

SPECIAL CONDITIONS OF CONTRACT

Name of work: -Izzat Nagar division: **TRR (P)- 57.6 TKM and TTR(TWS)-19 sets using Flash Butt welding in Rampur- Lalkuan section in IZN division.**

1. DESCRIPTION OF SCOPE OF WORK:

1.1 The work involves carrying out flash butt welding of approximately 1267 welds at various track renewal sites ON RUNNING TRACK under line block conditions/ on outside the track depending on the site conditions in IZN Division of North Eastern Railway using Contractor's own labour, flash butt welding plant, infrastructure and all other tools and plants. Track renewal works will be executed at multiple locations and if required firm has to depute more than one mobile flash butt welding setup for the execution of flash butt welding so that track renewal works shall not suffer for want of Mobile flash butt welding plant/setup.

1.2 It may be noted that the number of welds may vary as per actual site requirement and no claim whatsoever on this account shall be entertained.

1.3 The Contractor will have to make his own arrangement for movement of rail panels, for creating gaps, end cleaning of rails, welding and stripping of rail joints, grinding and final finishing of rail joints as Manual for Flash butt welding of Rails with up-to date ACS.

1.4 Contractor will arrange adequate labour, competent supervisors, skilled labour for grinding, welding, stripping/trimming, as required for the work. All the machines, plants and equipment's will be arranged and provided by the contractor at his own cost.

1.5 Welding process and methodology will be governed by the latest "Manual for Flash Butt Welding of Rails" (reprinted- April 2022, issued by the RDSO, Lucknow) with latest correction slips.

1.6 Contractor shall enclose Welding Specifications etc., and also complete technical data with photograph of the type of Mobile flash butt welding plant proposed to be used along with the tender offer.

1.7 The mobile flash butt unit will be required to be commissioned within 30 days from the date of acceptance.

2.0 CRITERIA FOR WORK/CODES & SPECIFICATIONS:

2.1 a) The specifications mentioned in special conditions regarding Site Data and specifications shall be governing primarily.

b) Where there is conflict between IRS & IS Specifications, IRS specifications shall prevail.

c) Where there is no provision of specifications in IRS, the IS conditions shall be followed.

d) All above sub items given above from (a) to (c) shall be deemed to be "excepted matters".

2.2 Apart from the basic data, specifications etc., all items of works shall be governed by the following codes as revised/corrected/amended up to the time of submission of the tender/negotiated rates for acceptance.

1. Indian Railway Manual for Flash Butt Welding of Rails (reprinted- April 2022, issued by the RDSO, Lucknow) with latest correction slips.

2. Standard General conditions of Contract, April -2022 with up-to date ACS and instructions to tenderers and Standard form of Contract.

4. Indian Railways Schedule of dimensions of Broad Gauge with up-to date ACS.

5. Indian Railway Permanent Way Manual with up-to-date ACS.

6. Indian Railways Manual for Alumino Thermic Welds.

7. Indian Railways Manual for Ultrasonic Testing of Rails and Welds.

NOTE:

a. Latest edition including correction slips as on date of submission of tenders/negotiated rates shall govern.

b. The list given above is by no means exhaustive. All IRS Codes pertaining to work shall be applicable.

3.0 PERFORMANCE OF WORK:

3.1 The capability of the welding plant installed by the contractor shall be judged as per the Manual for Flash butt welding of Rails with up-to-date ACS. Acceptance will be subjected to test

by Railways as per manual stipulations and weld recorder charts to be maintained for these test welds. No failure is acceptable. Railway shall do all necessary tests stipulated in the Manual for Flash butt welding of Rails with up-to-date ACS and submit all required documents for approval at appropriate levels as per the Manual before start of the work. After passing of all the necessary tests and approval of the all-necessary documents as per FBW manual and after certification of satisfactory working of the machine, regular production of welds will be permitted to carry out however Railway shall do all necessary tests as per FBW manual during the execution of work also.

