RESEARCH DESIGNS & STANDARDS ORGANIZATION
Manaknagar, Lucknow – 226011

Document No: TDG0044

Document Title: **Item Specific guidelines& Schedule of Technical Requirements for Vendor approval for manufacture and supply of Elastic Rail Clips**

1.0 Amendment History:

S. No.	Amendment Date	Version	Reasons for Amendment
1. 1	31.01.2019	QC-G- 8.1-3, Ver. '1'	First issue under new documentation system
2.	06.06.2022	TDG 0044Ver. '0'	Amendment in Specification and quality improvement
3	00.11.2024	TDG 0044 Ver. '1'	Amendment in Specification and quality improvement

2.0 Purpose:

This guideline is based on Indian Railway standard specification IRS/T-31-2021 for manufacture of Elastic Rail Clips including Mk-III, ERC-J, Mk-V & Anti-Theft ERC (with circlip)for use in railway track issued by Track Design Dte. of RDSO. The purpose is to specifically define the guidelines for vendor approval Elastic Rail Clips Mk-III, ERC-J, Mk-V &Anti-Theft ERC (with circlip) as well as to specify technical and other requirements.

3.0 Scope of Application

This shall be applicable for initial capability assessment, periodic Quality audit for extension of approval, up-gradation of vendors and maintaining their approved list. In case of any variation between the procedure/provision given in work instruction and that in the 'Item- specific guidelines', the later shall prevail. The competent authority wherever referred to in this document shall mean PED/INFRA-I.

It is responsibility of the vendor to approach the RDSO for quality audit of their manufacturing unit before the due date of the quality audit.

4.0 Procedure / Details

Procedure/details are annexed.

5.0 Referenced Documents:

1. Indian Railway Standard specification for Elastic Rail Clips S.No. T-31-2021 (Fifth Revision)
2. Indian Railway Standard specification for Spring steel Circlip for use with Anti-Theft Elastic Rail Clips S. No. T-58-2020
3. ISO Apex Documents of RDSO

6.0 Referenced Documents of External Origin

None.

7.0 Associated Records

None.

8.0 Responsibility and Authority

Activity	Responsible	Approver	Supporting	Consulted	Informed
Creation, maintenance of this document	ED/Track-III /Director/Trac k Design - IV	PED/INFRA-I	DD/AIE/ADE	M&C Dte.	All approved vendors through website
Compliance of directives contained in this document	DD/AIE/ADE	Director/ Track Design -IV	-	-	-
Requirement of deviation from this directive	ED/Track-III/Director/Tra ck Design -IV	PED/ INFRA-I	DD/AIE/ /ADE	M&C Dte.	-

Abbreviations

PED/ INFRA-I	Principal Executive Director/ INFRA-I
ED/Track Design-III	Executive Director/Track Design-III
RDSO	Research Designs & Standards Organization
DD	Dy. Director
AIE	Assistant Inspecting Engineer
ADE	Assistant Design Engineer

A. ITEM SPECIFIC GUIDELINES

1.0 The process of approval will involve following steps / activities.

i) Vendor seeking fresh registration shall register online on UVAM Portal website https://www.ireps.gov.in.

ii) Submit duly filled-in online fresh application form along withvendor registration charges as applicable at the time of submission.

iii) Upload the document as mentioned along with Quality AssaurancePrograme and legal documents for technical approval by this office.

iv) The specification & relevant drawings are available on RDSO website & UVAM Portal and same can be downloaded from RDSO website. The charges of these documents are included in fresh registration charges and no need to deposit separate charges for these documents at the first time.

v) Application/ proforma along with documents & charges will be scrutinized by RDSO and if details are found satisfactory, the works unit of the firm will be visited for Technical Capability Assessment.

vi) If any shortcomings are observed during the visit, the same will be conveyed to the firm for their compliance.

vii) After satisfactory compliance by the firm, the firm is advised to submit gauge checking charges and inspection gauges of the drawings of Elastic Rail Clips Mk-III, ERC-J, Mk-V & Anti-Theft ERC (with circlip) applied for (as the case may be) will be checked and approved during STR verification visit.

