रेल डिब्बा कारखाना , कपूरथला

MD35131 **Date**: **01.05.2024**

Sub: Issue of Specification MDST 102 Rev 05 for Schedule of Infrastructure requirements for Stainless Steel Fabrication Items.

Please find enclosed copy of Specification No. MDST 102 Rev 05 for Schedule of Infrastructure requirements for Stainless Steel Fabrication Items for information and necessary action please.

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CDE/MCF, CDE/ICF, CDE/RCF

Schedule of Infrastructure Requirements For Stainless Steel Fabrication Items.

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Issue/Rev.	Detail of changes	Date
Rev-01	1. Welding consumable defined in clause #3. **2.** Numbering of other clauses changed accordingly.	30.08.2010
Rev-02	• In clause 2.1.3 name of steel manufacturer deleted (M/s Jindal and SAIL). • Clause 2.1.6.1 modified as - Firm should have at-least one CNC laser cutting machine in working order. Availability of CNC laser cutting machine is must for "approved vendors." However, developmental order can be placed on a firm having valid tie-up in the form of MoU with the agency having CNC laser cutting machine in house in working order. A copy of MoU is to be submitted along with the tender in absence of above, offers shall be deemed as incomplete and may not be considered.	10.04.2017
Rev-03	• Clause 1 added & clause 3.1 updated. • Clause 3, 10 to 15 added for adoption of new processes IRIS Certification by the firms. • Clause 16 added for warranty.	20.03.2020

Rev-04	• Clause 3.5 updated. • Clause 6 revised to Standard Practice for Cleaning, Descaling and Passivation of Stainless Steel parts as per ASTA380/A380M-17.	01.12.2023
Rev-05	• Clause 3.2 deleted. • Clause 5.2 updated. • Clause 6 revised for treatment of weld area in Ferritic SS and Austenitic SS separately. • Clause 8 deleted.	24.04.2024

1. GENERAL:

This schedule covers infrastructure requirements for manufacture, testing and supply of completely finished stainless steel fabricated items.

2. SCOPE OF SUPPLY:

This schedule describes the infrastructure requirements for stainless steel fabrication at the tendered premises in working order. Tenderer should submit clause-wise comments specifying the availability of infrastructure with them along with capacity and make.

3. CERTIFICATIONS & OTHER REQUIREMENT:

3.1 The tenderer shall have valid ISO 9001-2015 series certification.

3.2 Clause deleted.

3.3 The tenderer shall provide list of M&P 's and past performance documents.

3.4 The tenderer shall have adequate manufacturing facilities mentioned in Para 4, 5, 6 &7. Complete stainless steel fabricated items shall be manufacture as per specified drawings and specification mentioned in purchase order.

3.5 The tenderer shall have to follow IRIS (ISO/TS 22163:2017) guidelines & terms in capacity of regular tender for RCF.

3.6 Firm may adopt new processes for manufacturing of stainless-steel fabricated items or improving the quality without financial implication with the approval from CDE/RCF.

4. AVAILABILITY OF INFRASTRUCTURE FACILITY AT MANUFACTURER PREMISES IN WORKING ORDER: -

4.1 Must infrastructure for Stainless steel Profile cut items for tenderers:

4.1.1 Separate covered area for manufacturing only stainless steel to avoid iron contamination and also having adequate space underneath for storage of raw materials e.g. sheets, billets, round corner squares, rounds etc. The covered area should have display board showing different colour shades nominated by different grades of steel to avoid mix up of materials. Arrangement of painting the billets, rounds etc with particular paint shade previously nominated according to the grade of steel should be available.

4.1.2 Fabrication should be confined to an area where only one grade of material is being worked.

4.1.3 Procurement of raw material should be done only from the authorized distributors of following reputed stainless steel manufactures. Proof of procurement of raw material from OEM or from his authorized distributor is to be enclosed with the supply. Necessary test certificate for raw material conforming to specified grade of steel shall be submitted from OEM along with supply.

4.1.4 The raw materials e.g. electrodes, hardware, rubber gaskets should be procured from the authorized distributor of original manufacturer and firm should procure material with test certificate.

4.1.5 Handling equipment's such as slings, hooks and lift truck forks should be protected with clean wood , cloth or plastic buffers to reduce contact with the *iron* surface.

4.1.6 **Following Machinery and Plant in working order, should be available at tenderer premises in working condition**:

4.1.7 Firm should have at least one CNC laser cutting machine in working order. Availability of CNC laser cutting machine is must for "approved vendors". However, developmental order can be placed on a firm having valid tie-up in the form of MoU with the agency having CNC laser cutting machine in-house in working order. A copy of MoU is to be submitted along with the tender in absence of above, offers shall be deemed as incomplete and may not be considered.

4.1.8 For components weighing more than 100 Kg, at least 1 No. Fork-lift or 1 No. Overhead crane of 2t (Min.) capacity.

4.1.9 At least one shearing machine of suitable capacity and of standard make.

4.1.10 Adequate machining facilities comprising of universal milling machine, drilling, lathe with pipe threading facility etc of suitable capacities and standard makes should be available facility etc. of suitable capacities and Standard makes should be available.

