get the raw material inspected before its use for production of clips.	Nil	No Change proposed
	Coriigendum No.-2			
~~**4.11A**~~	**INSPECTION OF RAW MATERIAL (i.e. SPRING STEEL ROUNDS) AT THE PREMISES OF PRODUCER OF SPRING STEEL ROUNDS:** The producer/manufacturer of spring steel rounds shall carry out the following tests and submit the necessary test certificates/reports. Further, documents pertaining to the steel manufacture, refining details, ingot shape and size of the rolled product, cropping yield etc. shall also be submitted. i) Heat number & Grade ii) Colour code iii) Chemical analysis iv) Inclusion rating v) Grain size vi) Depth of decarburization (C, P&T) vii) Freedom from harmful defects viii) Section/Dimension ix) Hardness x) Weight of consignment. x) Reduction rati	~~**INSPECTION OF RAW MATERIAL (i.e. SPRING STEEL ROUNDS) AT THE PREMISES OF PRODUCER OF SPRING STEEL ROUNDS:**~~ ~~The producer/manufacturer of spring steel rounds shall carry out the following tests and submit the necessary test certificates/reports. Further, documents pertaining to the steel manufacture, refining details, ingot shape and size of the rolled product, cropping yield etc. shall also be submitted.~~ ~~i) Heat number & Grade~~ ~~ii) Colour code~~ ~~iii) Chemical analysis~~ ~~iv) Inclusion rating~~ ~~v) Grain size~~ ~~vi) Depth of decarburization (C, P&T)~~ ~~vii) Freedom from harmful defects~~ ~~viii) Section/Dimension~~ ~~ix) Hardness x) Weight of consignment.~~ ~~x) Reduction rati~~	**1.Bridge Track & tower pvt. Ltd.** **2.M/s Vaishno Mata Track,Faridabad** **3.Adinath Industries INC** **4.Avdesh Track(P)Ltd** **5.Kamakashi Track Fasteners:** **6.Simplex Casting Ltd.** **7.Adinath Industries** **8. Surya Coach Builders Pvt. Ltd.** **9.R Rashmi Industries** **10. LNVS Infra Pvt. Ltd.** **11.Vedkiran steel Industries Pvt. Ltd.** We strongly propose to introduce the inspection of spring steel round for ERC at the steel producers plant itself as it is being carried out for coil spring steel. It will help us to trace the raw material used by ERC vendors, and quality will also remain intact **5.M/s Siddhartha Metal Fabricators** **6.M/s Fateh Chand Jain**	Suggestions are not acceptable as it is not practical to carry out inspections at the premises of the raw material manufacturer.

			We strongly propose to introduce the inspection of spring steel round for ERC at the steel producers plant itself as it is being carried out for coil spring steel. It will help us to trace the raw material used by ERC vendors are form the RDSO approved source only not from any other unapproved source.	
~~**4.11A.1**~~	While carrying out inspection of rolled bars the inspecting official would pay special attention to following: a) Size of ingots/billets used as verified from the records of the steel manufacturer. b) Dressing of complete billet by general surface grinding and freedom from surface defects c) Discarding of end portions at both ends of each billet and freedom from piping. d) The size of ingot used shall be checked, recorded and verified that minimum reduction ratio 16:1 is ensured for the rolled bars offered for inspection.	~~While carrying out inspection of rolled bars the inspecting official would pay special attention to following:~~ ~~e) Size of ingots/billets used as verified from the records of the steel manufacturer.~~ ~~f) Dressing of complete billet by general surface grinding and freedom from surface defects~~ ~~g) Discarding of end portions at both ends of each billet and freedom from piping.~~ ~~h) The size of ingot used shall be checked, recorded and verified that minimum reduction ratio 16:1 is ensured for the rolled bars offered for inspection.~~	Do	Suggestions are not acceptable as it is not practical to carry out inspections at the premises of the raw material manufacturer.
~~**4.11A.2**~~	The inspecting official shall carry out the tests of properties mentioned in Para 4.11A (iii) to (ix), as per sampling plan given in Para 4.11A.5 of this document and maintain records. He may draw Page 2 of 5 any additional number of samples and carry- out tests at his discretion. He shall also have the right to cross check any of the above parameters by actual tests at his discretion and at the cost of the spring steel manufacturer.	~~The inspecting official shall carry out the tests of properties mentioned in Para 4.11A (iii) to (ix), as per sampling plan given in Para 4.11A.5 of this document and maintain records. He may draw Page 2 of 5 any additional number of samples and carry- out tests at his discretion. He shall also have the right to cross check any of the above parameters by actual tests at his discretion and at the cost of the spring steel manufacturer.~~	Do	Suggestions are not acceptable as it is not practical to carry out inspections at the premises of the raw material manufacturer.

<table>
<tr>
<td ~~4.11A.3~~</td>
<td>The inspecting official shall examine various registers and records maintained by the spring steel manufacturer to verify heat wise checks carried out on various parameters and manufacturing practices like production of ingots with wide end up and hot top cropping of each ingot/primary rolled billet etc.</td>
<td ~~The inspecting official shall examine various registers and records maintained by the spring steel manufacturer to verify heat wise checks carried out on various parameters and manufacturing practices like production of ingots with wide end up and hot top cropping of each ingot/primary rolled billet etc.~~</td>
<td>Do</td>
<td>Suggestions are not acceptable as it is not practical to carry out inspections at the premises of the raw material manufacturer.</td>
</tr>
<tr>
<td ~~4.11A.4~~</td>
<td>Records for all the above tests shall be made available for scrutiny of inspecting official. Samples of the above test shall be preserved for atleast 3 months for counter check by inspecting official.</td>
<td ~~Records for all the above tests shall be made available for scrutiny of inspecting official. Samples of the above test shall be preserved for atleast 3 months for counter check by inspecting official.~~</td>
<td>Do</td>
<td>Suggestions are not acceptable as it is not practical to carry out inspections at the premises of the raw material manufacturer.</td>
</tr>
<tr>
<td ~~4.11A.5~~</td>
<td>Sampling (Random) of Spring Steel Rounds shall be as follows:
<table>
<tr><th>S no.</th><th>Items</th><th>Relevant Specification</th><th>Sampling</th></tr>
<tr><td>1</td><td>Chemical Analysis</td><td>IS:228</td><td>2 bars per heat</td></tr>
<tr><td>2</td><td>Hardness</td><td>IS:1500</td><td>10 bars per heat</td></tr>
<tr><td>3</td><td>Macro Examination</td><td>IS:7739</td><td>0.5% subject to minimum of 5 bars per heat.</td></tr>
<tr><td>4</td><td>Depth of Decarburisation</td><td>IS:6396 3</td><td>bars per heat</td></tr>
<tr><td>5</td><td>Inclusion Content.</td><td>IS:4163</td><td>3 bars per heat</td></tr>
<tr><td>6</td><td>Grain size.</td><td>ASTM-E112</td><td>3 bars per heat</td></tr>
<tr><td>7</td><td>Visual checks for defects.</td><td>IS:3195</td><td>2% of black bars per heat.</td></tr>
<tr><td>8</td><td>Verification</td><td>IS:3195</td><td>5 bars per</td></tr>
</table>
~~Sampling (Random) of Spring Steel Rounds shall be as follows:~~
<table>
<tr><th>~~S no.~~</th><th>~~Items~~</th><th>~~Relevant Specification~~</th><th>~~Sampling~~</th></tr>
<tr><td>~~1~~</td><td>~~Chemical Analysis~~</td><td>~~IS:228~~</td><td>~~2 bars pe heat~~</td></tr>
<tr><td>~~2~~</td><td>~~Hardness~~</td><td>~~IS:1500~~</td><td>~~10 bars p heat~~</td></tr>
<tr><td>~~3~~</td><td>~~Macro Examination~~</td><td>~~IS:7739~~</td><td>~~0.5% subject t minimum of 5 bars per heat.~~</td></tr>
<tr><td>~~4~~</td><td>~~Depth of Decarburisation~~</td><td>~~IS:6396 3~~</td><td>~~bars per heat~~</td></tr>
<tr><td>~~5~~</td><td>~~Inclusion Content.~~</td><td>~~IS:4163~~</td><td>~~3 bars pe heat~~</td></tr>
<tr><td>~~6~~</td><td>~~Grain size.~~</td><td>~~ASTM-E112~~</td><td>~~3 bars pe heat~~</td></tr>
<tr><td>~~7~~</td><td>~~Visual checks for defects.~~</td><td>~~IS:3195~~</td><td>~~2% of black bar per heat.~~</td></tr>
<tr><td>~~8~~</td><td>~~Verification~~</td><td>~~IS:3195~~</td><td>~~5 bars pe~~</td></tr>
</table>
</td>
<td>Do</td>
<td>Suggestions are not acceptable as it is not practical to carry out inspections at the premises of the raw material manufacturer.</td>
</tr>
</table>

