

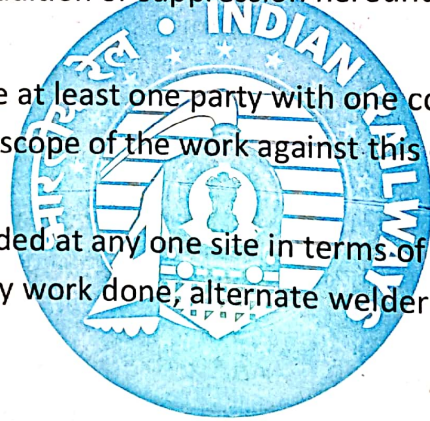
## Special Conditions for AT Welding

### A General:-

1. The welding work shall be done as per the provisions contained in the Manual for AT welding issued by RDSO, updated from time to time and as per the Special Conditions of the contract.
2. These Special Condition, tender conditions, Instructions to the tenderers and the General Conditions of Contract as amended up to date shall be govern the work done under this contract. Where there is any conflict between the Special Conditions and Instructions to tenderers on one hand and General Conditions of Contract on the other, the former shall prevail.
3. The supply of Alumino-Thermit portion for welding of Rail Joints as a regular measure shall be carried out by only such firms as have been approved by RDSO and accepted by nominated inspecting authority. Inspection cost shall be borne by the contractor. All the necessary arrangements at contractor's works for inspection of portions shall be made by contractor.
4. The tenderer must **submit a copy of the current approval of the tenderer by RDSO indicating the Rail Section** and the period up to which such approval has been given.
5. Part A of the Indian Railway Standard Specification for Fusion Welding of Rails By Alumino Thermic Process Serial No. IRST-19-2020 shall be followed for **supply of welding portions**.
6. Part D of the Indian Railway Standard Specification for Fusion Welding of Rails By Alumino Thermic Process Serial No. IRST-19-2020 shall be followed for **Acceptance tests of Joints welded at site**.
7. The supply of the thermit portion for this work shall be as per IRS T-19-2020 and inspection authority will be RDSO and execution part only shall be got done by RDSO approved welders.
8. The work shall be executed with improved preheating technology namely compressed air petrol system along with use of three piece pre fabricated moulds (zircon-washed) manually pressed using single shot crucible fitted with Automatic Tapping thimble with pre-fabricated mould with single shot crucible fitted with auto tapping thimble

Railway Board's letter No. Track/21/2007/0110/AT welding dated 03.03.2016 circulated by HQ office vide letter no. W 627/164 Vol. V dated 10/11.03.2016 & RDSO letter no. CT/Welding/CDI dated 29.02.2016/02.03.2016

9. The tenderer will abide to RDSO letter no. CT/Welding/Comb R-260& 90UTS/Rail Tech dated. 25.03.2021 for "AT welding technique for welding of 60Kg/ 60E1 R260 grade with 3 60Kg (90UTS) rail, 25+ 1 mm gap using Compressed Air –Petrol preheating system, 3 piece pre-fabricated moulds (Zircon –washed) manually pressed using single shot crucible fitted with Automatic Tapping thimble" and also letters issued from RDSO from time to time in connection with AT welding of R260 portions.
10. Supply of portion, other materials and the work shall be regulated by IRS: T-19-2020 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.
11. The contractor will depute at least one party with one complete set of equipment's under the contract as per scope of the work against this contract.
12. When any work is suspended at any one site in terms of clause 18.3.1 of the IRS: T-19-2020 due to unsatisfactory work done, alternate welders shall have to be provided by tenderer.
13. Any unauthorized 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.
14. Sales tax, Royalties and other duties if any, that may be payable under any Govt/Local bodies act as per rules, or any of the material that may be supplied or used by the contractor on the work shall be payable by the contractor. The taxes or duties nor be bound to compensate the contractor. The Railway shall neither pay him way of these taxes and duties.



