RESEARCH DESIGNS & STANDARDS ORGANIZATION

Manaknagar, Lucknow – 226011

Document No: ***QC-G-7.1-10***

Document Title : Item Specific Guidelines for Metal Liners for use with Elastic Rail clips

1.0 Amendment History:

S. No.	Amendment Date	Version	Reasons for Amendment
1.	01/09/2010	1.0	First issue under new documentation system for ISO 9001:2008.
2.	27/10/2014	2.0	Change in specification of Metal Liner

2.0 Purpose :

This guideline is based on Indian Railway standard specification for Metal Liners for use with Elastic Rail Clips (Provisional)–2013 issued by Track Design Dte. of RDSO. The purpose is to specifically define the guidelines for vendor approval of Metal Liners 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 reassessment 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 Metal Liners for use with Elastic Rail Clips (Provisional) – 2013
2. General Guidelines for vendor development

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.	-

9.0 Abbreviations

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

A. ITEM SPECIFIC GUIDELINES

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

i) Vendor seeking fresh registration shall register online on RDSO website www.rdso.indianrailways.gov.in.

ii) Submit duly filled-in fresh application form along with initial assessment charges as applicable at the time of submission.

iii) 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 priced documents and needs to be procured by the firm from RDSO. All payments should be made through RDSO payment portal of SBI "SB Collect" or through NEFT/RTGS..

v) After receipt of the filled in proforma, 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 inspection gauges of the drawings of metal liners applied for will be invited for check and approval by RDSO alongwith checking charges as applicable.

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 metal liners for use with ERCs (provisional) 2013. If test report is found satisfactory and other conditions are fulfilled, the firm would be accorded approval in the category of Part- II suppliers. The firm will be advised to start production of the product. First 20,000 nos. of Metal Liners 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 Metal Liners 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 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 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 Part-II suppliers.

4.0 The vendor placed in list of Part-II suppliers will be considered for upgradation to the list of 'Part-I suppliers' after fulfilling the criteria given in 'General Guidelines for Vendor Develoment', document no. QC-G-7.1-1 in force at the time of consideration of the case. The Criteria at present is as under:

a) The vendor has applied in writing to RDSO for Upgradation from Part-II to Part-I. Vendor shall apply to RDSO on Application form for Vendor Upgradation available on RDSO's website.

b) The Vendor should have supplied minimum specified quantity of 2,00,000 No. of metal liners to Indian Railways**.** and which shall have

i) To be in service for a minimum period of one year. Or

ii) 15 months from the date of issue of last inspection certificate.

c) The registration of the firm is valid.

d) The vendor should possess a valid ISO 9001 certificate for his works address covering the item for which he is registered with RDSO.

e) Service performance- No adverse performance attributable to unsatisfactory quality/ workmanship of the product has been received from the field within specified period at the time of consideration for up-gradation.

B. SCHEDULE OF TECHNICAL REQUIREMENTS (STR) FOR MANUFACTURE OF METAL LINERS

The vendors seeking approval shall comply all the requirements as under:

i) **Space**:- Covered area with adequate space for storage of finished material should be available.

ii) **Stacking of Raw Material**:- The rolled bars to be used for manufacturing of metal liners should be stored heat wise separately so that they do not get mixed up.

iii) **Manpower**: Sufficient experienced man power like manager, supervisor, lab. Incharge, quality control persons and workmen should be available. They should possess qualification depending upon the scope of their works.

iv) **Technical Requirements:** plant/ machinery and equipments required are listed as under:

List of plant/ machinery and equipments

S. No.	Item	No.	Capacity
	MANUFACTURING FACILITIES		
1.	Power Press	2 nos.	150-200 T
2.	Bench Grinder	1 no.	
	TESTING FACILITIES		
3.	a) Inspection Gauges (Approved by RDSO) b) Inspection Gauges for internal checking	Two sets of valid and approved inspection gauges for inspection out of which one set to be retained as master gauge One set for internal checking conforming to master gauge	
4.	A well lit, clean & properly ventilated physical laboratory cum inspection room provided with easily maintainable floor & platform should be available.		
5.	**Chemical Testing:**		
(i)	(a) Carbon & Sulphur apparatus with suitable chemicals for analyzing C, Si, Mn, S & P elements (b) Muffle Furnace (c) Analytical Balance (d) Other apparatus for the chemical / metallurgical test lab. or Through Spectrographic facility approved by RDSO/Govt or NABL accredited laboratory for which consent letter from the lab is desired.	One set	