	of dimensional tolerance heat	~~of dimensional tolerance heat~~	
~~4.11A.6~~	Inspecting official may pick up two samples per 250 tonnes of material offered or part thereof and send the same to NABL accredited labs for confirmatory test for chemical and metallurgical properties at Spring Steel Manufacturer's expense. This test should not form part of purchase acceptance test but will only serve as a counter check on Spring Steel Manufacturer's quality control practice.	~~Inspecting official may pick up two samples per 250 tonnes of material offered or part thereof and send the same to NABL accredited labs for confirmatory test for chemical and metallurgical properties at Spring Steel Manufacturer's expense. This test should not form part of purchase acceptance test but will only serve as a counter check on Spring Steel Manufacturer's quality control practice.~~	Do	Suggestions are not acceptable as it is not practical to carry out inspections at the premises of the raw material manufacturer.
~~4.11A.7~~	Rejection: In case the material offered for inspection fails to meet any of the requirements laid down in specification, twice the size of the original sample shall be drawn and tested for the parameters in which the original sample had failed. If one or both the retest samples fail, the complete heat shall be treated as failed. The manufacturer shall then undertake to render the heat unserviceable for Railways' use.	~~Rejection: In case the material offered for inspection fails to meet any of the requirements laid down in specification, twice the size of the original sample shall be drawn and tested for the parameters in which the original sample had failed. If one or both the retest samples fail, the complete heat shall be treated as failed. The manufacturer shall then undertake to render the heat unserviceable for Railways' use.~~	Do	Suggestions are not acceptable as it is not practical to carry out inspections at the premises of the raw material manufacturer.
~~4.11A.8~~	Procedure of Inspection of Raw material i.e. spring steel rounds of dia 20.64mm/23mm of grade 55Si7 conforming to IS: 3195 a) The inspection shall be carried out by the RDSO. b) Raw material manufacturer has to submit an advance intimation in writing, at least 15 days prior to their rolling schedule to RDSO, so that the inspecting officials can be nominated by RDSO accordingly. c) The Raw material manufacturer can offer the entire/partial quantity rolled or planned to roll for inspection. Page 3 of 5	~~Procedure of Inspection of Raw material i.e. spring steel rounds of dia 20.64mm/23mm of grade 55Si7 conforming to IS: 3195~~ ~~h) The inspection shall be carried out by the RDSO.~~ ~~i) Raw material manufacturer has to submit an advance intimation in writing, at least 15 days prior to their rolling schedule to RDSO, so that the inspecting officials can be nominated by RDSO accordingly.~~ ~~j) The Raw material manufacturer can offer the entire/partial quantity rolled or planned to roll for inspection. Page 3 of 5~~	Do	Suggestions are not acceptable as it is not practical to carry out inspections at the premises of the raw material manufacturer.

	d) The raw material manufacturer shall offer the spring steel round bars, size wise and heat wise for inspection. e) The inspecting official will check all the parameters as per Para 4.11A.5 above and certify the manufacturer's test certificates (MTC) heatwise. f) Inspecting official shall issue Inspection Certificates (ICs) for the offered round bars, heatwise and shall paste a hologram on each bar. g) g) The raw material manufacturer will then supply the certified material to ERC manufacturers against their PO along with the certified true copy of manufacturer's test certificates (MTC) and certified true copy of IC.	~~k) The raw material manufacturer shall offer the spring steel round bars, size wise and heat wise for inspection.~~ ~~l) The inspecting official will check all the parameters as per Para 4.11A.5 above and certify the manufacturer's test certificates (MTC) heatwise.~~ ~~m) Inspecting official shall issue Inspection Certificates (ICs) for the offered round bars, heatwise and shall paste a hologram on each bar.~~ ~~n) g) The raw material manufacturer will then supply the certified material to ERC manufacturers against their PO along with the certified true copy of manufacturer's test certificates (MTC) and certified true copy of IC.~~		
5.0	**MANUFACTURE OF CLIPS:**			
5.1	The clips, except for ERC Mk-V shall be manufactured from as rolled silicomanganese spring steel rounds as per technical specification (reference Para 4) by hot forming and shall be subsequently oil hardened and tempered to give uniform hardness across the section. The clips shall conform to the requirements of the relevant drawing and tests stipulated hereinafter. For ERC Mk-V, inter alia, the clips shall be manufactured by using 23mm dia. rod of material specified in clause 4.1 to keep the central leg portion fit to be used with existing design of sleeper, diameter in the central leg portion shall be reduced to 20.64mm. This shall be achieved by precise profiling using machines like Hydro copying turning machine to avoid sharp edges/curves.	The clips, except for ERC Mk-V shall be manufactured from as rolled silicomanganese spring steel rounds as per technical specification (reference Para 4) by hot forming and shall be subsequently oil hardened and tempered to give uniform hardness across the section. The clips shall conform to the requirements of the relevant drawing and tests stipulated hereinafter. For ERC Mk-V, inter alia, the clips shall be manufactured by using 23mm dia. rod of material specified in clause 4.1 to keep the central leg portion fit to be used with existing design of sleeper, diameter in the central leg portion shall be reduced to 20.64mm. This shall be achieved by precise profiling using machines like Hydro copying turning machine to avoid sharp edges/curves.	Nil	No Change proposed

5.2	The cut bars shall also be subjected to 100% crack detection by Magnetic Particle Crack Detector Machine as per IS 3703: 2004 before using them into production to ensure that the cut bars are free from harmful seams and other defects. Removal of surface seams by grinding shall be done provided the cut bar meets the specified limits of dimensional tolerances. The observations shall be recorded in the proforma given in Annexure-II A.	**Existing clause5.2 is now in clause 5.3 and newclause"Heat Treatment" is addedas clause 5.2, which is as under:** **Heat Treatment:** The forging of the clip shall be carried out when the temperature of the cut bar ismore than 900°C. The forging time of the clip after coming out from inductionfurnace and tillimmersion in the quenching tank shall not be more than 20second. The temperature of quenching oil shall be maintained less than 70^{0}C.The quenching tank shall be adequately dimensioned with capacity to hold morethan 20,000 liters of quenching oil and should be checked regularly for water anddirt content and condition of the filter. Furnace used for tempering shall beelectric continuous type equipped with independent thermocouple for each zoneto control temperature within ± 50C. The tempering should be done at thetemperature range of 400°C – 505°C.	**1.Bridge Track & tower pvt. Ltd.** **2.M/s Vaishno Mata Track,Faridabad.** **3.Adinath Industries INC** **4.Kamakashi Track Fasteners:** **5.Simplex Casting Ltd.** **6.Adinath Industries** **7. Surya Coach Builders Pvt. Ltd.** **8.R Rashmi Industries** **9. LNVS Infra Pvt. Ltd.** **10.Vedkiran steel Industries Pvt. Ltd.** The capacity of quenching tank depends upon individual firm's production capacity thus it should be mentioned as adequate capacity and tempering furnace should be oil fired/Gas fired as proposed in the STR Electric Tempering should be continued to be optional as it will not give any advantage in improving the quality. 20000 litres quenching tank capacity and electric tempering furnace are not at all acceptable to us. Our purpose is to maintain the temperature of Quenching oil >70^0 C, which we are maintaining with the help of cooling tower and heat exchanger of adequate capacity **1.Avdesh Track(P)Ltd**	The comments of the firms are not accepted. Oil fired or Gas Fired walking beam type heating furnaces have following drwabacks which adversely affect the quality of ERCs in regular production: i)It is difficult to maintain uniform temperature in the oil/gas fired furnaces. ii)The soaking time in the oil/gas fired furnace is more than 14 minutes. This leads to over burning of bars, reduction in section due to the over scaling and high depth of decarburization. iii)Bars in the oil/gas fired furnace stick together with other bars. iv) Oil/gas fired heating furnaces have adverse Environmental effect. To eliminate the above drawbacks and to improve the quality of ERC, Induction heating furnace is required. Similarly in the tempering process, the temperature control in different zones in the oil fired/gas fired tempering furnaces is

			The capacity of quenching tank depends upon individual firm's production capacity thus it should be mentioned as adequate capacity and tempering furnace should be oil fired/Gas fired as proposed in the STR Electric Tempering should be continued to be optional as it will not give any advantage in improving the quality. 20000 litres quenching tank capacity and electric tempering furnace are not at all acceptable to us. Our purpose is to maintain the temperature of Quenching oil >70^0 C, which we are maintaining with the help of cooling tower and heat exchanger of adequate capacity It is not the Volume of oil but the cooling technology(heat exchanger and colling Tower)that define the temperature of oil. **1.M/s Siddhartha Metal Fabricators** **2.M/s Fateh Chand Jain** The capacity of quenching tank depends upon individual firm's production capacity thus it should mentioned adequate capacity and tempering furnace should be oil fired as proposed in the STR	difficult, which leads to variation in the hardness of clip. Therefore, Electrical tunnel type induction furnace with thyristor-based control system is necessary to ensure the desired temperature across the tunnel and maintain uniform hardness in the ERCs. The quenching tank is used for quenching of ERC from 900^0C toless than 70^o C.The Martensitic structure in ERC is formed in the quenching tank. Hence the capacity of quenching tank is proposed 20000 L. This will help maintain the desired temperature. However, the suggestions of the firms have been examined and necessary modifications have been made.

			20000 liters quenching tank capacity and electric tempering furnace are not at all acceptable to us.	
5.3	**Marking:** All the firms have been given code for inscription of stamps. All clips shall bear clear inscription of stamp at the heel of the clip to indicate manufacturers initial, the last one digit of the year of manufacture and the lot number of the year. Example: AE9 1 AE Firms initial 9 last digit of year of manufacture 1 Lot No.	**Existing clause5.2 is now in clause 5.3 and clause 5.3 is now Clause 5.4** Minimum 03 bars per hour shall~~also~~be subjected to ~~100%~~crack detection byMagnetic Particle Crack Detector Machine as per IS 3703: 2004~~before usingthem into~~during production to ensure that the cut bars are free from harmfulseams and other defects. Removal of surface seams by grinding shall be doneprovided the cut bar meets the specified limits of dimensional tolerances. Theobservations shall be recorded in the proforma given in Annexure-II A.	**1.Bridge Track & tower pvt. Ltd.** **2.M/s Vaishno Mata Track,Faridabad.** **3.Adinath Industries INC** **4.Avdesh Track(P)Ltd** **5.M/s Siddhartha Metal Fabricators** **6.M/s Fateh Chand Jain** **7.Kamakashi Track Fasteners:** **8.Simplex Casting Ltd.** **9.Adinath Industries** **10. Surya Coach Builders Pvt. Ltd.** **11.R Rashmi Industries** **13.Vedkiran steel Industries Pvt. Ltd.** Amendment of 03 bars per hour crack detection by MPI machine from 100% should be taken up with immediate effect and should be communicated through separate letter to Inspection agency, RITES URGENTLY so that the bottle neck in production and process inspection should be addressed immediately and supplies should not get affected. Annexure-IIA should also be corrected from 100% to 3 bars per hour.	The comments of the firm have been examined and Annexure IIA has been modified.