3.3 Action for Number of joints deviating the specified provisions for visual and dimensional inspection shall be taken as per Manual for Flash Butt Welding of Rails with up-to-date ACS, RDSO/Railway Board guidelines/specification, IRS specifications. Ultrasonic test shall be carried out by the contractor at his own cost for each and every weld joint and action for rejection shall be taken as per the Manual for Flash Butt Welding of Rails – with up-to- date ACS, Manual for Ultrasonic Testing of Rails and Welds with up-to-date ACS, RDSO/Railway Board guidelines/circulars, IRS specifications.

3.4 Transverse test –As per the Manual for Flash Butt Welding of Rails – with up-to- date correction slips.

3.5 Hardness test – As per the Manual for Flash Butt Welding of Rails –with up-to- date correction slips.

3.6 Macro examination – As per the Manual for Flash Butt Welding of Rails –with up-to-date correction slips.

3.7 A visual and dimensional inspection will be carried out where every joint will be checked and if found unsatisfactory, will be rejected.

3.8 Transverse load test, hardness test and macro examination and if required micro examination will be done by contractor at his cost at frequency as per FBW manual stipulations. If any unsatisfactory results are found, the performance of the welding machine will be reviewed by

Railways and the contractor is bound to rectify the defects in the machine. Till then, the production will be stopped without any claim what so ever on railways.

3.9 All Visual and dimensional tests will be done by the Contractor in the presence of the Railway Engineer's representative and systematic record of such data shall be maintained as per FBW manual and periodically submitted for scrutiny as directed by Engineer-in-charge or his authorized representative.

3.10 The Transverse test, Hardness & Macro test will be done at the place approved by Engineer in charge or in any one of the following test centers. (i) CMT/Gorakhpur. (ii) RDSO/Lucknow. If facilities are not available/not functioning at the above locations, these tests shall be carried out at any reputed government institution such as IIT/CSIR etc., or at the recognized railway establishments in adjacent railways.

3.11 All the tests specified above will be carried out by contractor, who should make arrangements for transportation of the test pieces from the site of work to the nominated place for testing and back to site, as directed by the Engineer-in-charge or his representative. The rate quoted for flash butt welding shall include the cost of testing the welds and transportation arrangements. No separate payment will be made for this purpose.

3.12. All defective and failed joints shall be replaced by the contractor at his own cost. No payment shall be made for the failed/defective welds. 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. In case the numbers of defective/failed welded joints exceed as per the limits prescribed in the FBW manual with up-to date ACS, Manual for Ultrasonic Testing of Rails and Welds with up-to-date ACS, RDSO/Railway Board guidelines/circulars, IRS specifications, action on contract will be taken/penalty shall be recovered from the contractor as per para mentioned below-

3.13. Action on Contract Agreement will be taken/penalty shall be recovered from firm as per the Manual for Ultrasonic Testing of Rails and Welds with up-to-date ACS, RDSO/Railway Board guidelines/circulars, IRS specifications.

3.14. No payment shall be made for sample test welds (as per Para 10.2 of manual for Flash butt welding of Rails) for the purpose of testing. But the rails required for test joints shall be given free of cost but no extra payment shall be made for cutting rails etc.

3.15. The contractor shall also arrange to transport these joints at his own cost for the purpose of testing. The test pieces after testing shall be returned at the nominated point of Railway with his own transport.

3.16. Rail should also be inspected to ensure that there is no chisel mark or dent of any type on the bottom flange of the rail as this constitutes the tension zone.

3.17. Rail shall invariably be tested for bent and squareness of the rail end etc., to ascertain its suitability for welding before they are taken for Flash Butt Welding. Rails free from USFD defects only should be used for Flash butt welding.

3.18. Before welding, end faces of the rails to be welded and electrode contact locations shall be thoroughly cleaned of loose scales, rust, paint etc. Oil and grease if present shall be removed. If any internal defect such as piping is noticed during end cleaning, the rail shall not be welded.

3.19. The running surface of rail at interface shall be aligned carefully to avoid any 'Step defect'.

3.20. After finish grinding, all welds shall be visually inspected for pores, cracks, lack of fusion and other surface defects like notching damage in heat affected zone etc. Weld with visible defects shall be rejected.

