

Eastern Railway  
Howrah Division

**Engineering Department**

**SPECIAL CONDITION AND SPECIFICATIONS-AT WELDING BY SKV PROCESS**

- 1.0 Supply of portion, other materials and the work shall be regulated by IRS:T-19-2021 and the Manual (Manual for fusion welding of rails by the Alumino-thermic process) read with all up-to-date correction slips/amendments issued thereto from time to time subject to modification, addition or suppression hereunder.
- 2.0 The contractor will depute at least one no. of welding batch which should be available to each AEN at all the time during the execution of work.
- 3.0 When any work is suspended at any one site in terms of clause 18.3.1 of the IRS:T-19-2021 due to unsatisfactory work done, such suspension shall not affect other site.
- 4.0 Any unauthorised person entering into the platform areas may be prosecuted as per rule. Therefore, when the work will be done within the platform area, necessary permits, if required, will be issued to the contractor for entry of his staff within the platform area. The contractor will have to submit a statement of his staff to the Engineer-in-Charge for this purpose.
- 5.0 In case of in-situ welding, the Railway shall arrange cutting of rail/weld or opening of fish plated joint, opening of required length of track, creating required gap between two rails to be welded and supporting such rail ends to approximate alignment and level. The Railway would also arrange to restore the track after welding by lifting, packing, aligning and re-fixing the fittings. In case of cess welding, the Railway would arrange to create the required gap between the two rails to be welded and support the rail ends to approximate alignment and level.
- 6.0 The Railway would supply required pieces of wooden blocks and edges for final aligning and levelling by the Contractor.
- 7.0 The Railway will make all arrangement for traffic block of adequate duration. However, the contractor shall not have any claim for no work or less work due to non-availability of such traffic block.
- 8.0 No train should pass till the new weld is supported on well-packed wooden block fixed with four spikes, clamped with joggle fishplate and before 30 minutes after pouring of the weld material. Such wooden support, spikes, joggles fishplates and packing should be maintained till initial USFD is done and the weld is found satisfactory.
- 9.0 The contractor shall make all arrangement of supply of portions, all other materials, consumables, skilled and unskilled (preferably) labour, equipments, tools and plant, weld trimmer, rail profile grinder, power supply, RDSO's approved welders and supervisor etc at his own cost to produce finally finished weld to the satisfaction of the Engineer-in-charge.
- 10.0 Compressed air blower approved by RDSO/Railway Board will only be used for heating and pressure tank will not be allowed. The contractor shall adopt three-piece moulds as soon as the same is cleared by the RDSO with no additional cost thereof.
- 11.0 The contractor shall make his own arrangement for shelter of his men, materials, equipments, plants etc. The contractor shall make all arrangement for transportation, should make his own arrangement and will be solely responsible to protect the work and his materials etc against wind, weather, theft etc during the course of execution of the work.
- 12.0 The Railway would, however, try to provide accommodation for the contractor's materials and equipment and residential accommodation for supervisor, if available, free of charge and as

close to the site of the work as possible. In case such accommodation is not available, tents or tarpaulins would be arranged.