~~**5.3**~~ **5.4**	-	**Marking:** All the firms have been given code for inscription of stamps. All clips shall bear clear inscription of stamp at the heel of the clip to indicate manufacturers initial, the last one digit of the year of manufacture and the lot number of the year. Example: AE9 1 AE Firms initial 9 last digit of year of manufacture 1 Lot No.	Nil	No change is proposed in this clause. Numbering of this clause is changed as clause 5.4
6.0	**LOT AND SAMPLE SIZE FOR TESTING:**			
6.1	For the purpose of testing the number of clips manufactured from the same heat and heat treated in similar manner will form one lot. The clips inspected by RDSO should be distinctly identifiable in the field. For ERC Mk-III & ERC Mk-V, a mark is to be made at the end face of straight leg with yellow paint and green paint respectively of approved quality, before giving one coat of boiled linseed oil as per clause 9 of specification.	For the purpose of testing the number of clips manufactured from the same heat and heat treated in similar manner will form one lot. The clips inspected by RDSO should be distinctly identifiable in the field. For ERC Mk-III & ERC Mk-V, a mark is to be made at the end face of straight leg with yellow paint and green paint respectively of approved quality, before giving one coat of boiled linseed oil as per clause 9 of specification.	**1.Bridge Track & tower pvt. Ltd.** **2.M/s Vaishno Mata Track,Faridabad.** **3.Adinath Industries INC** **4.Avdesh Track(P)Ltd** **5.Kamakashi Track Fasteners:** **6.Simplex Casting Ltd.** **7.Adinath Industries** **8.Surya Coach Builders Pvt. Ltd.** **9.R Rashmi Industries** **10. LNVS Infra Pvt. Ltd.** **11.Vedkiran steel Industries Pvt. Ltd.** For the purpose of testing the number of clips manufactured from the same heat and heat treated in similar manner will form one lot. ~~The clips inspected by RDSO should be distinctly identifiable in the field. For ERC Mk-III & ERC Mk-V, a mark is to be made at the end face of straight leg with yellow paint and green paint~~	No change is proposed in this clause. The comments of the firm have been examined and Para has been modified, accordingly.

			~~respectively of approved quality~~, before giving one coat of boiled linseed oil as per clause 9 of specification. We propose to remove the application of yellow and green paint at the end face of straight let of ERCs as this process cannot be mechanized and is quite labour oriented job unnecessarily causes delay in packing and production. **1.M/s Siddhartha Metal Fabricators** **2.M/s Fateh Chand Jain** For the purpose of testing the number of clips manufactured from the same heat and heat treated in similar manner will form one lot. ~~The clips inspected by RDSO should be distinctly identifiable in the field. For ERC Mk-III & ERC Mk-V, a mark is to be made at the end face of straight leg with yellow paint and green paint respectively of approved quality~~, ~~before giving~~one coat of boiled linseed oil as per clause 9 of specification. We propose to remove the application of yellow and green paint at the end face of straight let of ERCs as this process cannot be mechanized and is quite labour oriented job unnecessarily causes delay in	

			packing and production.	
6.2	For Hardness test, dimensional check and toe load tests, the sample size and the acceptance and rejection numbers for Inspection Level IV and AQL of 1.5% shall be as per IS: 2500 (Part I) - 2000 and reproduced in Annexure- III of this standard. 8 For "Application & Deflection" test, all clips shall be driven at least one time into the application deflection block (RT-3745 Alt.1/RT-4710) and results shall be recorded in Annexure - X of this standard. **Corrigendum No-1** For Hardness test, dimensional check, toe load tests and weight test, the sample size and the acceptance and rejection numbers for Inspection Level IV and AQL of 1.5% shall be as per IS: 2500 (Part I) - 2000 and reproduced in Annexure- III of this standard. For "Application & Deflection" test, all clips shall be driven at least one time into the application deflection block (RT-3745 Alt.1/RT-4710) and results shall be recorded in Annexure - X of this standard.	For Hardness test, dimensional check and toe load tests, the sample size and the acceptance and rejection numbers for Inspection Level IV and AQL of ~~1.5%~~2.5% shall be as per IS: 2500 (Part I) - 2000 and reproduced in Annexure- III of this standard. For "Application & Deflection" test, all clips shall be driven at least one time into the application deflection block (RT-3745 Alt.1/RT-4710) and results shall be recorded in Annexure - X of this standard.	**1.Bridge Track & tower pvt. Ltd.** **2.M/s Vaishno Mata Track,Faridabad.** **3.Adinath Industries INC** **4.Avdesh Track(P)Ltd** **5.Kamakashi Track Fasteners:** **6.Simplex Casting Ltd.** **7.Adinath Industries** **8. Surya Coach Builders Pvt. Ltd.** **9.R Rashmi Industries** **10. LNVS Infra Pvt. Ltd.** **11.Vedkiran steel Industries Pvt. Ltd.** ERC is bulk production item and is open die forging without machining. Thus, we propose to change the AQL to 4% and further make the necessary amendments to all the respective Annexures as per AQL 4% **1.M/s Siddhartha Metal Fabricators** **2.M/s Fateh Chand Jain** Accepted ,Kindly make the necessary amendments to all the respective annexureas per AQL 2.5%	The comments of the firms are not accepted. The change in AQL level from 1.5% to 2.5% is in-line with the other products of track fittings. The comments of the firms are accepted

6.3	For chemical analysis, depth of decarburization, freedom from defect, examination of microstructure and inclusion rating, the sample size shall be as given under relevant clause.	For chemical analysis, depth of decarburization, freedom from defect, examination of microstructure and inclusion rating, the sample size shall be as given under relevant clause.	Nil	No Change proposed
6.4	The test samples for different tests shall be drawn at random from each lot.	The test samples for different tests shall be drawn at random from each lot.	Nil	No Change proposed
6.5	The clips shall be offered for inspection as per letter given in Annexure-IV.	The clips shall be offered for inspection as per letter given in Annexure-IV.	Nil	No Change proposed
7.0	**TESTS:**			
7.1	Chemical analysis: One sample clip drawn from the production of each lot shall be tested for chemical analysis spectrographically for determination of Carbon, Silicon, Manganese, Sulphur and Phosphorus. The sample shall conform to the requirement of chemical composition stipulated in Para 4.11.2. If the chemical composition does not conform to the specified chemical composition, the lot shall be rejected.	Chemical analysis: One sample clip drawn from the production of each lot shall be tested for chemical analysis spectrographically for determination of Carbon, Silicon, Manganese, Sulphur and Phosphorus. The sample shall conform to the requirement of chemical composition stipulated in Para 4.11.2. If the chemical composition does not conform to the specified chemical composition, the lot shall be rejected.	Nil	No Change proposed
7.2	**Hardness test:** The sample clips shall be tested for Hardness in accordance with IS: 1586 (Part 2) - 2018 "Rockwell Hardness Test (B&C Scales) for steels' or IS: 1501 (Part-I) – 2020 (Fifth Revision) "Vickers Hardness Test for Steel" or IS: 1500-2005 "Brinell Hardness Test for Steel" and shall conform to the following requirements as the case may be: Hardness Hardness Number HRC 40-44 HV 380-435 HBW 375-415	**Hardness test:** The sample clips shall be tested for Hardness in accordance with IS: 1586 (Part 2) - 2018 "Rockwell Hardness Test (B&C Scales) for ~~steels' or IS: 1501 (Part-I) – 2020 (Fifth Revision) "Vickers Hardness Test for Steel" or IS: 1500-2005 "Brinell Hardness Test for Steel~~" and shall conform to the following requirements as the case may be: Hardness Hardness Number HRC 42±2 ~~HV 380-435~~ ~~HBW 375-415~~	**1.Bridge Track & tower pvt. Ltd.** **2.M/s Vaishno Mata Track,Faridabad.** **3.Adinath Industries INC** **4.Avdesh Track(P)Ltd** **5.M/s Siddhartha Metal Fabricators** **6.M/s Fateh Chand Jain** **7.Kamakashi Track Fasteners** **8.Simplex Casting Ltd.** **9.Adinath Industries** **10. Surya Coach Builders Pvt. Ltd.** **11.R Rashmi Industries** **12 LNVS Infra Pvt. Ltd.** **13.Vedkiran steel Industries**	The comments of the firms are not accepted. The tolerance is given on the fixed value rather than on the range of the value. Further, with the proper heat treatment of 55Si7 grade steel, the hardness in the range of 40-44 HRC can easily be achieved.The hardness range has