S. No.	Machines/Equipments	No.	Capacity
6.	Brinell Hardness Tester (BHN / HB) scale equipped with inbuilt camera for capturing image of indentation and capable of displaying image and measuring its size in fully automatic mode along with provision for displaying hardness as well. The system should have facility of storage of image and test results with details of sample. The salient features of Machine shall be as per Annexure –I.	1 no.	3000 kgf
7.	Standard test block within the range of 100-200 BHN	1 no.	
8.	Vernier Callipers	1 no.	
9.	Dish or trays made of porcelain, heat resistant glass or a corrosion resistant glass or a corrosion resistant alloy of suitable size to store the hot acid for dipping the liner to check the surface defects	1 no.	
10.	Hot Plate	1 no.	
11.	Universal Testing Machine with bending facility of ***Class one or better*** (as per Clause 7 of IS 1828 part I : 2005 or latest) with facility for load rate control to facilitate operation of machine through a personal computer from a safe distance from location of machine. The machine should be calibrated from time to time by NABL Accredited laboratory. The salient features of machine shall be as per Annexure –II.	1 no.	200 KN min.
12.	Metallurgical Microscope, 100 X magnification with facility of eye piece for grain size and inclusion rating comparison	1 no.	
13.	Micro polishing Machine with Polishing reagents like Chromium Oxide or Diamond Paste	1 no.	
14.	Availability of grain size and inclusion rating charts duly enlarged.	1 no.	
	TOOL ROOM FACILITIES		
15.	i) Shaper, ii) Surface grinder iii) Nose grinder iv) Hand Saw	1 no. 1 no. 1 no. 1 no.	

QUALITY ASSURANCE CIVIL DIRECTORATE
RESEARCH DESIGNS & STANDARDS ORGANIZATION
LUCKNOW

C. PROFORMA FOR TECHNICAL CAPABILITY ASSESSMENT/REASSESSMENT FOR MANUFACTURE AND SUPPLY OF METAL LINERS FOR ERC ASSEMBLY

Metal Liners to Drawing No. ----------

NOTE:
(i) To be filled in by the firm in duplicate. Attach extra sheet wherever necessary. No para to be left blank.
(ii) All manufacturing and testing facilities to be available in the unit.
(iii) All enclosures to be signed by the authorized official of the firm.

GENERAL INFORMATION

1. Section - I :

1.1 Name of the firm ----------

1.2 Address:

a) Head office: ----------

b) Works : ----------

c) Distance of Works in Km from the Nearest Railway station. : ----------

d) Nearest Railway Station. : ----------

1.3 Factory Area (in Sq.m.)

a) Covered : ----------

b) Uncovered : ----------

c) Is the factory site in your name or on rental basis?:----------
(Support with documents).

1.4 (a) Telephone Numbers:

(i) Head office : ----------

(ii) Works' premises. : ----------

(b) Telegraphic / Telex address / Fax Nos.:

(i) Head Office : ----------

(ii) Works' premises : ----------

(iii) E-mail Address : ----------

1.5 Power Availability: (KVA)

a) General allotted capacity :----------

b) Stand-by generator & its capacity (if available):----------

c) Name the part / person in whose name the power is:----------
Sanctioned and your agreement with the party/person
(Support with reasonable 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 number, names, qualification & service experience)

c) Laboratory in-change whether full or part time :----------
(Indicate his / her name, qualifications & service experience)

d) Inspection & quality control staff :----------
(Give their names, qualification & service experience).

e) Workmen:

i) Highly skilled :----------

(ii) Semi skilled :----------

(iii) Un-skilled : ----------

TECHNICAL INFORMATION

2. SECTION- II

2.1 Manufacturing Facilities

(i) Mechanical Power Presses : ----------
(2 No. Minimum) 150-200T

(a) No. as available : ----------

(b) Make : ----------

(c) Capacity : ----------

(ii) Tool room and die making facilities : ----------
e.g. shaper, surface grinder, nose grinder, measuring instruments etc.

(iii) Bench grinders (Give Nos. available) :- ----------

2.2 Testing Facilities:

i) Tensile test /Universal testing Machine
(a) Capacity :- ----------

(b) Make : ----------

(c) In-house calibration facility : ----------

(d) Dumbell preparation : ----------

ii) Bend Test Facility : ----------

iii) Chemical Composition Test

(a) Carbon & Sulphur apparatus with suitable chemicals for analyzing C, Si, Mn, S & P elements
(b) Muffle Furnace
(c) Analytical Balance
(d) Other apparatus for the chemical / metallurgical test lab.