viii) After satisfactory verification of document and CAA (Capacity cum Capability Assessment), the name of the firm shall be considered to be placed in the **"List of RDSO vendors for Developmental order"** for 24 months period subject to technical clearance of Prototype/ Test samples and its approval by the RDSO (to be mentioned in check note in Vendor directory).

ix) After clearance / approval of two sets of inspection gauges as mentioned in para (vii) above, the firm would be advised to start trial production and to submit internal test results in formats as per Quality ~~Assaurance~~AssurancePrograme (QAP) for manufacture and testing. If the internal test results are found satisfactory, the firm would be advised for drawl of samples manufactured in presence of RDSO official from their works.

x) A total number of 14 samples shall be drawn from the works of the firm by RDSO representative and shall be sealed. The sealed bag shall be sent to RDSO by the firm's representative within a reasonable time period. The sample shall be subjected to various Civil Engineering tests stipulated in IRST–31 i.e. for dimensions, toe-load, flat bearing area, application deflection test on eight clips and stress test on at least 4 clip having higher toe-loads. The balance six clips shall be tested for chemical analysis, hardness, depth of decarburization, freedom from surface defects, inclusion rating and microstructure.

xi) If the samples pass all the tests as stipulated above, including fulfilling the criteria laid down by Railway Board /ISO documents then the conditional check note in Vendor directory as mentioned in Para viii above shall be removed. The firm will advised to start the production of the product with instruction that after getting the raw material inspected and passed by RDSO, the inspection of at leastinitial quantity of 20,000 Nos. clips (in at least two installments preferably of equal size) will be done by RDSO. If the inspected quantity of 20,000 nos. of Elastic Rail Clips and implementation of QAP is found satisfactory, the purchaser may be advised to get the inspection of the product done by themselves.

2.0 In the case of new Vendor/firms the process of approval will be initiated only if the firm has applied on-line or has been placed with developmental order from Zonal Railways/ Railway Board or given go ahead from RDSO as per instructions /guidelines of Railway Board from time to time. Rest of the procedure for approval will be the same as detailed in para1.0 above.

3.0 In case, firms approved for manufacturing of ERC to one drawing, applies for approval of the product to other variants/drawings of ERC, the requisite inspection gauges will have to be approved by RDSO. After getting satisfactory internal test reports, the samples of product prototype will be drawn and tested at RDSO. If test results on samples found satisfactory, the firm shall be considered for inclusion in the “List of RDSO Vendors for Developmental Orders” as per the provisions of relevant ISO apex document (latest version).

4.0 Up-gradation from List of RDSO Vendors for Developmental Orders” to “List of Approved Vendors” as per procedure mentioned in RDSO’s latest relevant ISO apex document.

B. SCHEDULE OF TECHNICAL REQUIREMENTS FOR APPROVAL OF FIRMS TO MANUFACTURE ELASTIC RAIL CLIPS Mk-III, ERC-J, MK-V &ANTI-THEFT ERC (WITH CIRCLIP)

1.0 SCOPE: The schedule of technical requirements covers the norms for manufacture of elastic rail clip.

2.0 REQUIREMENTS: The vendors seeking approval shall comply all the below mentioned requirement.

2.1 MANUFACTURING FACILITIES:

2.1.1 Space: Sufficient covered area with proper ventilation~~and facility to run EOT (Electric Overhead Traveling crane)~~should be available for manufacturing and testing facilities. Space for storage of raw material, cut bars, heating furnace, power press for forming clips, quenching tank, tempering furnace and for storage of finished products should be earmarked clearly. The shed floor area should be completely concreted preferably with VDF.

2.1.2 Raw Material: The as rolled bars to be used for manufacture of ERC shall be stored heat wise separately so that they do not get mixed up.

2.1.3 Power Press: Power press with sufficient capacity or preferably power press fed by mechanized roller conveyor to cut the as rolled bars should be available. Two or three supports depending upon length of the rolled bars should be available near the cutting press, to hold bars such that their end squareness is maintained within 1 mm.