			Pvt. Ltd. Not Acceptable, based on our experiences of more than 4 decades, we propose to amend the rage of hardness as (40-44) ± 2 HRC OR 42 ± 4 HRC The proposed range by us do not affect the quality of ERCs and it would be considered as passed during testing instead of considering them fail with the tolerance as proposed above.	historically been achieved by the manufacturers since 1990's.
7.3	**Decarburisation Test:**			
7.3.1	For decarburization test, the sample clips shall be microscopically examined at magnification x100 for decarburization as per IS: 6396-2000. The average total depth of decarburization (partial + complete) of five deepest decarburized zones of each sample clip shall not be more than d/100 or 0.25mm whichever is less for acceptance of material where 'd' is bar dia.	For decarburization test, the sample clips shall be microscopically examined at magnification x100 for decarburization as per IS: 6396-2000. The average total depth of decarburization (partial + complete) of five deepest decarburized zones of each sample clip shall not be more than d/100 or 0.25mm whichever is less for acceptance of material where 'd' is bar dia.	Nil	No Change proposed
7.3.2	Sample size will be 5% of that for Hardness Test, and the sample clips drawn accordingly will constitute the first sample	Sample size will be 5% of that for Hardness Test, and the sample clips drawn accordingly will constitute the first sample	Nil	No Change proposed
7.3.3	All the sample clips tested in the first sample must pass the test for acceptance of the lot. In case, more than one clip fails, the lot will be rejected. If only one clip fails in the first sample, a second sample of clips will be drawn such that the sample size is twice the sample size of the first sample. All the clips in the second sample of clips should be tested and each clip should pass the test for acceptance of the lot, i.e. in case one clip fails the lot will be rejected.	All the sample clips tested in the first sample must pass the test for acceptance of the lot. In case, more than one clip fails, the lot will be rejected. If only one clip fails in the first sample, a second sample of clips will be drawn such that the sample size is twice the sample size of the first sample. All the clips in the second sample of clips should be tested and each clip should pass the test for acceptance of the lot, i.e. in case one clip fails the lot will be rejected.	Nil	No Change proposed
7.4	**Freedom from Defects:**			
7.4.1	Sample clips will be checked for freedom from	Sample clips will be checked for freedom	Nil	No Change proposed

	defects and should be free from harmful surface defects such as seams, laps, rough or jagged and imperfect edges. The sample clips shall also be examined for the heterogenity of steel and freedom from internal defects by the micro-etching process as per IS: 7739 (Part 5) 1976.	from defects and should be free from harmful surface defects such as seams, laps, rough or jagged and imperfect edges. The sample clips shall also be examined for the heterogenity of steel and freedom from internal defects by the micro-etching process as per IS: 7739 (Part 5) 1976.		
7.4.2	Sampling of clips and acceptance / rejection of the lot for freedom from defects will be as per 7.3.2 and 7.3.3 above.	Sampling of clips and acceptance / rejection of the lot for freedom from defects will be as per 7.3.2 and 7.3.3 above.	Nil	No Change proposed
7.4.3	**Examination of Micro Structure:**			
7.4.3.1	Sample clips shall be microscopically examined for microstructure. Sample prepared for micro examination shall be etched with 2% nital. Microstructure of the clip should reveal tempered martensite structure across the section excluding the decarburized layer at 500X / 1000X magnification.	Sample clips shall be microscopically examined for microstructure. Sample prepared for micro examination shall be etched with 2% nital. Microstructure of the clip should reveal tempered martensite structure not less than 98% across the section excluding the decarburized layer at 500X / 1000X magnification	**1.Bridge Track & tower pvt. Ltd.** **2.M/s Vaishno Mata Track,Faridabad.** **3.Adinath Industries INC** **4.Avdesh Track(P)Ltd** **5.M/s Siddhartha Metal Fabricators** **6.M/s Fateh Chand Jain** **7.Kamakashi Track Fasteners:** **8.Simplex Casting Ltd.** **9.Adinath Industries** **10. Surya Coach Builders Pvt. Ltd.** **11.R Rashmi Industries** **12 LNVS Infra Pvt. Ltd.** **13.Vedkiran steel Industries Pvt. Ltd.** As per our understanding this issue is quite subjective and also debatable. Therefore, the same should be discussed in the RDSO meeting, till then it is not acceptable.	The comments of the firms have been examined. The martensite structure is required across the complete cross section of the clip. Therefore, the provision of 98% is required. The suggestions are, therefore, not acceptable.
7.4.3.2	Sample size will be 5% of that for hardness test and the sample clips drawn accordingly will constitute the first sample. Samples thus drawn for microstructure examination will be the same	Sample size will be 5% of that for hardness test and the sample clips drawn accordingly will constitute the first sample. Samples thus drawn for microstructure examination	Nil	No Change proposed

	as selected for decarburization test and decarburization test samples shall also be examined for microstructure.	will be the same as selected for decarburization test and decarburization test samples shall also be examined for microstructure.		
7.4.3.3	All the sample clips tested in the first sample must pass the test for acceptance of the lot. In case, more than one clip fails, the lot will be rejected. If only one clip fails in the first sample, a second sample of clips will be drawn such that the sample size is twice the sample size of the first sample. All the clips in the second sample of clips should be tested and each clip should pass the test for acceptance of the lot i.e. in case one clip fails the lot will be rejected. Test result of samples of ERCs taken for microstructure examination shall be recorded in Annexure-VII.	All the sample clips tested in the first sample must pass the test for acceptance of the lot. In case, more than one clip fails, the lot will be rejected. If only one clip fails in the first sample, a second sample of clips will be drawn such that the sample size is twice the sample size of the first sample. All the clips in the second sample of clips should be tested and each clip should pass the test for acceptance of the lot i.e. in case one clip fails the lot will be rejected. Test result of samples of ERCs taken for microstructure examination shall be recorded in Annexure-VII.	Nil	No Change proposed
7.5	**Inclusion Rating:**			
7.5.1	Minimum sample size required for the test shall be six. The sample clips of the decarburization test and additional samples required to make up the number to six, depending upon the lot size, shall be taken up for testing for inclusion rating. The inclusion rating in the material of clips when determined as per IS: 4163- 2004 shall not be worse than 2.0 (thin) and 2.0 (thick) A, B, C, D as per IS: 4163- 2004	Minimum sample size required for the test shall be six. The sample clips of the decarburization test and additional samples required to make up the number to six, depending upon the lot size, shall be taken up for testing for inclusion rating. The inclusion rating in the material of clips when determined as per IS: 4163- 2004 shall not be worse than 2.0 (thin) and 2.0 (thick) A, B, C, D as per IS: 4163- 2004	Nil	No Change proposed
7.6	**Dimensions:**			
7.6.1	The sample clips shall be checked for the dimensions by means of inspection gauges as per RDSO drawings, and shall meet with requirement of dimensions and tolerance as provided in the drawings of Inspection gauges. **Corrigendum No.-1** The sample clips shall be checked for the dimensions by means of inspection gauges as per RDSO drawings, and shall meet with requirement of dimensions and tolerance as provided in the	The sample clips shall be checked for the dimensions by means of inspectiongauges as per RDSO drawings, and shallmeet the requirementof dimensionsand tolerances as provided in the drawings of Inspection gauges. Thediameterof frontarch position of ERC shall be checked byVernier calipershavingdigitaldisplay, in two perpendicular directions of the ERC at front arch and averagevalue shall not be less than	**1.Bridge Track & tower pvt. Ltd.** **2.M/s Vaishno Mata Track,Faridabad** **3.Adinath Industries INC** **4.Avdesh Track(P)Ltd** **5.Kamakashi Track Fasteners:** **6.Simplex Casting Ltd.** **7.Adinath Industries** **8.Surya Coach Builders Pvt.**	The comments of the firms are not accepted. Dimensional accuracy of the clip is required to ensure that the ERC fulfils the desired functional requirements and has

	drawings of Inspection gauges. The dia. of front arch position of ERC shall be checked by Vernier calliper with a digital display in two perpendicular directions of the ERC at front arch and average value shall not be less than 20.47mm for ERC Mk-III & ERC-J and 22.81 for ERC Mk-V	20.47mm for ERC Mk-III & ERC-J and 22.81 for ERCMk-V	**Ltd.** **9.R Rashmi Industries** **10. LNVS Infra Pvt. Ltd.** **11.Vedkiran steel Industries Pvt. Ltd.** Dimensions of the clips should be check through RDSO approved gauges as per drawings but during process manufacturing and final inspection only. No foreign fastening permits to check the dimensions of their clips through any such inspection gauges except to use it for their internal checking only. Therefore, we should also be given dispensation for dimension check to keep it for in-house testing facility during production, process & final product inspection only and not to be tested anywhere after ERCs are Inspected and passed by the inspection agency and IC is issued. Tolerances in dimensions should be increased as proposed below as will not affect the quality of ERCs **1.M/s Siddhartha Metal Fabricators** **2.M/s Fateh Chand Jain** Dimensions of the clips should be check through RDSO approved gauges as per	desired interaction with the other components of the track.

			drawings but during process manufacturing and final inspection only No foreign fastening permits to check the dimensions of their clips through any such gauges however they may use it for their internal purpose. Therefore, we should also be given dispensation for dimension check to keep it for in-house testing facility during production, process & final product inspection only	
7.6.2	The sample clips shall also be examined for the flat bearing lengths of the major & minor axis of toe of the clip with the rail flange in the rail seat assembly or in fixture, which deflects the clip to the same extent as in the rail fastening assembly. For this purpose, the major and minor axis of the elliptical contact surface shall be measured to meet the requirements given in Annexure-V. For ensuring that the flat toe bearing area of the toe of the clip with rail flange slope surface at the major and minor axis, a filer 0.05mm thick shall not pass under the toe of clip along the major and minor axis of the clip. In case of ERC-J, the clips shall be examined in a similar way as indicated above, but for the bearing length of the toe on rail seat which shall be between 15-20mm.	The sample clips shall also be examined for the flat bearing lengths of the major & minor axis of toe of the clip with the rail flange in the rail seat assembly or in fixture, which deflects the clip to the same extent as in the rail fastening assembly. For this purpose, the major and minor axis of the elliptical contact surface shall be measured to meet the requirements given in Annexure-V. For ensuring that the flat toe bearing area of the toe of the clip with rail flange slope surface at the major and minor axis, a filer 0.05mm thick shall not pass under the toe of clip along the major and minor axis of the clip. In case of ERC-J, the clips shall be examined in a similar way as indicated above, but for the bearing length of the toe on rail seat which shall be between 15-20mm.	**1.Bridge Track & tower pvt. Ltd.** **2.M/s Vaishno Mata Track,Faridabad** **3.Adinath Industries INC** **4.Avdesh Track(P)Ltd** **5.M/s Siddhartha Metal Fabricators** **6.M/s Fateh Chand Jain** **7.Kamakashi Track Fasteners:** **8.Simplex Casting Ltd.** **9.Adinath Industries** **10. Surya Coach Builders Pvt. Ltd.** **11.R Rashmi Industries** **12 LNVS Infra Pvt. Ltd.** **13.Vedkiran steel Industries Pvt. Ltd.** The sample clips shall also be examined for the flat bearing lengths of the major & minor axis of toe of the clip with the rail flange in the rail seat	No change is proposed in this clause. The comments of the firms are not accepted. The measurement of the flat bearing area in the clip can only be done with the help of the filler gauge when fixed on the application and deflection block.