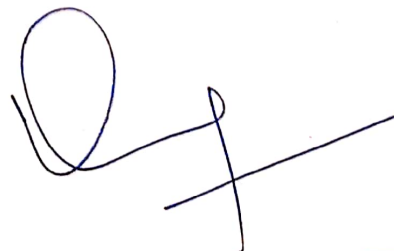
U



15. If the contractor fails to produce the desired progress within one month of commencement of this contract and maintain the same thereafter, the Railway reserve the right to terminate the contract on this account.
16. The contractor shall make his own arrangement for shelter of his men, materials, equipments, plants etc. The contractor shall make all arrangement for transportation, handling/re-handling, storage etc of all his men and materials etc. The contractor 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.
17. The contractor should arrange Form-42 (road permit) of his own or bring portions and other materials from his factory in, 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.
18. Payment will be made only for the finally acceptable welded joints. However, payment @60% 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 as instructed by site In-charge. Balance 40% 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 60 days, payment will be made subject to final adjustment on receipt of USFD testing report.
19. Reasonable suitable temporary accommodations for storage of the contractor's plant, tools, sand, consumable stores shall be arranged free of cost, to the site of work as far as possible on a specific request from the contractor.

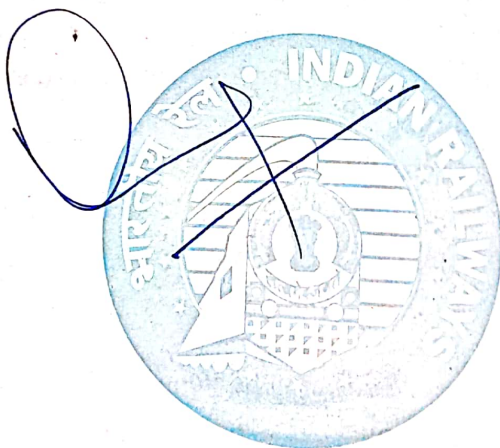
#### **B Description of Work:-**

20. The work of thermit welding of rail joints shall be done either on cess or in situ under traffic in block or without caution order as deemed fit by the Railways.
21. The work provided for supply of welding portions, Moulds as well as tools and equipments including all consumable like petrol, paint etc. as well as the execution of the work at site by the Contractor as per the provisions of the contract by deploying competent and qualified welding supervisors, skilled/unskilled labour required for the job including grinding and finishing of joints.
22. The distribution of the work between cess and in situ in the schedule will be as per the site condition; however payment shall be made as per accepted rates only.
23. The work is required to be completed within the completion period as specified in the Notice Inviting Tender from the date of issue of acceptance letter.
24. The contractor shall responsible for the welded joints remaining satisfactory for the guarantee period as specified in the IRS specification.
25. All welds executed by the contractor shall be ultrasonically tested by the Railway within 60 days



of its execution. Each joint marked defective shall be cut out and welded by the contractor at his own cost.

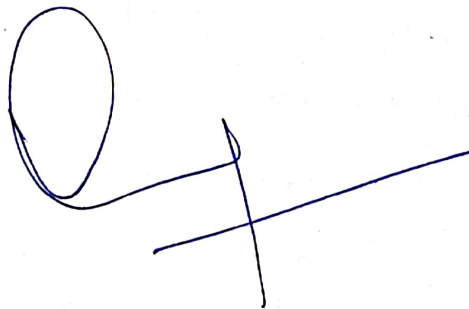
26. The Railway shall only pay for one joint even in case where it becomes necessary to make two joints for eliminating the defective/failed weld, done by tenderer. However no payment will be made for any rail cut involved in replacement.
27. No payment shall be made for sample welds as prescribed in Para 18 of the IRS Specification to tenderers, but the rails required for the same shall be supplied by Railway free of cost. The Railway shall also arrange for the transport of these joints at its own cost from the site of work to the contractor's work shop for testing.
28. In case any test joints picked up under clause No. 18 of IRS-T-19-2020 fails, suitable action as per specification shall be taken.



29. The parameters of welding technique for 60Kg (90 UTS) rails shall be as under or as per RDSO specification.

Sr. No.	Description	Parameters		
1.0	Rail gap (mm)	25±1mm		
2.0	Type of mould	Three piece prefabricated CO2 mould (Zicrm washed), manually pressed.		
3.1	Preheating time (minutes)	5.5		
3.2	Heating technique & device	Compressed air petrol preheating from center top with burner (Air pressure 0.10-0.14 Kg/Sqcm.		
3.3	Position	Top preheating with compressed air petrol.		
4.0	Tapping time (secs.)	16-26 secs. (using single shot crucible fitted with auto tapping thimble)		
5.0	Mould waiting time (minutes)	6:00-7:00 (Minutes:sec.)		
6.0	Welding technique	SKV process, center top pouring single shot crucible fitted with auto tapping thimble.		
7	Post weld treatment			
7.1	Chipping device	Double cutter weld trimmer		
7.2	Weight of portion	13.25±2%		
7.3	Weld metal dimensions	Web	Foot	Bottom
	(a) Width	42-44mm	44-48mm	46-50mm
	(b) Thickness	8-9mm	8-10mm	6-9mm

Note:-The above parameters are only indicative, in case of any ambiguity, parameters prescribed by RDSO in specification shall be final and binding to the contractor.