- 13.0 The contractor should arrange Form-42 (road permit/Way bill) of his own or bring portions and other materials from his factory in advance by rail at suitable locations, from where he will carry them further to the site at his own cost. He may make any other arrangement in this regard of his own.
- 14.0 While welding old rails, special care should be taken to weld only conforming rail sections having similar age profile and same UTS. Welding of rails having fish boltholes at their ends should not be done without end cropping. Similarly distance between two welds shall be maintained as per extent instructions on the issue. Presently such minimum distance is 6.5 metre.
- 15.0 Soon after welding, trimming of weld shall be done to effectively chip off extra metal within the prescribed time by weld trimmer of approved make and design. Supply of portion shall be regulated by the IRS:T-19-2021. Immediately thereafter, grinding shall be done to effectively finish the welded joint within the prescribed time by rail profile grinder of approved make and design to avoid overstressing due to passage of traffic.
- 16.0 The contractor shall be responsible for correct pre-alignment, welding, post alignment and the finish of all weld joints. Geometrical tolerance should not exceed before, during and after welding.
- 17.0 Marking on all welded joint shall be done by white paint on black background by the contractor in not less than 5mm size on rail web in the following manner and the marking shall be on the outer side of the rail web within 300mm from the welded joints:  
(Month, year Firm's insignia, Serial No. of joint and 'X' (Where necessary))
- 18.0 Weld collar shall be painted immediately after grinding, finishing and initial USFD testing as specified in the Manual. Such painting shall be done, after thorough scrapping, by applying one coat of red oxide paint followed by two coats of bitumen emulsion paint all round the rail section covering a width of 150mm.
- 19.0 Test for assessing quality of the portions shall be carried out at the contractor's workshop entirely at his cost in presence of the Inspecting Officers deputed by the RDSO, Lucknow as per the IRS:T-19-2021. The contractor shall adopt any modification advised by RDSO in the chemistry of portion for improving quality of welding.
- 20.0 One out of every 100 welded joints will be selected at random by the Railway as a test joint. The contractor will arrange for testing thereof in his premise and entirely at his cost in regards to hardness, transverse test etc as per the IRS:T-19-2021 in presence of RDSO's representative. However, the rail piece for the test joint having 2.0m length (1.0m on either side of the weld) will be supplied free by the railway and retained by the contractor after testing. The contractor shall submit the test report duly signed by RDSO officials in support of satisfaction of such test requirements.
- 21.0 All the welded joints shall be ultrasonically tested by the Railway as per the IRS:T-19-2021. This testing shall be completed as early as possible but before the contractor leaves the welding site. All the welded joints, which are found to be defective, shall be cut and re-welded by the contractor free of cost. Such re-welded joints shall also be tested ultrasonically and, if found defective, it will be again cut and re-welded free of cost and tested ultrasonically.
- 22.0 The contractor shall maintain record of all welding done by him in the manner specified by the Engineer-in-charge showing details of portions, welding, welders supervisors, test reports of welded joint, USFD reports, re-welding including USFD thereof etc including numbering of all such welded joint.

- 23.0 Payment shall be made only for the finally acceptable welded joints. However, payment @80% of the rate as per of Schedule of Items & Quantities will be made on supply of portions along with all supporting document thereof with the condition that such portion will not be shifted to any other site. Balance 20% payment will be made for the finally acceptable welded joints after USFD testing and finding the joint satisfactory. However, in case such testing is delayed by more than a month, payment will be made subject to final adjustment on receipt of USFD testing report.
- 24.0 Excise duty paid by the contractor would be reimbursed subject to submission of bill and documentary evidence in this regard, as applicable.
- 25.0 The Railway will increase/decrease payment @ three paise per welded joint for every ten rupee increase/decrease in the controlled/manufacture's price of Commercial Grade Aluminium per tonne including excise duty. For this purpose, price of Commercial Grade Aluminium per tonne including excise duty quoted during tendering will be considered as the base price. This increase/decrease will be applicable for joints for which portions are tested after the date on which price of the Commercial Grade Aluminium is increased/decreased and the prevailing price of Commercial Grade aluminium recorded in RDSO's test certificate will be the basis. In addition the contractor will also produce Aluminium manufacturer's certificate in support of the proof thereof. Payment of this additional amount as an escalation payment will be made along with payment for supply of portion.
- 26.0 The contractor exempted from retention of guarantee amount by the Railway Board would be entitled to avail of that facility as per extent instructions in this regard. In all other cases, only 90% of the security deposit shall be refunded to the contractor at the time of payment of final bill and balance 10% shall be retained during the Guarantee Period free of any interest charges thereon. The contractor shall be responsible for the welded joints during the guarantee periods as per the IRS:T-19-2021. If any welded joint fails within the guarantee period, the same shall be re-welded free of cost by the contractor otherwise three times the cost of welds failed joints during the guarantee period will be recovered from the amount due to him.
- 27.0 All the joints that are found to be defective during initial USFD shall be cut and re-welded by the contractor using their portion, equipment, labour and consumables. Where one bad joint is required to be replaced by two new joints, the entire cost of both the joints shall be borne by the firm. Such re-welded joints shall also be tested ultrasonically and if found defective, shall again be cut and re-welded free of cost.
- 28.0 The contractor shall be liable to pay the labour cost incurred by the Railway as well as cost of materials wasted in spoil welded joints.
- 29.0 No payment shall be made for welded joints, which may be allowed to be done for improving the welding technique in terms of the IRS:T-19-2021 through rail piece may be loaned by the Railway free of charge.
- 30.0 Test joints, which will be cut for testing, will be paid provided they stand the tests. Test joints, which fail during the testing, shall not be paid.
- 31.0 If the work is held up for supply of portions, all other materials, consumables, unskilled/skilled labour, equipments, tools & plant, weld trimmer, grinder, power supply, RDSO's approved welders and supervisors etc by the contractor for more than three days continuously at any occasion, a penalty of Rs.2000/- per day shall be levied on the contractor at each occasion.
- 32.0 If the contractor fails to start the work a new site within 15 days of notice of this effect subject to provision under 1.2 of this chapter of the document, a penalty @Rs.1000/- per day shall be levied on the contractor at each occasion. In case the work closed at site due to some reason is going to be re-opened, it will be considered a new site for the purpose of this clause.