2.1.4 Hydro-Copying turning machine (Only for ERC Mk-V): One Hydro-copying turning machine with sufficient capacity or preferably Hydro-copying turning machine with Automatic bar feeding arrangement to make the profile of central leg of ERC Mk-V as per the drawing should be available, preferably near the cutting power press.

2.1.5 Bench Grinder: Bench grinder should be available near the cutting press to ground any sharp edges/ burrs from the cut bars.

2.1.6 Gauge for checking length of cut bars: Go/No Go gauge should be available to check the correctness of nominal length of cut bars within + 1.5 mm and – 0 mm.

2.1.7 Racks: Pigeonhole racks to store the cut rodsfor at least one day production, heat wise should be available near the heating furnace. Separate racks to store raw material heat wise should be available.

2.1.8 Heating furnace: .

"Induction heating ~~pusher type~~furnace fitted with accept / reject system using double colored Radiation Pyrometer should be available".

2.1.9 Power Press for forming clip: Power press of sufficient capacity fitted with the required dies made of YXR-33 / carbide material for the sequential bending process for the formation of the clip with or without robotic feedershould be

available for formation of clips installed near the Induction heating furnace such that the time taken between taking out the heated bars to forming the clips and then dipping them in oil quenching bath can be completed within 20 seconds. Necessary die checking templates should be available at the works for checking the wear and tear of the dies. Dies shall be checked before starting the shift and after production ofevery 4000 ERCs. The checking shall be done using especially prepared templates. At the start of the shift, the dies shall be checked using the templates for the first bend, second bend and the assembly die. If, the ERCs produced are as per the prescribed dimensions, only first bend and second bend need to be checked after production of 4000 ERCs. Record of checking shall be maintained in a separate register with details of maintenanceof the dies.

2.1.10 Scale blower: There should be an arrangement for blowing off scales from the dies fitted into the clip forming press. For this purpose a compressor with at least 3 Kg/cm^{2}capacity should be available.

2.1.11 Oil quenching tank: Oil-quenching tank of adequate length, width and depth should be available fitted with a conveyor belt passing through the oil.Facility for cooling the oil by way of heat exchange with separate cooling tower along with continuous temperature recorder should be available such that the temperature of oil does not exceed 70˚ centigrade. Oil tank should also be fitted with mechanical / motorized stirrerand filter with sufficient capacity to maintain uniform temperature of oil throughout the tank. The speed of the conveyer belt shall facilitate the clip to be in oil for at least 12 minutes.

~~The oil quenching followed by tempering process must take place in line. No discontinuity should be allowed between these processes. The transfer of Oil quenched clip to tempering process must be automatic without any manual intervention.~~

2.1.12 Tempering furnace: The tempering furnace shall be continuous Electrical tunnel type~~/well type~~, fitted with conveyor system~~/hanger~~. Above furnace shall be fitted with thermo- couples to sense the temperature at three points along its length to ensure the constant temperature zone along length of the furnace. The speed of the conveyor should facilitate the clips to be in tempering furnace for minimum period of 60 minutes. Each zone of the Electrical Furnace should have thyristor based control system to ensure the desired temperatureThe furnace shall be fitted with an automatic temperature control device and continuous temperature recorder. The furnace shall have an arrangement for free circulation of hot air.

2.1.13 Magnetic particle crack detector as per IS: 3703:2004 shall be available for crack detection in raw material cut bars, before using them in production.

2.1.14 Material handling: The clip manufacturer should preferably have facility of EOT Crane, Fork Lift or conveyor system for transfer of Raw Material/ materialin process/ Finished Product.

2.1.15 A small in-process checking room or designated space having surface plate height gauge, vernier calipers, hardness testing machine & toe load testing arrangement

should be available near the manufacturing area for conducting the in-process check of ERCs.

2.1.16 The clip manufacturer must have facility of suitable power back up of sufficient capacity to support operation of tempering furnace up to minimum 1 hour

2.2 **TESTING FACILITIES:** All measuring and testing equipments shall be installed in a separate laboratory room, which shall be well lit, clean and properly ventilated and provided with easily maintainable floor and platform should be available at the works.