### C Works to be done by the Contractor:-

30. The contractor shall be responsible for using the correct portion for the type of rails to be welded. 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 bolt holes at their ends should not be done without end cropping.
31. The contractor shall be responsible for ensuring that the rails are brought to the correct alignment and level before welding.
32. Arrangements shall be made by the contractor to transport the materials, plant and tools between the nearest Railway station and the site of work and between successive sites of work as and when necessary. However, the Railway shall provide assistance by way of providing look out man with the material lorry/ Rail dolly along with a competent Railway servant to move the materials.
33. Mechanical trimming of each and every weld shall be done by use of weld trimmers and grinding will be done using profile grinder. Necessary equipment's like weld trimmer and profile grinder will be arranged by the contractor at his own cost at each site of welding work.
34. The contractor shall be responsible for proper trimming and grinding of the joints and their finish to the specified tolerance after welding.
35. The contractor at his own cost shall arrange the required welding equipment's and accessories, thermit mixture including dry mould suitable for welding rails by Alumino Thermit process using latest technique and other materials such as closing pins, dry lusting sand etc. required for the work. The contractor shall also supply the files for filing the welded joints at his own cost.
36. The contractor shall not carry out any work between sunset and sunrise. He should make his own arrangements to protect the work against wind and weather during the course of actual execution. Welding shall not be done during rains.
37. As per IRPWM-2020 Annexure 3/3 ( Para 306) Composition of Thermit Welding Team ( Compressor Tank- Wise):-

Sr. no	Designation	Numbers
1	Welder Grade I/Grade II	1
2	Welder Grade III/Skilled Artisan	2
3	Helper-Khalasi/ Khalasi	5
4	Trackman	As per work load

Note: The composition of welding team has been framed taking into account that trimming and grinding operation would be done by weld trimmer and rail profile grinder.

38. The welding work shall be carried out by self-contained units at each location so that type of work concerning each joint i.e. lifting, grinding finishing shall be carried out by the same party.
39. It should be ensured by the contractor that the work of grinding and finishing of welded joints keep pace with the welding. The contractor shall be responsible for ensuring the grinding within

prescribed tolerance as per relevant clause of manual of welding of rail joints by A.T. process IRS-T-19-2020.


40. The contractor shall be responsible for providing his own technical qualified supervisor who shall exercise expert supervision of the work during its progress so as to ensure that the welds are executed within the prescribed tolerance.
41. The contractor shall also provide each welding party with Calibrated metallic straight edge of 1m. and 10cms. length and one set of filler gauge measurement in units of 0.1mm to 2mm for the checking the geometrical tolerance.
42. The contractor will ensure that the rail are set to correct alignment and level with appropriate gaps between rails ends before welding either in track or in cess. He shall be responsible for the proper grinding of both faces of joints and their finish after welding and for the satisfactory results of the welding. He shall remove all kinks and twist in the rails particularly within 2m, at ends. The contractor shall take full responsibility for the welding of rails joints and for the satisfactory quality of weld.
43. In case of in-situ welding, the contractor will 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 contractor would also arrange to restore the track after welding by lifting, packing, aligning and re-fixing the fittings.
44. 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.
45. All welds shall be painted by the contractor using paint to specification IS:9862-1981 or bituminous emulsion to IRS-P-30 Gr. I or equivalent as accepted by the Railway as specified in the procedure for painting of welds collar of Thermit welded joints which is detailed below:-  
procedure for painting of weld collar for new thermit welded rail joints to protect against corrosion.

Surface preparation:-

- i) The dust loose rust and mill scale shall be removed as such as possible by wire brushing.
- ii) The welded area shall be scrubbed with water to make it free from alias and other water soluble compounds. The area should be allowed to dry.