- 33.0 If trimming and or grinding is delayed, a penalty @Rs.100/- per day shall be levied on the contractor.
- 34.0 If numbering of weld and/or painting of weld collar is not done in the approved manner and in time, a penalty @Rs.100/- per joint shall be levied on the contractor.
- 35.0 The contractor will be entitled to collect surplus materials such as used polythene bags, used packing case, used cotton bags, used and unused equipments, used and unused rail files, scarp metal, chipping metal etc.
- 36.0 The Railway will nominate one Assistant Engineer for recording M.B. and making payment. Since the Contract will cover generally the whole Division, the railway will make arrangement for frequent payment in time as per progress of the work.
- 37.0 Initial USFD testing should be conducted within a month's time from the date of welding so that the welder with a bad workmanship can be identified and removed from the site.
- 38.0 In case the defective weld exceeds 4% the certificate issued by RDSO should be cancelled and welder will have to go through with the process of re-certification till fresh certification is issued. Welder should not be allowed to do any work on the track.
- 39.0 A penalty of Rs.500/- may be imposed for defective welds ranging from 2 to 4% and a penalty of Rs.1000/- if the defective weld is found more than 4%.
- 40.0 There should be a provision of joint checking with firm's representative. During the course of joint checking if the defective weld is less than 50% of what has been detected earlier by PWI/USFD explanation should be called from the PWI/USFD for the discrepancy and suitable action be taken if the motive behind detecting the higher number of defective welds is suspected.
- 41.0 A firm may be allowed to do the welding of defective weld by wider gap technology this will reduce the wastage of rail and population of additional SKV weld at site.
- 42.0 Railway to maintain batch wise and welder wise data of each weld at site so that any deficiency in a particular batch or portion or welder can be identified and suitable action can be taken in consultation with RDSO. Numbering of SKV weld at site should be done to co-relate a particular weld with a particular batch of portion and welder.
- 43.0 1% sample joint testing as envisaged in the Manual (Para 7.1 of Manual For Fusion welding of Rails By Alumino-Thermic Process) shall be strictly followed by Zonal Railways.
- 44.0 The Indian Railway standard specification for fusion welding of Rails by Alumino thermit process Sl. No.IRST-19-2021, and Revised manual of 2022 is the latest specification of AT welding. In this regard approval of competent authority has communicated vide Dy. CE/TR/HQ's letter No.W(7)633/O/Pt.IX Dated 22.03.2024 for incorporation in new tender of AT welding. Accordingly, supply of welding portions should be as per IR standard specification for fusion welding of Rails by Alumino thermit process Sl. No.IRST-19-2021, and Revised manual of 2022.
- 45.0 On receipt of request letter for supply of portion, within 15 days portion to be supplied else Rs.500.00 per day will be penalized.

Signature of the tenderer  
Date: \_\_\_\_\_