~~2.2.1~~ **Chemical Testing:** Optical emission spectrometer should be available in the laboratory for carrying out chemical analysis to determine the carbon, sulphur, phosphorous, silicon and manganese percentage in the material
Spectrometer should be maintained and used as per the recommended manual / procedures of OEM like using recommended grade of Argon gas with argon flushing system, sample preparation facility, air conditioned room etc. Spectrometer shall be standardized as per the operation manual of the manufacturer of the instrument. In addition, Standard sample i.e. certified reference material (CRM) shall be available with the lab to confirm that standardization is correct. Also, Laboratory must be in possession of certified standard samples (CRM) in the close range of chemical composition of ERC. The Spectrometer should be calibrated by OEM regularly. In case, inspecting official wants to carry out the test from outside, for various reason, then the test can be conducted in spectro sources owned by Govt./ accredited by Accreditation agency as per extant guidelines issued by RDSO.

2.2.2 **Hardness tester:** Two ~~motorized digital~~ hardness testing machines based on the same method of testing (Rockwell Hardness) along with standard test blocks with certificate should be available in the firm's laboratory to test the hardness of raw and finished material. Hardness of Standard test blocks should be in close range of hardness of raw and finished material. The calibration of hardness testing machines should be done through Govt. Approved/Accredited labs.

2.2.3 **Proving ring:** Two proving rings of sufficient capacity should be available for use with the toe load test arrangement available in laboratory. These should be duly calibrated through National Physical Laboratory / NTH approved laboratory or through Labs Accredited by Accreditation agency as per extant guidelines issued by RDSO.

2.2.4 **Toe load testing arrangement:** For in-processtoe load testing, arrangement as per RDSO drawing should be available at the works. Final Toe load should be measured using UTM machine of sufficient capacity (LC-10kg) with suitable arrangement duly calibrated through test labs Govt. approved or Accredited by Accreditation agency as per extant guidelines issued by RDSO.

2.2.5 **Gauges and application & deflection test fixture:** Two sets of valid approved Inspection gauges (for dimension checking) and application & deflection test fixtures as per RDSO drawing should be available at the firms' premises. Angle-checking fixtures as per RDSO drawing should also be available. Hydraulic/Mechanical press of sufficient capacity for conducting the application & deflection test should be available.

2.2.6 Microscope & Polishing machine: A duly calibrated metallurgical microscope with 100x, 500x, 1000x magnification with a photographic attachment and measuring facility should be available in the laboratory. The polishing machine with all necessary items like diamond paste etc. shall be available to prepare and check samples for inclusion rating, depth of decarburization, grain size and microstructure.

2.2.7 Inclusion rating and grain size charts: Necessary charts for reading inclusion rating and grain size also should be available in the laboratory as mentioned in the specification of Elastic Rail Clips duly displayed in a glass frame.

2.2.8 Tool room cum die making/repair shop facility: All necessary tools and machines such as Surface Grinding Machine, lathe machine, cutting machine, Drilling Machine and Welding set etc. should be available in the tools room for manufacturing of gauges and dies. Optional – Vertical machining centre (VMC).

2.2.9 Calibration of test equipments: All the test equipments shall be periodically checked and calibrated. The frequency of calibration for Hardness testing Machine, UTM and proving ring shall be once in a year. Inspection gauges and application & deflection test fixture shall be produced before RDSO for approval three months in advance before expiry of approval validity at the time of Quality audit as per ISO guidelines for vendor approval. Details of calibration and due date shall normally be displayed on the equipments in the form of stickers issued by the Calibration agency. Calibration of equipments other than inspection gauges shall be got done from Government laboratory or from labs accredited by Accreditation agency as per extant guidelines issued by RDSO or National Test House (NTH) or Regional Test Center (RTC).

2.2.10 Firm shall possess Plant & Machineries detailed in Annexure A and submit details of same on enclosed format given as **Annexure B-I & B-II**.