			assembly or in fixture, which deflects the clip to the same extent as in the rail fastening assembly. For this purpose, the major and minor axis of the elliptical contact surface shall be measured to meet the requirements given in Annexure-V. ~~For ensuring that the flat toe bearing area of the toe of the clip with rail flange slope surface at the major and minor axis, a filer 0.05mm thick shall not pass under the toe of clip along the major and minor axis of the clip.~~ In case of ERC-J, the clips shall be examined in a similar way as indicated above, but for the bearing length of the toe on rail seat which shall be between 15-20mm.	
7.7	**Application and Deflection Test:** The sample clips shall be tested by driving into a fixture i.e. (Application Deflection Block as per relevant clip RDSO drg.) through horizontal pushing by Hydraulic Jack or Power Press or using any suitable arrangement, which deflects the clip to the same extent as in the rail fastening assembly. The clips shall then be removed from the fixture and this process is to be repeated successively thrice. On 3rd drive clips to be checked for flat bearing length as per clause 7.6.2 and for Toe Load as per clause 7.8.	**Application and Deflection Test:** The sample clips shall be tested by driving into a fixture i.e. (Application Deflection Block as per relevant clip RDSO drg.) through horizontal pushing by Hydraulic Jack or Power Press or using any suitable arrangement, which deflects the clip to the same extent as in the rail fastening assembly. The clips shall then be removed from the fixture and this process is to be repeated successively thrice. On 3rd drive clips to be checked for flat bearing length as per clause 7.6.2 and for Toe Load as per clause 7.8.	**1.Bridge Track & tower pvt.Ltd.** **2.M/s Vaishno Mata Track,Faridabad.** **3.Adinath Industries INC** **4.Avdesh Track(P)Ltd** **5.Kamakashi Track Fasteners** **6.Simplex Casting Ltd.** **7.Adinath Industries** **8. Surya Coach Builders Pvt. Ltd.** **9.R Rashmi Industries** **10 LNVS Infra Pvt. Ltd.** **11.Vedkiran steel Industries Pvt. Ltd.** **Application and Deflection Test:** The sample clips shall be tested by driving into a fixture i.e.(Application Deflection	No change is proposed in this clause. The comments of the firms are not accepted. This test is conducted on the clip to check the application, deflection, brittleness and proper heat treatment of the clip.

			Block as per relevant clip RDSO drg.) through horizontal pushing by Hydraulic Jack or Power Press or using any suitable arrangement, which deflects the clip to the same extent as in the rail fastening assembly. ~~The clips shall then be removed from the fixture and this process is to be repeated successively thrice. On 3rd drive clips to be checked for flat bearing length as per clause 7.6.2 and for Toe Load as per clause 7.8.~~ The clips must be fixed into track with the help of applicator and not with the help of hammer as it effects the quality and performance of clips into track. **1.M/s Siddhartha Metal Fabricators** **2.M/s Fateh Chand Jain** The sample clips shall be tested by driving into a fixture i.e.(Application Deflection Block as per relevant clip RDSO drg.) through horizontal pushing by Hydraulic Jack or Power Press or using any suitable arrangement, which deflects the clip to the same extent as in the rail fastening assembly. ~~The clips shall then be removed from the fixture and this process is to be repeated successively thrice. On 3rd~~	

			~~drive clips to be checked for flat bearing length as per clause 7.6.2 and for Toe Load as per clause 7.8.~~	
7.8	**Toe load test:** The sample clips shall be tested for load, with the help of toe load testing arrangement approved by purchaser / inspecting agency orusing application deflection block of approved drawing at UTM of sufficient capacity. The toe load values of the different clips shall comply with the requirements shown in Annexure-V. The clips shall then be checked for compliance with the dimensions and tolerances as per clause 7.6.1	**Toe load test:** The sample clips shall be tested for toe load, with the help of~~toe load testingarrangement approved by purchaser / inspecting agency~~application deflectionblock of approved drawing using UTM of sufficient capacity. The toe load valuesof the different clips shall comply with the requirements shown in Annexure-V.The clips shall then be checked for compliance with the dimensions andtolerances as per clause 7.6.	**1.Bridge Track & tower pvt. Ltd.** **2.M/s Vaishno Mata Track,Faridabad.** **3.Adinath Industries INC** **4.Avdesh Track(P)Ltd** **5.M/s Siddhartha Metal Fabricators** **6.M/s Fateh Chand Jain** **7.Kamakashi Track Fasteners:** **8.Simplex Casting Ltd.** **9.Adinath Industries** **10. Surya Coach Builders Pvt. Ltd.** **11.R Rashmi Industries** **12 LNVS Infra Pvt. Ltd.** **13.Vedkiran steel Industries Pvt. Ltd.** Since as per STR, RDSO approved and designed toe-load testing arrangement is permitted in process inspection & UTM for final inspection, the same should be mentioned here in the IRST-31 specification. UTM should be used for cross verification during final inspection/testing as it reduces the working productivity as it takes more time than the RDSO approved toe load arrangement which is widely in use since last more than 3 decades	The comments of the firms are not acceptable.The toe load testing is required in the final inspection of ERC. The comments regarding reduction in toe load of ERC Mk-III & Mk-V is not accepted. Toe load of various clips has been decided considering the various factors of track parameters. Toe load beyond the specified range on either side affects the performance of the track adversely.

			As proposed by us the upper ceiling limit of Toe load values should be removed and the lower limit should be amended from 850kg to 750kg for ERC MK-III and from 1200 Kg to 1100 kg for ERC MK-V None of the foreign fastenings claims upper range of toe load values. Rather your RFP for procurement of modern fastening itself says minimum Toe load of 900kg only	
7.9	Fatigue Test: Four sample clips shall be tested for fatigue test, as per test scheme enclosed as **Annexure XII.** This test shall be carried out in case of complaint/ reference from the user or any similar potent reason (on need basis only) as decided by RDSO at the cost of firm. Fatigue testing shall be done in RDSO or Government laboratory or from lab accredited by Accreditation agency as per extant guideline issued by RDSO or National Test House or Regional Test Center (RTC), as per fatigue scheme enclosed as Annexure XII.	Fatigue Test: Four sample clips shall be tested for fatigue test, as per test scheme enclosed as **Annexure XII.** This test shall be carried out in case of complaint/ reference from the user or any similar potent reason (on need basis only) as decided by RDSO at the cost of firm. Fatigue testing shall be done in RDSO or Government laboratory or from lab accredited by Accreditation agency as per extant guideline issued by RDSO or National Test House or Regional Test Center (RTC), as per fatigue scheme enclosed as Annexure XII.	Nil	No Change proposed
7.10	**Stress Test:** This test shall be carried out at RDSO, only at the time of initial approval of firm in the category of Developmental Vendors. Out of eight samples, four sample clips having higher toe load shall be tested for stress test as per test scheme enclosed as Annexure - XIV. The value of the stress in the clip shall not be more than 148 Kg/mm2 .	**Stress Test:** This test shall be carried out at RDSO, only at the time of initial approval of firm in the category of Developmental Vendors. Out of eight samples, four sample clips having higher toe load shall be tested for stress test as per test scheme enclosed as Annexure - XIV. The value of the stress in the clip shall not be more than 148 Kg/mm2 .	Nil	No Change proposed
7.11	**Corrigendum-1** The sample clips shall be checked for the weight by means of digital weighing machine,	The sample clips shall be checked for the weight by means of digital weighing Machineand shall meet with requirement	Nil	No comments on this clause have been received.

<table>
<tr>
<td></td>
<td>and shall meet with requirement of weight as given in Annexure-V</td>
<td>of weight as given in Annexure-V.
If, a lot fails in weight test, the manufacturer may re-offer the Elastic Rail Clip lot
wise, once more, after sorting out the defectives, with written permission of the Inspecting authority. If, the offered lot fails again in the weight test, it will be rejected</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.0</td>
<td>New Para Added</td>
<td>In-process Inspection:
The in-process inspection during manufacturing of clips shall be carried out by nominated inspection agency.Theminimum quantity of 35000 nos. of ERCs shall be offered for in-process inspection. For offering in-process inspection of lesser than 35000 ERCs, the manufacturer shall obtain written permission of PCE
specifying the reasons for the same.#

Following minimum testsshall be carried out during the in-process inspection:
<table>
<tr><th>SN</th><th>Item</th><th>Sampling Procedure</th><th>Frequency of Inspection</th></tr>
<tr><td>1</td><td>Checking of length of Cut bars</td><td>Random</td><td>03 bars per hour</td></tr>
<tr><td>2</td><td>Turning length</td><td>Random</td><td>03 bars perhour</td></tr>
<tr><td>3</td><td>MPI test</td><td>Random</td><td>03 bars per hour</td></tr>
<tr><td>4</td><td>Forging Temperat</td><td>Random</td><td>Once every</td></tr>
</table>
</td>
<td>Nil</td>
<td>New Para added of In- process Inspection. However, this clause is being deleted from the specification.

