

**CNC-TANDEM UNDER FLOOR WHEEL LATHE (BG) to Specification No.CR/IR/CNC-TUFWL
(BG)/ WITH WORKS /2024****Table of contents**

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In case, any of the conditions mentioned hereunder are contrary to those mentioned elsewhere in the tender document, conditions mentioned in this document shall supersede the corresponding conditions given elsewhere in the tender document.

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| | IMPORTANT FEATURES OF THE TENDER |
| 1 | INSTRUCTIONS TO TENDERERS FOR FILLING TECHNICAL BID |
| 1.1 | Unless otherwise stated, latest alterations/ revisions of specifications/ standards/ drawings as on the date of closing of the tender shall be applicable. In respect of safety standards and environmental standards relevant to the machine, the machine manufacturers shall ensure compliance with International (CE/ISO/DIN/JIS)/National standards (IS) (wherever applicable). |
| 1.2 | Tenderers should offer and quote for all the specified concomitant accessories, as these are considered essential for commissioning and utilization of the machine. Even if bidder does not recommend the purchase of any of these accessories, the price must be quoted for comparison purposes and their recommendation/suggestion to be indicated in the offer. Tenderers should also quote for optional accessories, spares and consumable spares as asked in the specifications. |
| 1.3 | In case, any item is required in sets, please specify nos./pieces per set. This is essential for proper technical evaluation of the offer. Offers received without this may be considered as incomplete and liable to be rejected. |
| 1.4 | The bidder should quote only for the specified make of sub-assemblies and equipment wherever specified. Makes of sub-systems other than the specified ones will normally not be acceptable. In case, some other make is quoted, specific reasons for the same including its features/advantages over specified makes must be brought out in the offer. |
| 1.5 | In case there is a contradiction in any information provided (between any parametric values given in the specification and those given in the brochure or some other document enclosed by the tenderer), unless specifically mentioned, the value as given in specification shall be taken as confirmed by the tenderer and offer evaluated accordingly. |
| 1.6 | Bidder in their own interest, should visit the consignees listed in clause 3 Section-IV with prior appointment with Controlling Officer and acquaint themselves with existing process of manufacturing/remanufacturing, site conditions, availability of crane facility etc. |
| 1.7 | The Purchaser may accept internationally accepted alternative specifications which ensure equal or higher quality than the specifications mentioned in the Technical Specification. However, the decision of the Purchaser in this regard shall be final. A copy of the alternative specifications offered should be sent along with the offer. The Tenderer should also furnish “Statement of Deviations” from tender specifications (as per Annexure -A, Section-VI) along with the offer. |
| 1.8 | Bidder must furnish clause wise compliances against the individual clauses of Section IV and V clearly indicating ‘complied’ incase of compliance to the clause, ‘non complied’ incase of non compliance to clause. Informative clauses can be indicated as ‘noted’. Bidder must provide necessary information as asked for in the relevant clauses. Bidder must provide necessary information as asked for in Section VI. Bid will be considered incomplete and liable to be rejected in case of noncompliance to this instruction. The Tenderer should also furnish “Statement of Deviation “ from tender specifications (as per Annexure – A , Section – VI) along with the offer. |
| 1.9 | The new stock of Locos/ Coaches can be seen at following places: |
| | WDG4/WDP4 locomotives :Diesel Loco Shed, Central Railway, Kalyan & Pune WAG9/WAP5 locomotives :Electric Loco Shed, Central Railway, Kalyan & Ajni WDM3A/WDG3 locomotives :Diesel Loco Shed, Central Railway, Kalyan & Pune LHB Coaches :Coaching Depot, Mumbai LTT, Pune, Ajni |