4.1.11 At least one press brake of suitable capacity.

4.1.12 At least one-hand grinders for removal of fins & burrs shall be available. Grinding wheels shall be free from iron, iron oxide, zinc or other Undesirable materials that may cause contamination on the surface.

4.1.13 Adequate number of fine punches for stamping marking particulars on finished components.

4.2 Must Infrastructure for Stainless steel fabrication items (involving welding) for tenderers: Besides requirements mentioned in clause 4.1, following should also be available at firm premises for stainless steel fabricated items involving welding.

4.2.1 TIG with only Argon gas or MIG welding shall be used only with Tri-Mixture gas (90% Argon +5% O2 +5%CO2 gas). No Stick electrode welding shall be done. Tenderer should have adequate no's of TIG/MIG welding machine.

4.3 Must Infrastructure for Stainless steel fabrication items (involving spot welding) for tenderers: Besides requirements mentioned in clause 4.1 and 4.2, following should also be available at firm premises for stainless steel fabricated items involving spot welding such as end walls, lavatory sidewalls etc.

4.3.1 At least one spot welding machine of one-meter arm length should be available in working condition.

4.4 The Tenderer shall comply with IS:822 regarding, storage of consumables, calibration of welding equipment, training of welder, testing of welding and remedies for welding defects. The welder shall have a minimum of 2 years' experience of the same type of welding.

4.5 The contractor shall have adequate fabrication and process capability to obtain all the tolerances and geometrical tolerances and shall have arrangement of jig/fixture/clamping device for main assembly & sub-assembly work.

4.6 RCF reserves the right to summarily reject the offers received without submitting clause wise comments on this schedule of requirements

5 Welding Consumable:

5.1 All the joints shall be welded using filler metal conforming to the table given below for various combinations of metals:

#	Parent Metal A	Parent Metal B	Filler Metal (material no) as specified in AWS
1	X2CrNi12 to RDSO Spec C-K201 (409M)	X2CrNi12 to RDSO Spec C-K201 (409M)	E308L
2	X5CrNi1810 to RDSO Spec C-K201 (304)	X5CrNi1810 to RDSO Spec C-K201 (304)	
3	X2CrNi12 to RDSO Spec C-K201 (409M)	X5CrNi1810 to RDSO Spec C-K201 (304)	
4	X2CrNi12 to RDSO Spec C-K201 (409M)	IRS: M41-97	E309L
5	X5CrNi1810 to RDSO Spec C-K201 (304)	IRS: M41-97	

5.2 The welding consumable shall be procured from the authorized distributor of RDSO approved sources / Manufacturers only.

6. Treatment of Weld areas (except spot welding) of stainless-steel fabricated items:

- For Ferritic stainless-steel surface, weld joints shall be free from blackish spot i.e.to be removed by soft buff wheels, soft grinding or manual scotch brite.
- For Austenitic stainless-steel surface standard practice for Cleaning, Descaling, and Passivation refer to ASTM: A380/A380M-17.

7. Testing Facilities:

7.1 Chemical Lab: The tenderer should have permanent arrangement with NABL certified Lab or a reputed steel making company for arranging the spectrum analysis of the material.

7.2 Physical Testing Lab: The tenderer should have physical lab at firm premises with following facilities or should have permanent arrangement with NABL certified Lab.

7.2.1 Universal Testing machine of 40t capacity with load/ deflection plotting arrangement to conduct UTS, Yield strength.

7.2.2 The firm shall have arrangement for conducting non-destructive tests for welding as per requirement of the purchaser in house.

7.3 Must Measuring Instruments with tenderer Firm should following measuring instruments, duly calibrated, at firm's premises:

7.3.1 Digital Vernier Calipers- 0 mm to 300 mm.
7.3.2 Measuring scale - 3 meter
7.3.3 Inside & outside Micrometers - Ranging from 0 to 150 mm
7.3.4 GO & NO-GO gauges.
7.3.5 Profile gauges
7.3.6 Filler gauges

8. Quality Control Requirements: Clause deleted.

9. Practices to be followed for Handling, Storage and Transportation:

9.1 Walking on the stainless steel surface should be avoided, where unavoidable, personal should wear clean shoe covers each time. Kraft paper, blotting paper, paper board or flannel or other protective material should be laid over areas where personals are required to walk. Supplier needs to make all these arrangements.

9.2 Shearing tables, press brakes, layout stand and other carbon steel work surfaces should be covered with dean kraft paper, blotting paper, paper board or flannel or other protective material to reduce the contact with carbon steel.

9.3 Hand tools, brushes, molding tools and other tools and supplies required for fabrication should be segregated from similar items used in the fabrication of carbon steel equipment and should be restricted to use on one material. Tools and

supplies used with other materials should not be brought into the SS fabrication area.