In-process inspection will be dealt separatelyas perexisting instructions of Railway Board.</td>
</tr>
</table>

				ure		Hour		
			5	Checking of dies	100%	at the start of the shift. If production per shift is more than 4000 ERCs, additional check in the middle of the shift		
			6	Quenching temperature and duration	Random	Once every hour		
			7	Quenching Hardness	Random	02 ERCs per hour		
			8	Tempering temperature and duration	Random	Once every hour		
			9	Dimension check	Random	02 ERCs per hour		
			10	Hardness of	Random	02 ERCs per		

				finished ERC		hour	
			11	Documentation	100%	Documentation should be done along with the aforementioned inspections.	
~~8.0~~ 9.0	**FINAL INSPECTION / TESTING & DOCUMENTATION:** The manufacturer shall carry out the final inspection and testing internally in accordance with the plan of testing given under 'Tests' clause 7 above except clause 7.9 Fatigue Test & 7.10 Stress test, and shall maintain the records as per Annexure-VI to XI to ensure that the clips have passed inspection criteria.	**FINAL INSPECTION / TESTING & DOCUMENTATION:** The manufacturer shall carry out the final inspection and testing internally in accordance with the plan of testing given under 'Tests' clause 7 above except clause 7.9 Fatigue Test & 7.10 Stress test, and shall maintain the records as per Annexure-VI to XI to ensure that the clips have passed inspection criteria.					Nil	No Change proposed. Para no. of Paragraph has been changed.
~~9.0~~ 10.0	PROTECTION: After inspection and approval, the clips shall be cleaned off all rust and protected with one coat of boiled Linseed oil as per IS: 77-1976 or any other rust preventing compound approved by the purchaser.	PROTECTION: After inspection and approval, the clips shall be cleaned off all rust and protected with one coat of boiled Linseed oil as per IS: 77-1976 or any other rust preventing compound approved by the purchaser.					Nil	No Change proposed. Para no. of Paragraph has been changed.
~~10.0~~ **11.0**	**PACKING:**							
~~10.1~~ 11.1	The clips shall be packed in double gunny bags / polythene bags, each bag containing 50 clips. In the consignment to be sent by the manufacturer, not more than one gunny bag / polythene bags shall be filled with less than 50 clips which	The clips shall be packed in double gunny bags / polythene bags, each bag containing 50 clips. In the consignment to be sent by the manufacturer, not more than one gunny bag / polythene bags shall be filled with less					Nil	No Change proposed. Para no. of Paragraph has been changed.

	should be clearly mentioned by the manufacturer in the dispatch particulars giving the bag numbers (as painted thereon) and number of clips. The packing shall be sound to ensure that there is no loss or damage to the clips during transit.	than 50 clips which should be clearly mentioned by the manufacturer in the dispatch particulars giving the bag numbers (as painted thereon) and number of clips. The packing shall be sound to ensure that there is no loss or damage to the clips during transit.		
~~10.2~~ 11.2	The gunny bags / polythene bags should not have any exterior stitching whatsoever, except for the edge to be sealed. The hesian thread used for 12 stitching the gunny bag / polythene bag edge should be free from any knots except at the sealing point.	The gunny bags / polythene bags should not have any exterior stitching whatsoever, except for the edge to be sealed. The hesian thread used for 12 stitching the gunny bag / polythene bag edge should be free from any knots except at the sealing point.	Nil	No Change proposed. Para no. of Paragraph has been changed.
~~11.0~~ 12.0	**TEST FACILITIES:** The manufacturer shall be required to install all the necessary test facilities for inspection of clips in separate well lit, clean and properly ventilated laboratory room provided with easily maintainable floor and platform.	**TEST FACILITIES:** The manufacturer shall be required to install all the necessary test facilities for inspection of clips in separate well lit, clean and properly ventilated laboratory room provided with easily maintainable floor and platform	Nil	No Change proposed. Para no. of Paragraph has been changed.
~~12.0~~ 13.0	**INSPECTION GAUGES:** The inspection gauges for dimensional check should conform to RDSO drawings. The manufacturer shall submit two sets of inspection gauges for the approval of Inspecting officer. Out of these, one set of inspection gauges shall be used as master gauge and shall be preserved safely by the clip manufacturer. The second set shall be used by the Inspecting Officer. For internal quality checks, the firm should use an additional set of gauges as per RDSO's gauge drawing.	**INSPECTION GAUGES:** The inspection gauges for dimensional check should conform to RDSO drawings. The manufacturer shall submit two sets of inspection gauges for the approval of Inspecting officer. Out of these, one set of inspection gauges shall be used as master gauge and shall be preserved safely by the clip manufacturer. The second set shall be used by the Inspecting Officer. For internal quality checks, the firm should use an additional set of gauges as per RDSO's gauge drawing.	Nil	No Change proposed. Para no. of Paragraph has been changed.
~~13.0~~ 14.0	**DISPOSAL OF REJECTED CLIPS**: The rejected clips shall be cut in two pieces by the manufacturer using oxyacetylene flame and shall then be disposed of as scrap	**DISPOSAL OF REJECTED CLIPS**: The rejected clips shall be cut in two pieces by the manufacturer using oxyacetylene flame and shall then be disposed of as scrap	Nil	No Change proposed. Para no. of Paragraph has been changed.
~~14.0~~ 15.0	**GENERAL:**			
~~14.1~~	The manufacturer shall furnish, at his cost, the	The manufacturer shall furnish, at his cost,	Nil	No Change proposed.

~~15.1~~	clips required for all tests and shall also provide necessary man-power and facilities for carrying out tests at his works.	the clips required for all tests and shall also provide necessary man-power and facilities for carrying out tests at his works.		Para no. of Paragraph has been changed.
~~14.2~~ 15.2	Purchaser/Inspecting officer shall have free access to the works of manufacturer at all reasonable times and shall be at liberty to inspect the manufacture at any stage and to call for any records, pertaining to manufacture, which shall be made available to him within reasonable time.	Purchaser/Inspecting officer shall have free access to the works of manufacturer at all reasonable times and shall be at liberty to inspect the manufacture at any stage and to call for any records, pertaining to manufacture, which shall be made available to him within reasonable time.	Nil	No Change proposed. Para no. of Paragraph has been changed.
~~15.0~~ 16.0	**Corrigendum-2**			
	Consignee End Inspection of ERCs	**Consignee End Inspection of ERCs**	**1.Bridge Track & tower pvt. Ltd.** 2.**2.M/s Vaishno Mata Track,Faridabad.** **3.Adinath Industries INC** **4.Avdesh Track(P)Ltd** **5.Kamakashi Track Fasteners:** **6.Simplex Casting Ltd.** **7.Adinath Industries** **8. Surya Coach Builders Pvt. Ltd.** **9.R Rashmi Industries** **10 LNVS Infra Pvt. Ltd.** **11.Vedkiran steel Industries Pvt. Ltd.** Since ERC is now being manufactured/inspected and passed through stage inspection of raw material, Process Inspection methodology and final product inspection, therefore this consignee end inspection of ERCs must be dropped/deleted. from the specification. If at all testing is required, the	The comments of the firms are not accepted. The consignee end policy is framed separately to check the quality of the ERC which was passed by inspecting agency.

			same should be initiated only on the samples of the specific firm against whom the problem or complaint has raised by the end user within the 30 days from the date of supply of material to the consignee. The sampling and testing process based on sample sets of 30 nos. and thereby testing of 14 nos. for various tests is neither appropriate method nor acceptable. In case of any quality related complain from end user, Joint inspection should be carried out and testing should be done on the set of samples as per lot size according to the sampling plan IS:2500 (Part-I) -2000 level IV and AQL 4% Rejection if any should be as per lot wise quantity not as per whole quantity of whole IC. Only defective pcs are supposed to be replaced under and not the entire lot after joint inspection. No other sampling plan is acceptable to us. **1.M/s Siddhartha Metal Fabricators** **2.M/s Fateh Chand Jain** Since ERC is now being manufactured/inspected and	

			passed through stage inspection of raw material, Process Inspection methodology and final product inspection, therefore this consignee end inspection of ERCs must be dropped/deleted. from the specification. If at all testing is required, the same should be initiated only on the samples of the specific firm against whom the problem or complaint has raised by the end user within the 30 days from the date of supply of material to the consignee. The sampling and testing process based on sample sets of 30 nos. and thereby testing of 14 nos. for various tests is neither appropriate method nor acceptable. In case of any quality related complain from end user, Joint inspection should be carried out and testing should be done on the set of samples as per lot size according to the sampling plan IS:2500 (Part-I) -2000 level IV and AQL 2.5% No other sampling plan is acceptable to us.	
~~15.1~~	The Purchaser/Consignee or its nominated	The Purchaser/Consignee or its nominated	Nil	No Change proposed.