2.3 QUALITY CONTROL REQUIREMENTS:

2.3.1 There should be a quality control system for manufacturing process of product commencing from raw material stage. The QAP for the product should cover all the requisite information as per General guidelines and also on following aspects.

a) Organizational Chart
b) Process Flow Chart
c) Methodology of Process Control
d) Details of Plants and machinery including its size and other details as per STR
e) Details of calibration of testing/ measuring instruments.

2.3.2 All the relevant specifications and IS Standards should be available with the firm.

3.0 GENERAL: Sufficient manpower like managers, supervisor, laboratory-in- charge, quality control person and workmen etc. should be available. They should possess necessary qualification depending upon the scope of their works. All the approved firms should possess a valid ISO- 9001 Certificate. The firm should maintain records as per QAP approved by RDSO. The firm should possess all the referred

specifications / drawings as referred to in the specification for elastic rail clips IRST – 31. The firm should also possess the ISO documents issued by RDSO / Lucknow.

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Annexure - A

Summarized List of plant and machineries and testing equipments

SN.	Name of Item	Minimum Quantity/	Details/ to be Submitted
Number required			
A.	**MANUFACTURING FACILITIES**		
1	Power Press	One Power press of sufficient capacity for cutting of bars.	Capacity in Tonnes
2	Heating furnace	Induction heating ~~pusher type~~ fitted with accept / reject system using double colored Radiation Pyrometer.	Furnace type with Make & Model, Sr. No. Size: Effective length x width x height/depth
3	Power Press for forming clip	One/ two Power press of sufficient capacity for clip formation fitted with dies and blower for blowing off scales.	Capacity in Tonnes
4	Oil quenching tank	Oil-quenching tank of adequate length, width and depth fitted with a conveyor belt passing through the oil and filter of sufficient capacity. Facility for cooling the oil by way of heat exchange with cooling tower along with continuous temperature recorder such that the temperature of oil does not exceed 70˚ Centigrade. Oil tank shall be fitted with mechanical / motorized stirrer to maintain uniform temperature of oil throughout the tank. The speed of the conveyer belt shall facilitate the clip to be in oil for at least 12 minutes.	Size: Effective length x width x depth
5	Tempering furnace	The tempering furnace continuous Electrical tunnel type~~/well type~~ fitted with conveyor/hanger system and thermo-couples to sense the temperature at three points along its length to ensure the constant temperature zone along length of the furnace. The speed of the conveyor shall facilitate the clips to be in tempering furnace for minimum period of 60 minutes. Each zone of the Electrical Furnace should have thyristor based control system to ensure the desired temperature. The furnace shall be fitted with an automatic temperature control device and continuous temperature recorder. The furnace shall have an arrangement for free circulation of hot air.	Furnace type with Make & Model, Sr.No. Size: Effective length x width x height/depth
6	Hydro-Copying turning machine	One Hydro-copying turning machine with sufficient capacity/Hydro-copying turning machine with Automatic bar feeding arrangementto make the profile of central leg of ERC Mk-V as per drawing (RT-5919) should be available, preferably near the cutting power press.	
7	Bench Grinder	One No.	Capacity in RPM or H.P. & Nos.
B.	**TESTING FACILITIES**		
1.	Magnetic Crack Detector Machine	. matching with the production capacity	Make : Sr. No.:
2	Chemical Testing	Optical emission spectrometer should be available in the laboratory for carrying out chemical analysis to determine the carbon, sulphur, phosphorous, silicon and manganese percentage in the material Spectrometer should be maintained and used as per the recommended manual / procedures of OEM like using recommended grade of Argon gas with argon flushing system, sample preparation facility, air conditioned room etc. Spectrometer shall be standardized as per the operation manual of the manufacturer of the instrument. In addition, Standard sample i.e. certified reference material (CRM) shall be available with the lab to confirm that standardization is correct. Also, Laboratory must be in possession of certified standard samples (CRM) in the close range of chemical composition of ERC. The Spectrometer should be calibrated by OEM regularly. In case, inspecting official wants to carry out the test from outside, the test can be conducted in spectro sources owned by Govt./ accredited by Accreditation agency	Make, Model, Sr.No., CRMs certificate.