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| | Vande Bharat | : ICF/Chennai, Wadibunder Depot at Central Railway |
| 2 | DESCRIPTION: | |
| | CNC Tandem Under Floor Wheel Lathe as per specification No.CR/IR/CNC-TUFWL (BG)/ WITH WORKS /2024 is required as per main features and description of tender requirements in Section-IV & technical specification in Section-V for simultaneous or independent re-profiling of two wheel sets of one bogie of Broad Gauge (BG) Diesel & Electric Locomotives, diesel & electric multiple units, coaches and wagons without removing the wheel sets, bogie brake gear, axle box covers or any other components of the locomotives/coaches/ wagons as per drawings mentioned in Annexure-E of section-VI. Re-profiling simultaneously at both ends, independent wheel sets with out-board journals by means of suitable hold-down device. Machining of inside faces of the wheel in continuation to profile turning of the tread & flange. | |
| 2.1 | The machine shall have following configuration: | |
| 2.1.1 | The machine shall consist of hauling system, lifting & positioning system, drive system, measuring system, cutting depth determination system, tread profile machining system, swarf disposal system, tooling system, lubrication system, hold down device etc. | |
| 2.2 | Leading Parameters | |
| 2.2.1 | Major parameters | |
| 2.2.1.1 | Track gauge | 1676mm |
| 2.2.1.2 | Cutting speed (infinitely variable) | 15 to 120 m/min |
| 2.2.1.3 | Feed (infinitely variable) | 0.1 to 2 mm/rev. |
| 2.2.1.4 | Axle load | 8 to 25 tonnes |
| 2.2.1.5 | Tread diameter | 700 to 1250mm |
| 2.2.1.6 | Distance between wheel set axis in one bogie | 1900 to 3000 mm. |
| 2.2.2 | Job Parameters | |
| 2.2.2.1 | Width of vehicle | 3660mm (max.) Refer drawing no COFMOW/UFWL/BG/2007 Sheet 1 of 7. |
| 2.2.2.2. | Wheel gauge (distance between inner faces of flanges) | 1595 to 1602mm |
| 2.2.2.3 | Width of tyre | 125 to 140mm |
| 2.2.2.4 | Distance between axles of vehicle | 1600mm |
| 2.2.2.5 | Axle length | 1889 to 2750mm |
| 2.2.3 | Other Parameters | |
| 2.2.3.1 | Power Supply | 415V+10% to -20%, 50Hz+/-3% |
| | Note: No deviation shall be permitted against above Parameters. | |
| 2.3 | PERFORMANCE STANDARDS: | |
| | Machine shall be capable of - | |
| 2.3.1 | Re-profiling in-situ simultaneously two-wheel sets of one bogie at both ends without any interruption in a single setting old work hardened and new wheel set as per drawings mentioned in Annexure- E of section VI of broad-gauge Diesel & Electric Locomotives, diesel & electric multiple units, coaches and wagons without removing the wheel sets, bogie brake gear, axle box covers or any other components of the locomotives/coaches/ wagons. | |
| 2.3.2 | Re-profiling simultaneously at both ends, independent wheel sets with out-board journals | |

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| | by means of suitable hold-down device. |
| 2.3.3 | Machining of inside faces of the wheel in continuation to profile turning of the tread & flange. |
| 2.3.4 | Surface Finish and Accuracy: |
| | The machine shall be capable of re-profiling wheel sets to the following standards during the finish cut: |
| 2.3.4.1 | The radial run out of tread diameter on any wheel shall not exceed 0.3mm. |
| 2.3.4.2 | The difference in tread diameter of two wheels on the same axle shall not exceed 0.3mm. |
| 2.3.4.3 | The difference in tread diameter of four wheels of one bogie shall not exceed 0.5mm. |
| 2.3.4.4 | The inaccuracy of profile reproduction shall not exceed 0.2mm when measured with a standard profile gauge. |
| 2.3.4.5 | Surface finish of the machined wheel shall be 20 microns (Ra) or better. |
| 2.3.5 | A suitable load-meter to indicate load on the machine shall be provided. The load-meter shall have an indication to indicate the maximum load the machine can take. |
| 2.3.6 | Noise Level: Noise level of the machine under full load shall not exceed 85 dB when measured at a distance of 7 meters from the machine in free field conditions as per IS: 4758-1968 and ISO test code 230 part-5. |
| 2.3.7 | Working in normal Indian Railway environment with temperature up to 50 degree C and relative humidity up to saturation. |
| 2.4 | CYCLE TIME: |
| 2.4.1 | The machine claimed cycle time shall be proved for removal of 8mm material radially (diameter reduction up to 16mm) in maximum two passes (two cuts) on normally worn out wheels. The claimed productivity shall be achieved with the accuracies as specified in clause no. 2.3 of section IV for wheel tread dia of at least 700mm or above. The exact sequence of operation including multiple cuts shall be explained in the offer. |
| 2.4.2 | The details of automatic mode of operation of machine during one complete cycle, should be indicated in the machining cycle to be attached with bid. |
| 2.4.3 | The basis of the timing should be clearly given with details of all the cutting parameters. The timing should be maintainable for regular 8 hours shift for double shift working six days per week with machine availability of 85% without affecting normal life and accuracy of the machine. |
| 2.4.4 | <p>During tandem / simultaneous operation, using single operator on each machine (i.e. two operators for Tandem Machines) the average cycle time for profile turning of two wheel sets of one bogie should not exceed 48 minutes and average cycle time for one coach with two bogies (four wheel sets) shall not exceed 96 minutes. The cycle time offered shall include floor-to-floor machining time for all the activities including following:</p> <ol style="list-style-type: none"> Hauling from edge of pit Loading Machine startup Initial orientation and programming Control panel operation Pre-machining measurement Profile turning Post- machining measurement Unloading <p>The break-up of floor-to-floor cycle time indicating depth of each cut (rough & finish cut) and cutting parameters shall be indicated in the bid. The average cycle time shall be</p> |