3.21. All welds shall be inspected as per FBW manual. Welds not meeting the standards, if rectifiable by grinding as approved by Engineer in charge can be reground, failing which they shall be rejected.

3.22. The contractor will depute trained welding staff as per stipulations mentioned in FBW Manual with up-to-date ACS and also employ minimum one graduate engineer, technical supervisor and other technically trained staff as per instructions of Engineer-in charge or his representative for ensuring quality control during whole process and safety of staff. Over the above, the Railway may also depute its own trained supervisors for ensuring the above and for providing technical guidance, if considered necessary in the interest of work.

4.0 DIMENSIONAL AND OPERATING REQUIREMENT:

4.1 The profile of the complete Mobile Flash Butt welding system longitudinally and in cross section during transfer towed in train formation or self-propelled or during working shall be within the Indian Railways standard BG Schedule of dimensions.

4.2 Adequate clearance shall be allowed so that no component infringes the minimum clearance of stipulations from rail level while travelling.

4.3 The mobile Flash Butt Welding plant shall be capable of continuous operation during the varying atmospheric and climatic conditions occurring throughout the year in India.

4.4 Fuel tank capacity/consumable storage capacity shall be adequate for travelling of long distances/working, as the case may be.

5.0 ON ROAD:

5.1 The provisions of the Motor Vehicles Act, 1988 shall be complied with. It shall be the responsibility of the manufacturer to obtain the technical certification of road worthiness of the vehicle from the authorized agencies in India such as the Automobile Research Institute of India, Pune, prior to the registration of the vehicle. For plying the vehicles on roads of different classification, it may require special permission from the Ministry of Surface Transport, Government of India.

6.0. MOBILE FLASH BUTT WELDING PLANT:

6.1 The important characteristics of the Mobile Flash Butt Welding Plant shall be as under:

- i. Road/Rail mobile machine capable of on cess/on track in situ welding.
- ii. The QAP of Mobile flash butt welding plant to be used shall be approved by RDSO and shall have the validity.
- iii. The welding head shall be capable of welding loose rails of 13 m to 260 m long rails or of any length, into longer lengths in different situations as laid down in this specification.
- iv. The clamping jaw construction should be such that sleeper around the rail joint should not hinder the welding process under opened out fastening condition.

- v. Rails of either type will be supplied by Railways. The rails shall be handled by contractor. It shall be the responsibility of the contractor to pull and align the rails as required and directed by the Engineer with the rails in 'head on' position. In addition, the contractor shall maintain one site equipment and labour to straighten and re-align rails to straightness tolerances specified that might have been bent or damaged during the rail handling processes.
- vi. Arrangements shall be made to have test welds and their testing as per provisions of the flash butt welding manual and competent welders to be deployed for welding work. The welders certified by RDSO/Lucknow and CTE of Zonal railway as per Flash Butt Weld manual are only to be employed for doing welding work / operation of the welding machine.
- vii. The welds shall be finished to final profile by controlled grinding as approved by the Engineer or his representative. The finished weld alignment shall be as per specified tolerances. Rail head profile grinding to produce the finished alignment shall not extend the limit as prescribed by the FBW Manual with up-to date ACS.
- viii. All welds shall be indelibly marked with an individual number as per stipulations mentioned in the FBW Manual with up-to date ACS.
- ix. All surfaces or other irregularities shall be ground flush. Any defects of irregularities in welds, which in the opinion of the Engineer or his representative cannot be rectified by grinding, shall be rejected. These defective joints shall be cut out 10 cms on either side before re-welding at the contractor's expenses.
- x. All works pertaining to preparation of rail ends for welding like loosening/removing/re fixing of fittings associated with handling, pulling of rails etc. to be done by the Contractor. Nothing extra will be paid on this account.
- xi. The Mobile Flash Butt Welding Plant used for this work must have PC based Weld management System with printout facility. Distance, Current, Voltage and Forging pressure are the minimum parameters to be recorded, details as mentioned in the QAP duly approved by RDSO. A daily report of these parameters is to be submitted to the Engineer-in charge at the end

of the day's work. This machine will not be allowed to work if the Recorder is not working and no claim whatsoever on railways entertained on stoppage of machine.