		as per extant guidelines issued by RDSO.	
SN	Name of Item	Minimum Quantity/ Number required	Details/ to be Submitted
C.MEASURING AND TESTING EQUIPMENT			
1	Motorized DigitalHardness tester	Two Nos.	Hardness machine type (RC), Make, Model &Sr.No., Capacity,
2	Toe load testing arrangement a) As per RDSO drawing No. EDO/T-2135or b) UTM	One (Min) One (Min)	Nos. Make: Sr. No. Capacity in Ton/ KN/Kgf
3	Proving Ring	Two Nos	Capacity in Ton/KN Sr. No.
4	Metallurgical Microscope having atleast magnification 100x, 500x, 1000x with a photographic attachment and measuring facility.	One	Make, Model, Sr. No.
5	Polishing machine single disc with leveler.	One	Capacity in RPM or H.P
6	Surface plate near cutting press	Two min., One (18"x18" Min) in inspection Room & One(12"x12" Min)	Size: Length x width
7	Height gauge fitted with vernier	One	Sr.No. & Range
8	Bevel protector	One	Sr.No. & Range
9	Digital Vernier caliper	Two (of 0.02mm accuracy)	Sr.No. & Range
10	Tri-square	One	Sr.No. & size
11	Set of filler gauge	One	Sr.No.
12	Length checking gauge	One Go-No Go gauge for checking of length of cut pieces	Sr.No.
13	Application & deflection test fixture	Two	Nos.
14	Inclusion rating charts and Grain size chart.	One complete set	Nos.
15	Angle checking fixture as per drg. no. RDSO/T-3935 (Latest Alt.)	One	Nos.
16	Inspection Gauges	Two sets RDSO Approved	Nos.
17	Gauges/ Templates	Two sets of working gauges	Nos.

Note: All temperature indicators, recorders, thermocouples & other equipments shall be calibrated once in a year or earlier if found unsatisfactory during working.

Annexure B-I

LIST OF PLANT & MACHINERY

Sl. No	Name of the Equipment/ Machine	Manufactured By/ Model No.	Quantity /Nos.	Capacity / Size	Unique Sl. No. of Machine	Year of procurement	Documents establishing Ownership	Year of Manufacture
.								

Undertaking:

1 We undertake to inform RDSO through FAX/email of scanned copy followed by confirmation copy through courier / Speed post if any machinery is removed from firm's premises even for repair. We shall inform RDSO when machine is brought back and made operational.

2 We undertake that if at any time after approval is accorded, some machinery is found deficient without intimation to RDSO action against our firm can be taken by RDSO as per extant policy.

Place : Signature
Date : Name in full of Signing Authority

Status in the Firm
Stamp of the firm

Annexure B-II

LIST OF TESTING/MEASURING INSTRUMENT

Sl. No	Name of the Equipment/ Machine	Manufactured By/ Model No.	Quantity /Nos.	Capacity / Size	Unique Sl. No. of Machine	Year of procurement	Documents establishing Ownership	Year of Manufacture
.								

Undertaking:

1 We undertake to inform RDSO through FAX/email of scanned copy followed by confirmation copy through courier / Speed post if any machinery is removed from firm's premises even for repair. We shall inform RDSO when machine is brought back and made operational.

2 We undertake that if at any time after approval is accorded, some machinery is found deficient without intimation to RDSO action against our firm can be taken by RDSO as per extant policy.

Place :
Date :

Signature
Name in full of Signing Authority

Status in the Firm
Stamp of the firm

Annexure -C

C. PROFORMA FOR TECHNICAL CAPABILITY ASSESSMENT /FORMANUFACTURE AND SUPPLY OF ERC

(To be filled in by the firm in triplicate. Attach extra sheets wherever necessary)