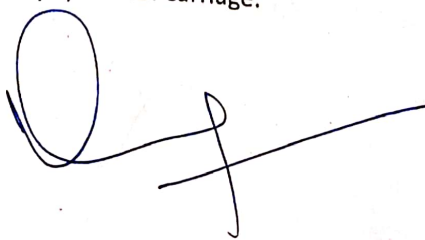
Painting:-

- iii) One coat of ready mixed paint conforming to specification given in Para 3.14 above shall be applied on the welded area up to 30cm. on either side.
  - iv) After eight hours of drying a second coat of the same paint shall again be applied.
  - v) The painting shall be carried out by brush.
46. Dry luting sand:-Only dry luting sand shall be used for welding for which sufficient quantity of dry luting sand manufactured by using high silica white sand confirming to IS:1987-74 Grade A and inorganic binder and wetting agent shall have to be supplied/arranged by the contractor.
47. A comprehensive register (as per manual) shall be maintained by the contractor wherein the records of acceptance test including USFD tests as prescribed in the specification shall be kept. The record shall be jointly signed by the contractor and the Railway representative and submitted to the Sr. Divisional Engineer/Divisional Engineer every month in the progress report. It will be entire responsibility of the contractor to maintain the register and to obtain signature of Railway representative time to time.





48. The testing charges for estimation of aluminum by spectrograph method in thermit steel shall be borne by the contractor.
49. The contractor shall not directly or indirectly use any invention which for the time being is the subject of letters of patents and should not infringe any such patent, so as to involve the Railway in any infringement thereof. The contractor shall hold harmless and keep the Railway indemnified against all cost, damages, charges and expenses arising out of in connection with any such infringement.
50. Contractor shall provide petrol as required for cleaning of joints free from grease under his supervision of work.
51. The contractor shall make all arrangement of supply of portions, all other materials, consumables, equipments, tools and plant, weld trimmer, rail profile grinder, power supply, RDSO's approved welders and supervisors etc at his own cost to produce finally finished weld to the satisfaction of the Engineer-in-charge.
52. 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.
53. The contractor shall make his own arrangement for shelter of his men, materials, equipments, plants etc. The contractor shall make all arrangement for transportation, handling/re-handling, storage etc of all his men and materials etc. The contractor 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.
54. 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 IRS: T-19-2020. 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.
55. The contractor shall be responsible for correct pre-alignment, welding, post alignment and finish of all weld joints. Geometrical tolerance should not exceed before, during and after welding.
56. 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 300 mm from the welded joints: (Month, year, Firm's insignia, Serial No. of joint and 'X' (Where necessary)
57. Weld collar will be painted immediately after grinding, finishing and initial USFD testing as specified in the Manual. Such painting shall be done, after through 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 150 mm.
58. It shall be responsibility of contractor to ensure fixing of Joggle fish plate for every newly executed AT weld, which shall be paid for separately. Joggle fish plate shall be carried by contractor from nearest PWI depot, where Contractor T&P are stored, and nothing extra shall be payable for carriage.
59. It shall be responsibility of contractor to ensure removal of Joggle fish plate for every USFD tested newly executed AT weld, which shall be paid for separately. Joggle fish plate shall be carried by contractor from weld location and deposited to locations where Contractor's T&P are stored, and nothing extra shall be payable for carriage.