7.0 WORK PLAN:

7.1 The Contractor shall submit his proposed method statement for work execution along with quality assurance plan and details of the welding team for welding to the Engineer for approval. This plan shall include the details of machinery, welding process to be adopted, tools and equipment's for finishing the welded joints, QAP approved by RDSO, RDSO approved welding parameters, welding teams details & documents, the date of commissioning the same, the date of completion of the welding, the daily production foreseen and a list of personnel and their duties.

8.0 OPERATIONS:

8.1 The contractor shall employ qualified and experienced personnel having valid competency certificate as per FBW manual to weld the rails and shall carry out regular test with his own machine, plants and inspections to ensure that the welds comply with the specifications and FBW manual.

8.2 PERMISSIONS TO WORK ON NORTH EASTERN RAILWAY SYSTEM:

- i. The Contractor shall be responsible for obtaining necessary authorizations and clearances, wherever required for the movement of contractor's equipment on North Eastern Railways system.
- ii. The contractor shall submit details of competency certificate of working MFBWP, technical qualification and experience of their workmen, operator and supervisors.

9.0 PREPARATION OF RAILS TO BE WELDED:

9.1 All rails to be used for welding shall be examined prior to welding; Rails not meeting with the rail end geometry as stipulated in the relevant paras of the "Manual for flash butt welding of rails" shall be rejected. Any rail, which is not within the above tolerances, shall be cut back to a sufficient distance to get the required alignment. The rails shall be cut clean and square by means

of abrasive cutting disks only with approved make machine as directed by engineer-in-charge or his representative. Hacksaw or Gas torch cutting of rail is prohibited.

9.2 Rail ends to be welded shall meet the following geometrical standards as per Manual for flash butt welding of rails with up-to-date ACS:

10.0 END CLEANING:

10.1 Before welding, end faces and both sides (electrode contact location) of the web of the rails shall be thoroughly cleaned of loose scales, rust paint etc. by mechanized brushing. Oil and grease, if present shall be removed by Carbon Tetrachloride or Benzene. If any internal defects such as piping are noticed during end cleaning the rails shall be not welded. End cleaning shall be ensured as per provisions of FBW Manual with up-to date ACS before welding.

10.2 The rail ends shall be cleaned up to a length as prescribed by the welding machine manufacturer before placing them on rollers. The gap between the rail ends to be welded shall be according to the supplier's specification. The rail ends shall be perfectly aligned in both horizontal and vertical planes. To compensate for lowering of joints due to thermal contraction, the two ends to be welded shall be raised by appropriate amount as specified by the manufacturer or gained experience of the welding team suiting to local conditions.

11.0 TESTING OF JOINTS:

11.1 The contractor shall submit a testing procedure plan covering the test criteria stipulated in Clause 10 of the Manual for Flash butt welding of rails for testing of every joint as well as testing of sample joints. The tests to be conducted shall include Visual inspection, Dimensional check, Ultrasonic test, Hardness test, transverse test, Macro examination and if required Micro examination.

12.0 **QUALITY CONTROL:** In order to ensure quality control during the welding process, the contractor shall furnish a quality assurance program along with welding parameters to be approved by the RDSO as per FBW Manual. Such a plan shall have provision for submission of weld records of all welds as per FBW Manual at intervals not exceeding 2 km of rail welded into long lengths. The proposed proforma for the maintenance of weld records as per FBW manual

shall be submitted by contractor for approval. The record shall contain as a minimum, the following information.

i. Pre welded inspection results.

ii. Physical inspection results.

iii. Ultrasonic inspection record.

iv. Weld chainage to the nearest meter

v. Weld number

vi. Rail grade and section.

vii. Date of weld

viii. Weld test record sheet

ix. Dimensional check results. Copies of Certified production welding test results, identifying the rail panel and weld position shall be submitted to the Engineer. Apart from above, all records shall be made by the firm as mentioned in the approved QAP and as per provisions of FBW Manual with up-to date ACS.