1.0	**SECTION – I : GENERAL INFORMATION** (For record purpose only)	
1.1	Name of the Firm	
1.2	Address	
(a)	Head Office	
(b)	Works	
(c)	Location of Works …….km from ……Rly. Stn.	
1.3	**Factory Area (Attach layout plan for factory premises)**	
(a)	Covered	
(b)	Uncovered	
(c)	Is the factory site in your name or on rental basis? (Support with documents)	
1.4	SSIC / NSIC / MSME Registration No. (Enclose copy)	
1.5	**Power Availability**	
(a)	General allotted capacity	
(b)	Standby generator and its capacity	
(c)	Name the party / person in whose name the power is sanctioned and your agreement with the party / person (Support with relevant documents)	
1.6	Name of any other units located in the above premises	
1.7	Man – Power Management	
(a)	Managerial Staff	
(b)	Shop Floor Engineers / Supervisors (Their numbers with their qualifications and service experience)	
(c)	Lab Incharge whether full time or part time (Indicate their names, qualification and service experience)	
(d)	Inspection & Quality Control Staff (Their nos., name, qualification and service experience)	
(e)	Workmen	
	(i) Highly Skilled	
	(ii) Semi Skilled	
	(iii) Un Skilled	

2.0	**SECTION – II : TECHNICAL INFORMATION** (Availability of plant & machinery as indicated by manufacturer should be verified by assessment official) Indicate the availability of following against each item parawise	
2.1	**Infrastructure for production and production capability of Elastic Rail Clips:**	
2.1.1	**Power Press:**	
(a)	~~Their~~ Total Numbers	
(b)	Capacity	
(c)	Make	
(d)	Attachment for blowing off scale from dies	
2.1.2	**Magnetic Particle Crack Detector machine:**	
(a)	Total Numbers	
(b)	Capacity	
(c)	Make	
2.1.3	**Hydro-Copying turning machine:** (Only for ERC Mk-V)	
(a)	Total Numbers	
(b)	Capacity	
(c)	Make	
2.1.4	**Indirect Oil fired walking beam type or Indirect Gas fired walking beam type Heating Furnace / Electric Induction heating pusher type Furnace**	
(a)	Total Numbers	
(b)	Whether rotary hearth or walking beam	
(c)	Capacity	
(d)	Make	
(e)	Attachment for automatic temp. control cum temp. indicator & continuous temperature recorder (indicate temp. range)	
(f)	Facility for bars to come out at required temperature	
2.1.5	**Oil Quenching Bath with Conveyor Belt:**	
(a)	Size of Tank	
(b)	Type of Stirrer provided	
(c)	Volume capacity for Oil	
(d)	Heat Exchange facility (by way of heat exchange with cooling tower)	
(e)	Auto. Temp. control device and continuous temperature recorder (indicate range of temp.)	
2.1.6	**Tempering Facility:**	
(a)	Type of Tempering Furnace	
(i)	Oil fired tunnel type or gas fired tunnel type or ContinuousElectricaltunnel type	
(ii)	Is it converyorised?	
(iii)	Is it provided with sensing devices at 3 places? (At entry, center & exit)	

(iv)	Auto. Temp. control device and continuous temperature recorder (indicate range of temp.)	
(b)	Nos. and Size	
(c)	Auto. Temp. control device and continuous temperature recorder (indicate range of temperature)	
	If the infrastructure is not yet installed, the date of placement of order against purchase of each equipment should be mentioned. (Attach photocopy of such order). Expected date of commissioning should also be indicated	
2.1.7	Tool Room cum die making / repair shop facility	
2.1.8	Driving and Extraction tool for Anti-Theft ERC (with circlip) (As per Annexure-I with IRS/T-58-2020)	
2.1.9	Source of Raw Material	
2.1.10	Arrangement for storing the raw material heat wise. Describe briefly the arrangement	
2.1.11	Arrangement for storing the finished clips heat wise and capacity to store the clips in numbers at a time	
2.1.12	Arrangement for storage and the disposal of scrap/waste material	
2.1.13	Rated production capacity planned i) Per Shift ii) Per Month	
2.2	**Infrastructure for testing of Elastic Rail Clips:**	
	Nature of Test	**Facilities available with the firm required**
2.2.1	Toe Load Test (A) Arrangement as per drg. No EDO/T-2135 (B) Proving Rings. Indicate No., Capacity & date of calibration(Enclose copy) (C) UTM Capacity & date of calibration	
2.2.2	Motorized Digital Hardness test apparatus on RC scale with standard test blocks and working literature. (RC, test blocks of value 40- 44 required)	
2.2.3	**Lab Cum inspection room**	
(a)	Laboratory cum inspection room with well lit, clean and properly ventilated laboratory room with and easily maintainable floor and platforms, should be equipped with	
i)	Polishing machine with diamond paste	
ii)	Drawing (latest) duly stamped displayed	
iii)	Inclusion rating, grain size and microstructure charts duly enlarged and displayed	
iv)	Microscope 100x, 500x, 1000x with a photographic attachment and measuring facility for Depth of decarb and inclusion rating / grain size tests.	