<table>
<tr>
<td>16.1</td>
<td>representative shall pick up and seal 02 sample sets per lot in the presence of firm's representative within 01 month after receipt the material (ERC) at the consignee depot which shall be preserved in the consignee depot or nominated location for a period of one year from the date of receipt of material. One sample set shall comprise of 30 nos. ERCs picked randomly.</td>
<td>representative shall pick up and seal 02 sample sets per lot in the presence of firm's representative within 01 month after receipt the material (ERC) at the consignee depot which shall be preserved in the consignee depot or nominated location for a period of one year from the date of receipt of material. One sample set shall comprise of 30 nos. ERCs picked randomly.</td>
<td></td>
<td>Para no. of Paragraph has been changed.</td>
</tr>
<tr>
<td><s>15.2</s>
16.2</td>
<td>If the firm's representative does not turn up within one month after receipt of material (ERC) at the consignee end for joint sampling by Purchaser/Consignee, the sampling shall be done by Purchaser/Consignee solely.</td>
<td>If the firm's representative does not turn up within one month after receipt of material (ERC) at the consignee end for joint sampling by Purchaser/Consignee, the sampling shall be done by Purchaser/Consignee solely.</td>
<td>Nil</td>
<td>No Change proposed. Para no. of Paragraph has been changed.</td>
</tr>
<tr>
<td><s>15.3</s>
16.3</td>
<td>The sealed sample set can be got tested by the Purchaser/Consignee, from RDSO or NABL accredited labs within 12 months from the date of receipt of material with the approval of an officer not below the level of JAG of the concerned Zonal Railway or equivalent as per the observation during field inspections / specific nature of complaint regarding performance of ERC. 14 nos. ERCs from the first sample set shall be tested for conformity as per following scheme:
<table>
<tr><td>No. of ERc</td><td>Test to be Conduct for Conformity</td></tr>
<tr><td>14</td><td>Dimension</td></tr>
<tr><td>06</td><td>Hardness, depth of decarburization and freedom from surface defects</td></tr>
<tr><td>08</td><td>Toe-load, flat bearing area, application & deflection test</td></tr>
</table>
</td>
<td>The sealed sample set can be got tested by the Purchaser/Consignee, from RDSO or NABL accredited labs within 12 months from the date of receipt of material with the approval of an officer not below the level of JAG of the concerned Zonal Railway or equivalent as per the observation during field inspections / specific nature of complaint regarding performance of ERC. 14 nos. ERCs from the first sample set shall be tested for conformity as per following scheme:
<table>
<tr><td>No. of ERc</td><td>Test to be Conduct for Conformity</td></tr>
<tr><td>14</td><td>Dimension</td></tr>
<tr><td>06</td><td>Hardness, depth of decarburization and freedom from surfa defects</td></tr>
<tr><td>08</td><td>Toe-load, flat bearir area, application & deflection test</td></tr>
</table>
</td>
<td>Nil</td>
<td>No Change proposed. Para no. of Paragraph has been changed.</td>
</tr>
<tr>
<td><s>15.4</s>
16.4</td>
<td>After decision for testing of samples, the supplier shall be informed to witness the test of first</td>
<td>After decision for testing of samples, the supplier shall be informed to witness the</td>
<td>Nil</td>
<td>No Change proposed. Para no. of Paragraph</td>
</tr>
</table>

	sample set. Second sample shall be kept as standby as per the provisions of ISO Apex documents.	test of first sample set. Second sample shall be kept as standby as per the provisions of ISO Apex documents.		has been changed.
~~15.5~~ 16.5	If the first sample set passes the tests, no further action will be needed. In case the first sample set fails as per acceptance / rejection criteria, the corresponding lot shall be rejected. The supplier/firm shall remove the rejected lot from the consignee depot at their own cost, but only after the supplier/firm has reimbursed payments already made if any by Purchaser/Consignee or an equivalent amount has been recovered for this purpose. However, the Purchaser/Consignee shall not be liable to return the material that is already put into track and the supplier/firm shall have no claim for compensation. Page 4 of 5	If the first sample set passes the tests, no further action will be needed. In case the first sample set fails as per acceptance / rejection criteria, the corresponding lot shall be rejected. The supplier/firm shall remove the rejected lot from the consignee depot at their own cost, but only after the supplier/firm has reimbursed payments already made if any by Purchaser/Consignee or an equivalent amount has been recovered for this purpose. However, the Purchaser/Consignee shall not be liable to return the material that is already put into track and the supplier/firm shall have no claim for compensation. Page 4 of 5	Nil	No Change proposed. Para no. of Paragraph has been changed.
~~15.6~~ 16.6	The rejected lot shall be removed by the supplier/firm within 03 months of date of rejection advice, failing which the Purchaser/Consignee shall not be liable to return the rejected lot and the supplier/firm shall have no claim for compensation for such material. The rejected clips shall be cut into two pieces by the supplier/firm using oxy-acetylene flame at their own cost before removing the rejected clips from purchaser/consignee depot.	The rejected lot shall be removed by the supplier/firm within 03 months of date of rejection advice, failing which the Purchaser/Consignee shall not be liable to return the rejected lot and the supplier/firm shall have no claim for compensation for such material. The rejected clips shall be cut into two pieces by the supplier/firm using oxy-acetylene flame at their own cost before removing the rejected clips from purchaser/consignee depot.	Nil	No Change proposed. Para no. of Paragraph has been changed.
~~15.7~~ 16.7	Financial recovery and Penal action shall be taken as per the provisions of ISO Apex documents and Railway Board's extant policy	Financial recovery and Penal action shall be taken as per the provisions of ISO Apex documents and Railway Board's extant policy	Nil	No Change proposed. Para no. of Paragraph has been changed.
~~15.8~~ 16.8	Acceptance / Rejection of the sample: The sample set will be subjected to the tests as per Acceptance / Rejection criteria	Acceptance / Rejection of the sample: The sample set will be subjected to the tests as per Acceptance / Rejection criteria	Nil	No Change proposed. Para no. of Paragraph has been changed.

~~15.8.1~~ 16.8.1	Dimension checking of ERC: (Defect and Non-conformity criteria) Parameters | Main gauge | Dia | Major axis | Minor Axis | Slip gauge 'L' | Slip gauge 'M' | Slip gauge 'N' | Slip gauge 'R' | Details at F | Application Block Defect/Non conformity | D | D | NC | NC | NC | NC | NC | NC | NC | NC ERC no. 01 u	Dimension checking of ERC: (Defect and Non-conformity criteria) Parameters | Main gauge | Dia | Major axis | Minor Axis | Slip gauge 'L' | Slip gauge 'M' | Slip gauge 'N' | Slip gauge 'R' | Details at F Defect/Non conformity | D | D | NC | NC | NC | NC | NC | NC | NC ERC no. 01 u	Nil	No Change proposed. Para no. of Paragraph has been changed.

	p t o E R C n o. 1 4	p t o E R C n o. 1 4	
	- D: Defect, NC: Non-conformity - All the 14 ERCs shall be checked for dimension. - More than three NC in a piece will constitute a defect. - More than 16 NC in the set will render the whole set defective - Defect in more than one ERC in the whole set of 14 pieces will render the whole set as failed and lot shall be rejected. - After successful dimension test as per para 15.8.1, sample no. 1 to 8 will be tested for Toe load, Application & Deflection and Flat bearing area	- D: Defect, NC: Non-conformity - All the 14 ERCs shall be checked for dimension. - More than three NC in a piece will constitute a defect. - More than 16 NC in the set will render the whole set defective - Defect in more than one ERC in the whole set of 14 pieces will render the whole set as failed and lot shall be rejected. - After successful dimension test as per para 15.8.1, sample no. 1 to 8 will be tested for Toe load, Application & Deflection and Flat bearing area	
~~15.8.2~~ 16.8.2	**Toe load, Application & Deflection and Flat bearing area checking of ERC:** 08 nos. ERCs shall be checked for Toe load, Application & Deflection & Flat bearing area test.	**Toe load, Application & Deflection and Flat bearing area checking of ERC:** 08 nos. ERCs shall be checked for Toe load, Application & Deflection & Flat bearing area test.	Nil	No Change proposed. Para no. of Paragraph has been changed.

Parameters	Toe load	Application & Deflection test	Flat bearing area
Whether Defect or NC	Defect, if the value is beyond the specified limit as per	Application test shall be done on each piece as per Para	Defect, if value is beyond specified value in Annexure -V of

Parameters	Toe load	Application & Deflection test	Flat bearing area
Whether Defect or NC	Defect, if the value is beyond the specified limit as	Application test shall be done on each piece as	Defect, value is beyond specifie value in Annexu

		Annexure -V of IRS/T-31 in more than one clip	7.7 of IRS/ T-31. Non-conformity during application test shall be considered as a defect in any of the following conditions: - a) When any piece breaks during insertion or extraction in application block. b) When any piece cannot be driven into the application block. c) When any piece	IRS/T-31 in more than three clips		per Annexure -V of IRS/T-31 in more than one clip	per Para 7.7 of IRS/ T-31. Non-conformity during application test shall be considered as a defect in any of the following conditions: - a) When any piece breaks during insertion or extraction in application block. b) When any piece cannot be driven into the application block. c) When	-V of IRS/T-31 in more than three clips			

			bounces back while driving into applicati on block.				any piece bounces back while driving into applicati on block.		
	ERC no. 01				ERC no. 01				
	upto ERC no. 08				upto ERC no. 08				
	- After successful Toe load, Application & Deflection and Flat bearing area test as per para 15.8.2, ERC no. 01 to 06 will be tested for Metallurgical and chemical (M&C) tests.				- After successful Toe load, Application & Deflection and Flat bearing area test as per para 15.8.2, ERC no. 01 to 06 will be tested for Metallurgical and chemical (M&C) tests.				
~~15.8.3~~ 16.8.3	**Metallurgical and chemical (M&C) tests on ERC:** 6 nos. ERCs shall be checked for Hardness (HRC), depth of decarburization & surface condition.				**Metallurgical and chemical (M&C) tests on ERC:** 6 nos. ERCs shall be checked for Hardness (HRC), depth of decarburization & surface condition.				Nil	No Change proposed. Para no. of Paragraph has been changed.
	Paramete rs	Hardness (HRC)	Depth of decarburi zation	Surface condition	Paramete rs	Hardness (HRC)	Depth of decarburi zation	Surface conditi		
	Whether Defect or NC	Defect, if deviation are beyond 2 on either side in more than one clip	Defect, if any piece having value beyond d/100 or 0.25mm	Defect, if non conformi ty with para 7.4 of IRS T-31 in more than one clip	Whether Defect or NC	Defect, if deviation are beyond 2 on either side in more than one clip	Defect, if any piece having value beyond d/100 or 0.25mm	Defect, non conform ty with para 7.4 of IRS T 31 in more than on clip		
	ERC no. 01				ERC no. 01					
	upto ERC no. 06				upto ERC no. 06					