12.1 Approval of QAP: QAP approval process shall be as per stipulations of Manual for Flash Butt Welding of Rails (Reprint- April 2022) with up-to date ACS.

12.2 USFD testing and other test examination as stipulated in FBW Manual with up-to-date ACS of Flash butt weld executed in field should be done within two days of welding. For welding in depot, it shall be done immediately after welding.

13.0 TRANSPORTATION & IMPORTATION OF MFBWP:

13.1 Transportation of the MFBWP shall be the responsibility of the contractor including Customs & other clearances, taxes payable and all other related formalities and charges which may be required for the import and export of MFBWP and also other equipment, spares, consumable, etc. which may be required during the contract.

13.2 Contractor shall bear the cost of transfer of the MFBWP or any of its part when transported in train formation on Indian Railway network for any reason on contractor's account like repairs, maintenance schedules, etc.,

13.3 No payment shall be made for

i) Movement due to normal working from one track renewal site to other track renewal site in between Sr den 1/IZN section.

ii) Movement on contractor's account.

14.0 LAND

14.1 The contractor can make use of the Railway land to the extent available and spared by the Railways free of any charge. In case any additional land is required for storage of materials, etc., the Contractor will have to make his own arrangements at suitable locations.

15.0 SAFETY PRECAUTIONS:

15.1 The contractor shall at all times adopt such safe methods of work as well ensure safety of structure, equipment, labour and public. If at any time, the Engineer in charge or his representative finds the safety arrangements inadequate or unsafe, the contractor shall take immediate corrective actions as directed by Engineer at site. Any dereliction in the matter shall in no way absolve the contractor of his sole responsibility to adopt safe working methods.

15.2 The Contractor shall design and execute temporary works, such as to ensure safety of contractor's personnel as well railway staff and personnel engaged on the work. The contractor shall also be responsible for any structural & other damage to property or injury caused by work to his workmen, or by his workmen to persons, animals or things including any compensation arising out of claims on this account and shall be held entirely responsible for all works carried out by him until it is finally taken over by the Railways and he will be liable to be called upon to make good any damage or loss which may occur. The contractor shall indemnify the railways in all such respects. Railways reserve the right to enforce safety regulations on the contractor and recover any cost which may be incurred for this purpose from contractor/s bills.

16.0 CONSTRUCTION EQUIPMENTS

16.1 The contractor shall arrange and operate at his own cost, all necessary tools, plants, machineries and equipment's necessary for successful and timely completion of the work.

16.2 If in the opinion of the Engineer, equipment/plants brought by the contractor are not suitable for the work concerned, the Engineer shall have the right to order the contractor to replace them by suitable plants/equipment. In the interest of public convenience, the Engineer may advise on a specific method of execution of the work.

16.3 The contractor shall be required to give a trial run of the equipment's for establishing their capacity to achieve the laid down specifications and tolerance to the entire satisfaction of the Engineer before commencement of any work.

16.4 All equipment's provided shall be of proven efficiency and shall be operated and maintained at all times in a manner acceptable to Engineer.

16.5 No equipment shall be removed from site without the permission of the Engineer-in-charge.

17.0 PENALTY DUE TO UNSAFE WORK:

17.1 In the event of accident at the work site affecting train movement, on account of Contractor's negligence or the negligence of his men, penalty up to an upper limit of the 10% of the total cost of the work shall be imposed on the contractor.

17.2 Railway reserve the right to terminate the contract with immediate effect if the contractor is found responsible for causing an accident, without giving any further notice/notices to the contractor.

17.3 In the event of Contractor starting the job without proper supervision, causing an accident, he may be prosecuted under Railway Act 1989 for unlawfully interfering with the Railway track and bear the actual losses, compensation with damages to the Railway property. In addition, a penalty for every such case shall be leviable on the Contractor.

18.0 WARRANTY

18.1 The contractor shall ensure that the welds executed under this contract shall have no defect arising from design, materials or workmanship (except in so far as the design or material is

required by the North Eastern Railway's specifications) or from any act or omission of the supplier that may develop under normal use in the conditions prevailing at the site.