9.4 Grinding wheels and Sanding material should not contain iron, iron oxide, zinc or other undesirable materials that may cause contamination on the surface. Grinding wheels and sanding material and wire brushes previously used on other metals should not be used on stainless steel. Wire brushes should of stainless steel which is equal in corrosion resistance to the material being worked on.

9.5 Measures to protect the cleaned surfaces should be taken as soon as final cleaning is completed and should be maintained during all subsequent fabrication, inspection, storage and installation. The basic guidelines are as follows:

9.6 Do not remove wrappings and seals from incoming materials until they are at use site, ready to be used or installed.

9.7 Do not store the finished cleaned materials and components stored directly on the ground or floor and do not permit these to come in contact with galvanized or carbon steels, Zinc, lead Brass etc.

9.8 Do not use carbon or galvanized steel wire for bundling and galvanized steel identification tags.

10. QUALITY CONTROL REQUIREMENTS :

There shall be a system to ensure trace ability of the product from raw material stage to finished product stage. Quality Assurance Plan (QAP) for the following aspects shall be ensured and approved by CDE/RCF.

10.1 Process flow chart.

10.2 Stage wise inspection details from raw materials stage to finished product.

10.3 Check list for critical monitoring of stages to be prepared and followed

10.4 Various parameters to be checked and level of acceptance of such parameters indicated and method to ensure and control over them.

10.5 Disposal system of rejected raw material and components.

10.6 The Quality Assurance Plan (QAP) to be submitted for approval.

11. DOCUMENTATION :

Following documentation should be maintained:

i) Incoming raw material register.

ii) Stage inspection results including finished products results as per QAP.

iii) Record of internal rejection and its analysis vis-à-vis action plan.

iv) Record of final products inspection by external agencies.

v) Record of maintenance schedule of machinery and plant.

vi) Record of training imparted, Quality assurance, safety parameter and maintenance of machinery etc.

12. REQUIREMENT OF WELDING ACTIVITIES:

12.1 Welder qualified with ITI or equivalent qualification and qualified as per ISO: 9606-1 for all critical joints, position shall be only employed. Laser weld and Spot welding operator shall be qualified as per ISO 14732.

12.2 Supervisor shall have sufficient welding knowledge having minimum qualification of diploma in mechanical engineering. Firm shall identify and nominate a welding coordinator responsible for all welding operations. The welding coordinator should preferably have qualified as per ISO 14731 of IWE/IWT/IWS, diploma awarded by Indian Institute of Welding or certificate from WRI/Trichy or AWTI/ICF.

12.3 Inspection and testing personnel shall have qualification as per ISO 9712 level-2 or SNT-TC-1A level 2.

12.4 All welding plants should be calibrated as per ISO 17662/BS EN 50504.

12.5 Proper grinding using iron free grinding disc followed by buffing shall be done on all weld joints other than spot weld.

12.6 Record of above details shall be maintained for verification.

13. PROTOTYPE INSPECTION :

13.1 First article inspection/Pilot sample inspection/ Prototype inspection will be done by CDE /RCF or its authorized agency. Successful tenderer would be required to submit quality assurance plan (QAP) and all relevant documents required for FAI including special processes.

13.2 After passing above, Bulk supply will be made after First article approved by CDE / RCF.

13.3 Whenever there is a change in design/material/process, first article inspection will be done by CDE/RCF.

13.4 Audit inspection shall be done during regular production in the firm for certify quality of product.

13.5 FAI (First Article Inspection) shall be carried out as per requirement of ISO/TS 22163:2017.

13.6 External provider shall carryout FAI as per ISO/TS22163:2017 requirement prior to submission of documents to RCF, Kapurthala.

13.7 Validation of all Special process (including outsourced Special Process) shall be carried out as per requirement of ISO/TS22163:2017.

13.8 Firm has to fulfill all the requirements of IRIS to ISO/TS22163:2017.

14. MARKING/QR CODING :

The tenderer name or initial with month and year of manufacture shall be marked in the finished products unless otherwise specified in the relevant drawings.

15. PACKING INSTRUCTION :

The supplier to ensure the safe transit and delivery of material up to consignee by adopting suitable mode of transport and handling transit damage if any shall be the cost of supplier.

The surface shall be properly protected against rubbing /impact/ scratches during transportation via wagon / truck / trailers by wooden blocks / rubber pads at suitable locations in the transportation fixtures.

Due care should be taken to avoid mechanical damage during loading / transit / unloading. The packing should be such that while un packing the consignment at RCF there should be no damage / dent mark to the finished products. As far as possible recyclable material to be used in packing of sub assemblies.

Transit insurance shall be in the scope of supplier.

16. Warranty:

The manufacturer shall warranty for a period of 96 months from the date of supply or 84 months from the date of service whichever is earlier, for material, manufacture and workmanship as regards trouble-free and satisfactory service performance. If any defects are noticed during service with regards to manufacture/ welding quality of the Side wall complete, action shall be taken by the supplier to carry out any repairs/rectification or replacement at his cost. The decision of the purchaser in this regard shall be final.