



RESEARCH DESIGNS & STANDARDS ORGANIZATION

Manaknagar, Lucknow – 226011

Document No: QC-G- 8.1-3, Ver. '1'

Document Title : Item Specific guideline & Schedule of Technical Requirements for Vendor approval for manufacture and supply of Elastic Rail Clips Mk-III,ERC-J & Mk-V

1.0 Amendment History:

S. No.	Amendment Date	Version	Reasons for Amendment
1. 1	31.01.2019	1.0	First issue under new documentation system
2.	26.08.2020	2.0	Amendment in Specification and quality improvement

2.0 Purpose:

This guideline is based on Indian Railway standard specification for manufacture of Elastic Rail Clips Mk-III, V & ERC - J 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, V & ERC - J allotted to Quality Assurance Civil Directorate of RDSO as well as to specify technical and other Requirements in context with adequate space needed for storage of raw/finished material, manpower and plant/ machinery & equipment required for manufacture and supply of metal liners.

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 Executive Director, Quality Assurance Civil Dte.

4.0 Procedure / Details

Procedure/details are annexed.

5.0 Referenced Documents:

1. **Indian Railway Standard specification for Elastic Rail Clips S.No. T-31-2018(Fourth Revision)**
2. **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	Director/QAC	ED/QAC	DD/XEN/AIE/ARO	Track Design Dte. & M&C Dte.	All approved vendors through website
Compliance of directives contained in this document	DD/XEN/AIE/ARO	Director/QAC	-	-	-
Requirement of deviation from this directive	Director/QAC	ED/QAC	DD/XEN/AIE/ARO	Track Design Dte. & M&C Dte.	-

Abbreviations

QA	Quality Assurance.
QAC	Quality Assurance Civil.
ED/QAC	Executive Director/Quality Assurance Civil
RDSO	Research Designs & Standards Organization
DD	Dy. Director
XEN	Executive Engineer
AIE	Assistant Inspecting Engineer.

A. ITEM SPECIFIC GUIDELINES

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

- i) Vendor seeking fresh registration shall register online on RDSO Website www.rdsolndianrailways.gov.in.
- ii) Submit duly filled-in **online** fresh application form along with ~~initial assessment~~ **vendor registration** charges as applicable at the time of submission.
- iii) **Upload the document as mentioned alongwith QAP and legal documents.** ~~Submit a key plan & layout plan, on Auto CAD (A-1/A-2 Size), for technical approval by this office. The layout plan should indicate the adjacent plot productions unit thereof, roads, boundaries etc.~~
- iv) The specification & relevant drawings are **available on RDSO website 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.** All payments should be made through RDSO payment portal of SBI “SB Collect” or through NEFT/RTGS.
- v) After **downloading application/proforma along with documents & charges verification**, it will be scrutinized by Quality Assurance Civil Directorate 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, V & ERC - J applied for will be checked and approved during STR verification visit.**
- viii) 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 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. Charges of drawl of samples will be obtained from the firm as applicable.
- ix) The testing of the samples drawn will be carried out as per clause laid down in IRS specification for Elastic Rail Clips Mk-III, V & ERC - J for track S.No. T-31-2018(Fourth Revision) If test report is found satisfactory and other conditions are fulfilled, the firm would be accorded approval in the **“List of RDSO Vendors for developmental order”**. The firm will be advised to start production of the product. First 20,000 nos. of Elastic Rail Clips Mk-III, V & ERC - J will be inspected by RSDO in at least two installments in two visits. During the inspection the QAP adopted and records maintained by the firm will be verified. If the inspected quantity of 20,000 nos. of Elastic Rail Clips Mk-III, V & ERC - J and implementation of QAP is found satisfactory, the purchaser may be advised to get the inspection of the product done by RITES or themselves.

2.0 In the case of new Vendor/firms the process of approval will be initiated only if the firm is **applied on-line or** 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. The firm shall be approved in **“List of RDSO Vendors for Developmental Orders”** after the

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inspection of initial quantity of 20,000 nos. Elastic Rail Clips Mk-III, V & ERC - J or after completion of developmental order whichever is earlier **in case developmental order from Zonal Railways/**

Railway Board or given go ahead from RDSO.

- 3.0 In case, firms approved for manufacturing of metal liner to one drawing, desires to develop the product to other drawings, the requisite inspection gauges will have to be approved by RDSO. After getting satisfactory internal test reports, the samples will be drawn and tested at RDSO. If test results on samples found satisfactory, the firm would be accorded approval to other drawings in **“List of RDSO Vendors for Developmental Orders”**.
- 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 ISO apex document No. QO-D-8.1-11 Ver.1.0.**

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A. SCHEDULE OF TECHNICAL REQUIRMENTS FOR APPROVAL OF FIRMS TO MANUFACTURE ELASTIC RAIL CLIPS Mk-III, V & ERC-J

1. **SCOPE:** The schedule of technical requirements covers the norms for manufacture of elastic rail clip.
2. **REQUIREMENTS:** The vendors seeking approval shall comply all the below mentioned requirement.

a) MANUFACTURING FACILITIES:

- i. **Space:** Sufficient covered area with proper ventilation 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.
- ii. **Raw Material:** The as rolled bars to be used for manufacture of ERC Mk-III, V and ERC-J shall be stored heat wise separately so that they do not get mixed up.
- iii. **Power Press:** Power press with sufficient capacity 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.
- iv **Hydro-Copying turning machine (Only for ERC Mk-V):** One Hydro-copying turning machine with sufficient capacity to make the profile of central leg of ERC Mk-V as per the drawing should be available, preferably near the cutting power press.
- v **Bench Grinder:** Bench grinder should be available near the cutting press to ground any sharp edges/ burrs from the cut bars.
- Vi 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.
- Vii Racks:** Sufficient pigeonhole racks to store the cut rods heat wise should be available near the heating furnace.
- Viii Heating furnace:** Indirect oil fired walking beam type or Indirect gas fired walking beam type heating furnace should be available. An automatic temperature control device and continuous temperature recorder should also be fitted with.
OR
“Induction heating pusher type furnace fitted with accept / reject system using double colored Radiation Pyrometer should be available”.
- Ix Power Press for forming clip:** Power press of sufficient capacity fitted with the required dies should be available for formation of clips installed near the 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 also be available at the works for checking the wear and tear of the dies.
- X 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 sufficient capacity should be available.

Xi Oil quenching tank: Oil-quenching tank of adequate length, width and depth should be available fitted with a conveyor belt passing through the oil.

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Facility for cooling the oil by way of heat exchange with 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 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.

Xii Tempering furnace: The tempering furnace shall be oil fired tunnel type or gas fired tunnel type or continuous Electrical tunnel type, fitted with conveyor system. 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 50 minutes. 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.

- xiii Magnetic particle crack detector as per IS: 3703:2004 shall be available for crack detection in raw material cut bars, if any, before using them in production.
- xiv **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.
 - a. **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 else the firm should possess a no objection certificate from RDSO for carrying out chemical analysis of material spectrographically from RDSO approved / accredited by Accreditation agency / Government owned spectro source as and when required by them within specified time frame. In such case, distance of spectro lab from firms work should not be more than 100km for sake of smooth working / inspection.

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, 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.

- b. **Hardness tester:** Two hardness testing machines of same method (any of Vickers Hardness /Brinell Hardness/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.
- c. **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.

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- d. **Toe load testing arrangement:** For toe load testing, arrangement as per RDSO drawing should be available at the works OR Toe load can also be measured through UTM machine of sufficient capacity (LC-10kg) with suitable arrangement duly calibrated through test labs Govt. approved

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or Accredited by Accreditation agency as per extant guidelines issued by RDSO.

- e. **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.
- f. **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.
- g. **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.
- h. **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).
- i. **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).
- j. Firm shall possess Plant & Machineries detailed in Annexure A and submit details of same on enclosed format given as **Annexure B-I & B-II**.
- k. ~~Fatigue Test: Four sample clips shall be tested for fatigue test, as per test scheme mention as under:~~

~~Stage I — 2 million cycles at frequency of 300/minute (L/V ratio = 0.4)~~

~~Vertical load between (V) = 9.375t (max) — 0.5t (min)
Lateral load between (L) = 3.75t (max) — 0.2t (min)~~

~~Stage II — 0.5 million cycles at frequency of 300/minute (L/V ratio = 0.62)~~

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Vertical load between (V) = 9.375t (max) — 0.5t (min)
Lateral load between (L) = 5.81t (max) — 0.31t (min)

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~~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).~~

QUALITY CONTROL REQUIREMENTS:

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.
 - i) Organizational Chart
 - ii) Process Flow Chart
 - iii) Methodology of Process Control
 - iv) Details of Plants and machinery including its size and other details as per STR
 - v) Details of calibration of testing/ measuring instruments.
2. All the relevant specifications and IS Standards should be available with the firm.
3. **GENERAL:** Sufficient manpower like managers, supervisor, laboratory-in- charge, quality control person and workmen 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.

Annexure A

Summarized List of plant and machineries and testing equipments

SN.	Name of Item	Minimum Quantity/ Number required	Details/ to be Submitted
A MANUFACTURING FACILITIES			
1	Power Press	One Power press of sufficient capacity for cutting of bars.	Capacity in Tonnes
2	Heating furnace	Indirect oil fired walking beam type or indirect gas fired walking beam type furnace fitted with an automatic temperature control device and continuous temperature recorder, Or 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. 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 oil fired tunnel type or gas fired tunnel type or continuous Electrical tunnel type fitted with conveyor 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 50 minutes. 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 to 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	One No.	Make : Sr. No.:

2	Chemical Testing	<p>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</p> <p style="text-align: center;">else</p> <p>the firm should possess a no objection certificate from RDSO for carrying out chemical analysis of material spectrographically from RDSO approved / accredited by Accreditation agency / Government owned spectro source as and when required by them within specified time frame. In such case, distance of spectro lab from firms work should not be more than 100km for the sake of smooth working / inspection.</p> <p style="text-align: center;">Or</p> <p>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, 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.</p>	<p>Make, Model, Sr.No., CRMs certificate.</p>
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SN.	Name of Item	Minimum Quantity/ Number required	Details/ to be Submitted
C	MEASURING AND TESTING EQUIPMENT		
1	Hardness tester	Two Nos.	Hardness machine type (RC/HB/VH), Make, Model & Sr.No., Capacity,
2	Toe load testing arrangement a) As per RDSO drawing No. EDO/T-2135 or 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	Two min., One (18"x18" Min) in inspection Room & One(12"x12" Min) near cutting press	Size: Length x width
7	Height gauge fitted with vernier	One	Sr.No. & Range
8	Bevel protector	One	Sr.No. & Range
9	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 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 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 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/
QUALITY AUDIT FOR MANUFACTURE AND SUPPLY OF Elastic
Rail Clips Mk-III/IV ERC-J**

(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, Telephone & Fax No. :

(a) Head Office :

(b) Works :

(c) Location of Workskm 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)

SSIC / NSIC or equivalent MSME Registration No. (Enclose

copy) :

1.4 **Power Availability** :

(a) General allotted capacity :

(b) Standby generator and its capacity, if available :

(c) Name the party / person in whose name the power is

sanctioned and your agreement with the party / person

(Support with reasonable documents) :

1.5 Name of any other units located in the above premises :

1.6 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 of 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

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2.0 SECTION – II : TECHNICAL INFORMATION

(Availability of plant & machinery as indicated by manufacturer should be verified by assessment official)

2.1.1 Infrastructure for production and production capability of Elastic Rail Clips Mk-III/V ERC-J:

Power Press:

- (a) Their Nos. :-----
- (b) Capacity :-----
- (c) Make :-----
- (d) Attachment for blowing off scale from dies :-----

2.1.1 Magnetic Particle Crack Detector:

- (a) Their Numbers :-----
- (b) Capacity :-----
- (c) Make :-----

2.1.2 Indirect Oil fired walking beam type or Indirect Gas fired walking beam type Heating Furnace / Electric Induction heating pusher type

Furnace:

- (a) Their 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 :-----

2.1.3 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.) :-----

2.1.4 Tempering Facility:

- (a) Type of Tempering Furnace :-----
 - i) Oil fired tunnel type or gas fired tunnel type or Continuous Electrical tunnel type :-----
 - Is it conveyrised? :-----
 - Is it provided with sensing devices at 3 places? (At entry, center & exit). :-----
 - Auto. Temp. control device and continuous temperature recorder (indicate range of temp.) :-----
 - For loading the clips into the furnace, does suitable supporting arrangements exist? :-----
 - What are approx. no. of clips which can be tempered at a time with the support arrangement duly permitting free circulation of air around the clips. :-----
- (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 of equipment should be mentioned. (Attach photocopy of such order). Expected date of commissioning should also be indicated.

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2.1.5 Tool Room cum die making / repair shop facility: -----

2.1.6 Source of Raw Material:

2.1.7 Arrangement for storing the raw material heat wise. Describe briefly the arrangement: :-----

2.1.8 Arrangement for storing the finished clips heat wise and capacity to store the clips in numbers at a time: :-----

2.1.9 Rated production capacity planned for clips per shift per day. :-----

2.2 Infrastructure for testing of Elastic Rail Clips Mk-III/V ERC-J:

Nature of Test Facility as required Facility as available

2.2.1 Toe Load Test

(A) Arrangement as per drg. No. EDO / T – 2135
OR
UTM

(B) Proving Rings. Indicate No. capacity & date of calibration (Enclose copy) :-----

2.2.2 Hardness test apparatus on RC, BHN / HV scale with standard test blocks and working literature. (In case of RC, test blocks of value 40 – 44 required) :-----
:-----

2.2.3 Lab. Cum inspection room

(a) Well lit, clean ad properly ventilated lab. Room with 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 Metallurgical 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). :-----

Distance between spectro lab from firms work should not be more than 100 km

OR

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, 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.

2.2.5 (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 Vernier caliper to read up to 0.02 mm (Min.).

2.2.7 Indian Standards Codes. As per clause 2.1 of IRST-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 and the name of the agency / client for whom it is being manufactured.
- 3.2 Indicate important customers for the last 3 years both Government and non-Government. if any, for information furnished in your reply to 3.1.
- 3.3 Give details (contract reference, item and quantity manufactured and supplied of important orders executed in the past 3 years for the following. Indicate the inspecting agency for each:
 - (i)
 - (ii)
 - (iii)
- 3.4 Please specify current orders in hand on your firm (Contract reference, client, item, quantity under manufacture and supply)
- 3.5 Whether you are already registered with RDSO for other P. way

items. If so, name the item supported by documents.

3.6 Whether you are 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. :-----

3.7 Indicate annual turnover of your company : :-----

Final Draft

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 manufacture and testing as listed above shall be maintained in good working order 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 abide by all the stipulations laid therein.

Signature of Firm's Rep.

Name in full of signing authority

Status in the firm

Stamp of the firm