2.2.4	**Chemical Composition Test**	
	Through Optical Emission Spectrographic facility approved by RDSO / Accredited by Accreditation agency / Govt. owned (NOC to be submitted). ~~In case, Spectrometer is provided by the Firm then~~ Spectrometer should be maintained and used as per the recommended manual /procedures of OEM like using recommended grade of Argon gas with argon flushing system, sample preparation facility, airconditioned room etc. Spectrometer shall be standardized as per the operation manual of the manufacturer of the instrument. In addition, Standard sample i.e. certified reference material (CRM) shall be available with the lab to confirm that standardization is correct. Also, Laboratory must be in possession of certified standard samples (CRM) in the close range of chemical composition of ERC. The Spectrometer should be calibrated by OEM regularly. In case, inspecting official wants to carry out the test from outside, for various reason, then the test can be conducted in spectro sources owned by Govt./ accredited by Accreditation agency as per extant guidelines issued by RDSO.	
2.2.5 (a)	**Depth of decarb test**	
i)	Microscope 100x, 500x, 1000x magnification	
ii)	Diamond paste	
iii)	Polishing paste	
iv)	Inclusion rating & grain size charts	
(b)	**Freedom from internal defects**	
(c)	**Inclusion Rating**	
2.2.6	**Other facilities**	
i)	Surface plate	
ii)	Height gauge	
iii)	Bevel protractor to read up to 5 minute angle (Min.)	
iv)	Angle checking fixture as per drg. No. RDSO/T-3935	
v)	Digital Vernier caliper to read upto 0.02 mm (Min.)	
vi)	Digital weighing Machine upto 5kg	
2.2.7	Indian Standards Codes. As per clause 2.1 of IRS: T-31 Please list them	
3.0	**SECTION - III : EXPERIENCE** (For record purpose only)	
3.1	Indicate various types of items being manufactured in ~~your works~~the work site and the name of the agency / client for whom it is being manufactured.	

3.2 Give details of important orders executed in the past 3 years :

SN	Item	Client	Contract reference	Date of completion of contract	Total order quantity	Quantity supplied year wise in last 3 years		
						year	year	year

3.3 Please specify current orders in hand

SN	Item	Client	Contract reference	Date of completion of contract	Total order quantity to be supplied	Balance Quantity to be supplied

3.4	Whether the firm is already registered with RDSO for other P. way items. If so, name the item supported by documents.	
3.5	Whether the firm is already registered with RDSO for items other than P. way items. If so, name the item and deptt. with which you are registered, support with documents.	
3.6	Indicate annual turnover of the firm:	
4.0	**DECLARATION:**	
4.1	We do hereby declare that the above particulars are correct and no discrepancy shall be found during actual investigation before and during execution of order on our firm.	
4.2	Any change in the plant and machinery and change of place of office and of Works site shall be brought to the notice of RDSO for clearance and approval.	
4.3	We also declare that our concern has not been black listed by Railway/Railway Board/ RDSO for business with the Railways.	
4.4	We hereby undertake that all our equipments for manufacturing and testing as listed above shall be maintained in good working condition at all time.	
4.5	We hereby declare that the contents and the instructions of "ISO Apex Documents of RDSO" have been read and understood by us and our firm shall agree to abide by all the stipulations laid therein	
4.6	We hereby undertake to themaintain the records of the procurement of raw material for production of ERC, supply of ERC and disposal of scrap in the proper format of QAP.	
		Signature of Firm's Rep. Name in full of signing authority Status in the firm Stamp of the firm