17.0	New para Added	Warranty for Elastic Rail Clips: The warranty period of the supplied ERCs shall be 48 months from the date of issue of Inspection Certificate or 36 months from the date of actual fitment in the track, whichever is earlier.	**1.Bridge Track & tower pvt. Ltd.** **2.M/s Vaishno Mata Track,Faridabad.** **3.Adinath Industries INC** **4.Avdesh Track(P)Ltd** **5.M/s Siddhartha Metal Fabricators** **6.M/s Fateh Chand Jain** From the stage of procurement of specific grade of raw material from RDSO approved sources only the ERCs are being manufactured based on the drawing, design, and specification of RDSO only. The three-stage inspections including process inspection are all controlled by the railway nominated agency. We are just providing the services to Indian Railways as Job workers. Therefore, we are not in a position to provide the requisite warranty for ERCs. The warranty issue should be discussed in the meeting, with RDSO/Rly Bd as it has serious impact on the MSME firms which is being misinterpreted **1.Kamakashi Track Fasteners** **2.Simplex Casting Ltd.** **3.Adinath Industries** **4. Surya Coach Builders Pvt. Ltd.** **5.R Rashmi Industries** **6 LNVS Infra Pvt. Ltd.** **7.Vedkiran steel Industries Pvt. Ltd.**	The comments of the firms have been examined. The contention that the manufacturers are only service providers / job workers is not acceptable. The manufacturer has to produce the ERCs fulfilling all the quality parameters to ensure longer life of the product.

			From the stage of procurement of specific grade of raw material from RDSO approved sources only the ERCs are being manufactured based on the drawing, design, and specification of RDSO only. The three-stage inspection including process inspection are all controlled by the railway nominated agency. We are just providing the services to Indian Railways as Job workers. Therefore, we are not in a position to provide the requisite warranty for ERCs. The warranty issue should be discussed in the meeting, with RDSO/Rly Bd as it has serious impact on the MSME firms which is being misinterpreted	
	Annexure-I **IRST-31- 2021** **No Change**	**Annexure-I** **IRST-31- 2021** **No Change**	Nil	No Change proposed
	Annexure-II **IRST-31- 2021** **No Change**	**Annexure-II** **IRST-31- 2021** **No Change**	Nil	No Change proposed
	Annexure-IIA **IRST-31- 2021** **No Change**	**Annexure-IIA** **IRST-31- 2021** **No Change**	Nil	No Change proposed
	Annexure-III **IRST-31- 2021**	**Annexure-III** **IRST-31- 2021**	**1.Bridge Track & tower pvt. Ltd.** **2.M/s Vaishno Mata Track,Faridabad.** **3.Adinath Industries INC** **4.Avdesh Track(P)Ltd** **5.M/s Siddhartha Metal**	Firms' suggestions are not accepted. Acceptance quality level percentage has been changed from 1.5% to 2.5% in line with the same for

			Fabricators **6.M/s Fateh Chand Jain** **7.Kamakashi Track Fasteners:** **8.Simplex Casting Ltd.** **9.Adinath Industries** **10. Surya Coach Builders Pvt. Ltd.** **11.R Rashmi Industries** **12 LNVS Infra Pvt. Ltd.** **13.Vedkiran steel Industries Pvt. Ltd.** Firms haveproposed 4% AQL in place of 1.5%.	other track components.
	Annexure-IV **IRST-31- 2021** **No Change**	**Annexure-IV** **IRST-31- 2021** **No Change**	Nil	No Change proposed.
	Annexure-V **As per Corrigendum No-1** **TOE-LOAD, TOE-DEFLECTION, WEIGHT & FLAT BEARING CONTACT LENGTH OF DIFFERENT ELASTIC RAIL CLIPS:**	**Annexure-V** **TOE-LOAD, TOE-DEFLECTION, WEIGHT & FLAT BEARING CONTACT LENGTH OF DIFFERENT ELASTIC RAIL CLIPS:**	**1.Bridge Track & tower pvt. Ltd.** **2.M/s Vaishno Mata Track,Faridabad.** **3.Adinath Industries INC** **4.Avdesh Track(P)Ltd** **5.M/s Siddhartha Metal Fabricators** **6.M/s Fateh Chand Jain** **7.Kamakashi Track Fasteners:** **8.Simplex Casting Ltd.** **9.Adinath Industries** **10. Surya Coach Builders Pvt. Ltd.** **11.R Rashmi Industries** **12 LNVS Infra Pvt. Ltd.** **13.Vedkiran steel Industries Pvt. Ltd.** Firmshave proposed reduced toe load of all clips and minimum weight of all clips with their tolerances.	Firms' suggestions are not accepted. The clips have to provide the specified toe load to ensure proper performance of the track as a whole. Modified Nominal Weight of Clips and their tolerances have been added in the table of Annexure-V.

	Annexure-VI **IRST-31- 2021** **No Change**	**Annexure-VI** **IRST-31- 2021** **No Change**	Nil	No Change proposed
	Annexure-VII **IRST-31- 2021** **No Change**	**Annexure-VII** **IRST-31- 2021** **No Change**	Nil	No Change proposed
	Annexure-VIII **IRST-31- 2021**	**Annexure-VIII** **IRST-31- 2021**	**1.Bridge Track & tower pvt. Ltd.** **2.M/s Vaishno Mata Track,Faridabad.** **3.Adinath Industries INC** **4.Avdesh Track(P)Ltd** **5.M/s Siddhartha Metal Fabricators** **6.M/s Fateh Chand Jain** **7.Kamakashi Track Fasteners:** **8.Simplex Casting Ltd.** **9.Adinath Industries** **10. Surya Coach Builders Pvt. Ltd.** **11.R Rashmi Industries** **12 LNVS Infra Pvt. Ltd.** **13.Vedkiran steel Industries Pvt. Ltd.** Firm has proposed to change the value of no. of defective to 5 instead of 2	Firms' suggestions are not accepted. Defective numbers in sample size is governed by IS:2500 with AQL 2.5%
	Annexure-IX **IRST-31- 2021** **No Change**	**Annexure-IX** **IRST-31- 2021** **No Change**	Nil	No Change proposed
	Annexure-X **IRST-31- 2021** **No Change**	**Annexure-X** **IRST-31- 2021** **No Change**	Nil	No Change proposed
	Annexure-XI **IRST-31- 2021** **No Change**	**Annexure-XI** **IRST-31- 2021** **No Change**	Nil	No Change proposed

	Annexure-XII **IRST-31- 2021** **No Change**	**Annexure-XII** **IRST-31- 2021** **No Change**	Nil	No Change proposed
	Annexure-XIII **IRST-31- 2021** **No Change**	**Annexure-XIII** **IRST-31- 2021** **No Change**	Nil	No Change proposed
	Annexure-XIV **IRST-31- 2021** **No Change**	**Annexure-XIV** **IRST-31- 2021** **No Change**	Nil	No Change proposed
	Annexure-XV IRST-31-2021	**Annexure-XV IRST-31-2021**	**1.Bridge Track & tower pvt. Ltd.** **2.M/s Vaishno Mata Track,Faridabad.** **3.Adinath Industries INC** **4.Avdesh Track(P)Ltd** **5.M/s Siddhartha Metal Fabricators** **6.M/s Fateh Chand Jain** **7.Kamakashi Track Fasteners:** **8.Simplex Casting Ltd.** **9.Adinath Industries** **10. Surya Coach Builders Pvt. Ltd.** **11.R Rashmi Industries** **12 LNVS Infra Pvt. Ltd.** **13.Vedkiran steel Industries Pvt. Ltd.** Firm has proposed to change the value of no. of defective to 9 instead of 5	Firms' suggestions are not accepted. Defective numbers in sample size is governed by IS:2500 with AQL 2.5%
*	**Being ERC a bulk production, an open die forging without machining product, RDSO needs to allow the tolerances in the specification of ERC as under:** **Dimensions: Inspection Gauges Tolerances:** Toe Gap From: 21.2 $\pm$ 0.8 to 20.8 $\pm$ 0.4			The suggestions of the firmsare not accepted. Dimension and tolerances given in the product & toe load is the part of the design. This was fixed through

	P3 Pin to Pin Distance for Centre leg from: 21 to 21.4 Flat toe: Major Axis (Min) in MM from 28 to 26 Minor Axis (Min) in MM from 9.5 to 8 **Flat Bearing Area** should not be the part of testing during consignee end testing It should be maintained only at the initial sample development as usual. It should only be measured with the help of GO/No-go inspection gauges **Hardness:** 40-44 HRC $\pm$ 2 HRC **Toe Load:** ERC MK-V 1100 Kgf minimum and no upper sealing limit. **Toe Load:** ERC MK-III 750 Kgf minimum and no upper sealing limit. **Weight:** From 904gm to -10gm for ERC MK-III From 1068gm to -10gm for ERC MK-V	various trials and different consideration of the track parameters.