18.2 The warranty shall remain valid as per provisions of FBW manual with up-to date ACS, Manual for Ultrasonic Testing of Rails and Welds with up-to-date ACS, RDSO/Railway Board guidelines/circulars, IRS specifications after the date of execution of the weld.

18.3 The North Eastern Railway shall promptly notify the contractor in writing of any claims arising under this warranty.

18.4 Upon receipt of such notice the Contractor shall, with all reasonable speed, repair or replace the defective welds. No claim whatsoever shall lie on the Railway for the replaced weld thereafter.

18.5 If the Contractor having been notified, fails to remedy the defect within a period of one month, the Railway may proceed to recover double the cost of the weld paid to the contractor plus Rs. 5,000/- for each defective weld towards the cost of the price of rails becoming scrap and other incidental costs without prejudice to any other rights.

NOTE: At the end of the day's work, before allowing the train services, it is to be ensured that no free rails/ 2 or 3 rail panels are left lying in between the running rails or adjacent to the running rails on shoulders, so that there is no infringement to running trains. However, welded panels of more than 3 rail panels, if left in between the running rails shall be aligned properly and suitably secured at ends by tie anchors and a speed restriction of 30 Kmph shall be imposed by Railways.

21. USFD Testing of Flash butt weld under NS Item no. 3-

The USFD testing of new Flash butt welds under NS item no.3 shall be done by Phased Array ultrasonic weld testing techniques as specified by RDSO/Railway Board. The firm shall depute RDSO approved Phased Array ultrasonic weld tester/vendor as per criteria mentioned below-

Revised Technical Eligibility Criteria for testing of FB welding joints by Phased Array ultrasonic weld tester through outsourcing-

1. Firm shall have RDSO verified PAUT weld tester.

2. Firm shall have RDSO certified USFD operators for weld testing by conventional UT method as described in IRS-T-53. In addition to above, the operator should have competency certificate issued by OEM after completing requisite training for operation and data analysis of Phased Array ultrasonic weld tester.

3. Firm shall have RDSO verified Quality Assurance Plan (QAP) for ultrasonic Testing of FB welds by Phased Array ultrasonic weld tester.

4. The PAUT weld tester proposed to be used by firm on IR network should be in service on some other Railway network for USFD testing of Flash Butt (FB) welds and should have carried out USFD testing of at least 5000 FB welds with satisfactory performance. Firm shall submit a certificate of satisfactory performance of USFD testing of 5000 FB welds in this regard.

5. Original Equipment Manufacturer (OEM) firms shall be eligible to participate in the tender. However, in case the OEM firm is not located in India, any Authorized Indian service provider

or representative can participate in the tender. Data analysis cells/centre shall be set up for backend analysis of recorded ultrasonic testing data generated during testing by PAUT Weld testers. OEM/OEM's Authorized Indian Service Provider or Representative shall collaborate with Railway to operationalize these data analysis cells/centre as per the instruction of Railways.

a. Concerned team members of Zones to upload & share regularly PAUT testing data of welds with these data analysis cells/center. For uploading this data, corresponding authorization will be given to concerned team members accordingly. Data to be uploaded and shared in suitable cloud storage or servers.

b. The ownership of this data & all related results/reports etc. will remain with Indian Railways. These data of ultrasonic testing (reports, recording) shall be kept & preserved as per guidelines. Suitable safety protocols & protection for stored data should be ensured. Admin rights of this storage system will remain with Railways. OEM/Service\provider will not utilize or share this data/reports etc. outside IR, without the approval of Indian Railways.

c. Undertaking from concerned OEM/OEM's Authorized Indian Service provider/Representative will be required to provide required support/facilities for operationalizing these data analysis cells/centre. A certificate shall be given by concerned OEM communicating details of trained manpower, data analysis software features and related capabilities available with them to ensure the smooth & effective functioning of these data analysis cells/center.

d. As a part of eligibility criteria, tender documents to ask for above undertaking & certificate from the OEM/OEM's Authorized Indian Service provider/ Representative duly specifying the details as mentioned above.