Or

Through Spectrographic facility appd. By RDSO Govt or NABL accredited laboratory
(Consent letter to be attached)

iv) Dimensional Check Facility : ----------
inspection gauges (2 sets min.)

v) Brinell Hardness Tester on, BHN/ : ----------
HB scale with standard test blocks
Within the range of 100 – 200)

vi) Dish or trays made of porcelain, heat/ : ----------
corrosion resistant glass or a corrosion
resistant alloy of suitable size to store
the hot acid for dipping the liner to
check the surface defects

vii)Metallurgical Microscope 100 X : ----------
magnification with facility of eye piece
for grain size and inclusion rating

viii) Micro polishing Machine & polishing : ----------
reagentslike Chromium Oxide or
Diamond Paste

ix) Availability of grain size and inclusion: ----------
rating charts duly enlarged.

2.3 Laboratory-cum inspection room

(i) Indicate available in Yes or No. : ----------

(ii) If yes, indicate size of room : ----------

2.4 Source of raw material/metal liner bar : ----------
(In house rolling Mill shall be preferred) :

2.5 Arrangement for storing raw material/: ----------
metal liner bar at a time (in tonnes)

2.6 Arrangement for storing finished liners
and capacity to store at a time in Nos. : ----------

2.7 Availability of IS: codes as per revised : ----------
specification

EXPERIENCE

3.0 SECTION- III.

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 ----------
Govt. & Non-Govt. if any, for information furnished
in your reply to 3.1. :

3.3 Give details (contract reference, item & quantity manufactured & supplied) of important orders executed in the past 3 years for the following. Indicate the inspecting agency for each. :

(i) Govt. department, Central, State & Govt. Undertaking other than Railways : ----------

(ii) Directly to the Railways. : ----------

(iii) Outside important firms. : ----------

3.4 Specify current orders in hand on your firm (Contract reference, client, item, quantity under manufacture & 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 department with which you are registered, supported with documents. : ----------

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

4.0 DECLARATION:

(i) 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.

(ii) 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.

(iii) We also declare that our concern has not been black-listed by Railway / Railway Board / RDSO for business with the Railways.

(iv) We hereby undertake that all our equipments for manufacturing and testing as listed above shall be maintained in good working order at all times.

(v) We hereby declare that the contents and the instructions of latest **"General Guidelines for Vendors Development** document no. QC-G-7.1-1**"** effective from …… have been read and understood by us and our firm shall agree abide by all the stipulations laid therein.

Signature
Name in full of Signing Authority
Status in the Firm,

Place :
Date :

Stamp of the firm

Annexure – I

Technical Specification for computerized Brinell Hardness Tester Capacity 3000Kgs

1. Description:

Computerized Brinell Hardness Testing Machine with Load Capacity of 3000 Kgs. having camera to capture image of indentation with minimum following features –

- Indentation Image with auto date and time from system
- Identification mark of Sample under Testing
- Measurement of Hardness in Auto and Semi Auto mode along with manual measurement.
- Saved Image can be used for rechecking hardness of sample afterwards.
- PC based compatible with windows features

2. Purpose:

To take hardness of ferrous material on Brinell Scale.

3. Technical Requirement:

S.No.	Description	Units	Requirement
1.	Total loads	Kgf	3000
2.	Magnification of object	-	2X and higher
3.	Max. Test height	mm	410
4	Scale least count	mm	.01
5	Measurement range	mm	1-6
6	Indentor	mm	5

4.0 Additional Facility in Software

The software system should be capable of preserving the indentation image in computer memory. The software should facilitate auto incorporation of date and time of testing from computer memory and this data should be in-editable.

Annexure –II

SPECIFICATION OF UNIVERSAL TESTING MACHINE

The equipment is used for Tensile, compression and bend test of materials

TECHNICAL DETAILS:
Technical Specification for Computer Controlled Servo hydraulic Universal Testing Machine

Driving method:	Hydraulic System
Test Curve mode:	Stress-strain Curve
Output Parameters from Computer:	Yield strength, Max Load point, breaking strength, Tensile strength, deformation, elongation,
Maximum Capacity:	200 KN
Load resolution:	20 N or better
Load accuracy	±1% or better
Strain measuring accuracy:	±1% or better
Speed	2-40 mm/min
Grips for round specimen (mm)	8-30 or better
Grips for flat specimen (mm)	0-20 or better
Bending distance between rollers (mm)	50-300
Mandrel diameter for bend test	18 mm to 60 mm

Standard accessories

Grips for round specimen - 2 sets each (minimum)

Grips for flat specimen - 2 sets each (minimum)

Transverse/bending attachment – 1 set

Electronic extensometer (travel 25 mm min.) – 1 set