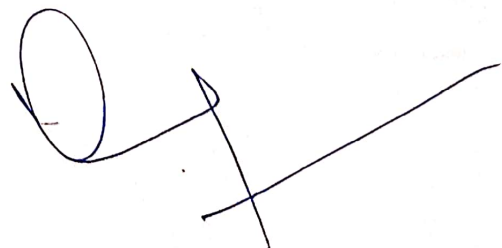


Sl. No.	PARTICULARS	QUANTITY	UNIT
1	Water Pump Plier	2	Nos
2	Asbestos Gloves 14"	2	Pairs
3	Bars for Mould detaching	2	Nos
4	Ball Pen Hammer	4	Nos
5	Blue Goggles	4	Pairs
6	Coal Shovel	2	Nos
7	Crucible Complete (Composite Crucible)	6	Nos
8	Crucible Cap	6	Nos
9	Crucible Stand	4	Nos
10	Crucible Fork	4	Nos
11	Crucible Ring	4	Nos
12	Crucible Carrying Ring	2	Pairs
13	Cold Set	1	Nos
14	Cleaning Rod	2	Nos
15	Distance Gauge	2	Nos
16	Fire Tongue Flat	2	Nos
17	Flat Chisel	2	Nos
18	Adjustable Wrench-250	1	Nos
19	Funnel Tin	2	Nos
20	Gap Gauge	3	Nos
21	Chipping Goggles	2	Pairs
22	Height Gauge	4	Nos
23	Hot Set	4	Nos
24	Mould Cover (Plates)	2	Nos
25	Mould Shoe (3 Pc.)	12	Pairs
26	Plier	2	Nos
27	Rain Guard	6	Nos
28	Rail Guard	4	Nos
29	Steel Wedge - Long	10	Nos
30	Steel Wedge - Small	20	Nos
31	Streight Edge 1mtr. long	2	Nos
32	Streight Edge 10 cm.	2	Nos
33	Feeler Gauge	4	Nos
34	Stop Watch	2	Nos
35	Sledge Double Pane 5 Kg.	2	Nos
36	Spanner Set	1	Set
37	Steel Wire Brush	4	Nos
38	Slag Container	8	Pairs
39	Screw Driver	1	No
40	Thimble Drift	2	Nos
41	Tommy Bar 450 mm long	2	Nos
42	Tongs	2	Nos
43	Torch Holder	2	Nos
44	Universal Mounting	6	Nos
<b>MECHANICAL EQUIPMENT</b>			
45	Compressed Air Petrol Blower, Complete Set along with Pre-Heating Torch & Hose Pipe	1	No
46	Cutter	2	Sets
47	Portable Genset	1	No
48	Rail Profile Grinding Machine & Fixture	1	No
49	Grinder As Spare	1	No
50	Rail Weld Trimming Machine with Power Pack & Trolly	1	No
51	Abrasive Rail Cutter	1	No

Signature Not  
Verified  
Digitally signed by


#### D Works to be done by the Railways:-

60. The Railway shall provide a permanent Way Official for supervision of the execution of AT welding work.
61. In case welding is to be done outside the track, on cess or in depot. Railway will provide wooden block and wedges required for the work and arrange to spread rails approximately parallel to the track.
62. The Permanent Way supervisor in Charge of the work shall make necessary arrangements for safe working and traffic block. The arrangements made by the Railway for safe working shall not relieve the contractor of his liability for indemnifying the Railway against all cost.
63. Reasonable suitable temporary accommodations for storage of the contractor's plant, tools, sand, consumable stores shall be arranged free as close to the site of work as possible on a specific request from the contractor. The Railway will not be responsible for the loss of the contractor's plant, tools and consumable stores due to theft, fire etc. No any accommodation for contractor's staff shall be provided by Railway.
64. During the course of the work the Railway at its own cost shall be responsible for:-
- (i) Protection of track at site as decided by the Railway.
  - (ii) Shifting sleepers to insert wooden block and wedges for alignment.
  - (iii) Repackaging sleepers after welding.
  - (iv) Providing cut pieces after removing any spoiled joint by cutting.
  - (v) Opening out fish plates, bolt, nut, keys and putting them back when necessary.
  - (vi) Unloading of materials at the destination when received at PWI's store initially.
65. The Railway would supply required pieces of wooden blocks and wedges for final aligning and leveling by the contractor.
66. 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.*
67. No train should pass till the new weld is supported on well-packed wooden block, clamped with joggle fishplate and before 30 minutes after pouring of the weld material. Such wooden support, spikes, joggle fishplates and packing should be maintained till initial USFD is done and the weld is found satisfactory.
68. Re-spacing of the sleepers and replacement of rails, if any shall be done by the Railways. The end of cropped of the rails shall be handed over by the party to the Railway's representative. Any loss shall be made good at contractor's cost. In case contractor fails to hand over end piece of cropped rails recovery shall be made as per prevailing rates.
69. No price variation clause will be applicable for this work.
70. 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 rewelded free of cost.





71. The contractor will be liable to pay the labour cost incurred by the Railway as well as cost of materials wasted in spoil welded joints.
72. 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.
73. The Railway will nominate one SSE for recording MB and making payment.
74. 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, scrap metal, chipping metal etc.
75. 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.
76. Executed of AT welds should be done by TPP/LKO certified welders only.
77. A.T. Welds should be executed for 52kg/90UTS, 60 kg/90UTS & R-260/1175/HT rails.
78. Availability of Joggled fish plate should be ensured for protection of new weld before execution.
79. Welders of the agency should have valid competency certificate certified by TPP/LKO.
80. Execution of 25mm wide gap AT welding should be done as per laid down procedure.



Sr. DEM/II/UMB