| | calculated from the total cycle time taken for the machining of all(6 for locos and 4 for Coach/Wagons/diesel & electric multiple units ,Vande bharat) wheel sets of the vehicle). | | | | | | | | | | |
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| 2.4.5 | The machine shall be capable of turning wheels having tensile strength up to 110 Kg/mm ² . The tensile strength of work-hardened spots can be up to 125 Kg/mm ² . The machine using indigenously available throwaway carbide tools shall operate without vibrations or chatter at all loads. | | | | | | | | | | |
| 2.4.6 | A graph showing the depth of cut the machine capable of taking with a feed rate of 1mm per revolution, at different axle loads up to 25 tonnes shall be submitted in the bid for wheel material having tensile strength of 75, 90, 110 and 125 Kg/mm ² . | | | | | | | | | | |
| 2.5 | PROVE OUT AT FIRM'S PREMISES: | | | | | | | | | | |
| 2.5.1 | <p>The machine is required to prove out to establish the claimed cycle time as per clause 2.4. The proving out shall be done at inspection stage itself at supplier's premises for 02(Two) nos. Loose wheel sets as given in Annexure-E of section VI.</p> <p>The consignee will provide Min. 5 nos. wheel sets on returnable basis to the supplier on submission of Indemnity bond by firm for an amount to be indicated by the consignee. In case the wheel sets are not available with consignee, supplier may take similar wheel sets from the nearby Railway locations / Units on returnable basis against Indemnity bond. The supplier will collect the Loose wheels set at his cost and will be subject to provisions :</p> <ul style="list-style-type: none"> • All the property of the Consignee loaned to the Contractor in connection with contract shall remain the property of the Consignee. The Contractor shall use such property for the purpose of the execution of the contract and for no other purpose whatsoever. • All such property shall be deemed to be in good condition when received by the Contractor unless he shall have within twenty-four hours of the receipt thereof notified the consignee to the contrary. If the Contractor fails to notify any defect in the condition or quality of such property, he shall be deemed to have lost the right to do so at any subsequent stage. • The Contractor shall return all such property and shall be responsible for the full value thereof to be assessed by the Consignee whose decision shall be final and binding on the Contractor. The Contractor shall be liable for loss or damage to such property from whatever cause happening while such property is in the possession of or under the control of the Contractor, his servants, workmen or agents. | | | | | | | | | | |
| 2.6 | PROVE OUT AT CONSIGNEE'S WORKS: | | | | | | | | | | |
| 2.6.1 | <p>The machine shall be prove out for complete profile machining of 02(Two) nos. of loose wheel sets & any one stock of coaches/wagons.</p> <p style="text-align: center;">or</p> <p>The supplier shall demonstrate machine performance and prove out the claimed capability as given in para 2.4 for a period of four 8 hrs. shifts as a part of successful commissioning at the consignee's works.</p> <p>After such successful demonstration as mentioned herein, the consignee shall take over and watch the machine performance for a period of one month, before the final proving test certificate is issued.</p> | | | | | | | | | | |
| 3.0 | QUANTITY & CONSIGNEE: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">S.N.</th><th style="width: 40%;">CONSIGNEE</th><th style="width: 10%;">QTY.</th><th style="width: 40%;">Specification No.</th></tr> </thead> <tbody> <tr> <td></td><td>SSE/C&W/PUNE</td><td style="text-align: center;">1</td><td>CR/IR/CNC-TUFWL (BG)/ WITH WORKS /2024</td></tr> </tbody> </table> | | | S.N. | CONSIGNEE | QTY. | Specification No. | | SSE/C&W/PUNE | 1 | CR/IR/CNC-TUFWL (BG)/ WITH WORKS /2024 |
| S.N. | CONSIGNEE | QTY. | Specification No. | | | | | | | | |
| | SSE/C&W/PUNE | 1 | CR/IR/CNC-TUFWL (BG)/ WITH WORKS /2024 | | | | | | | | |

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| 4.0 | SCOPE OF SUPPLY- | |
| 4.1 | The scope of supply shall include design, manufacturing, supply, installation, testing, commissioning and proving of machine on turnkey basis. It includes all the concomitant accessories/ equipments & concomitant works, required to make the machine fully functional when connected to a power source. It shall also include installation and commissioning of related equipment, training of personnel in operation and maintenance of machine and supply of technical documentation. | |
| 4.2 | CONCOMITANT ACCESSORIES: | |
| 4.2.1 | The machine should be accompanied with the following concomitant accessories: | |
| 4.2.1.1 | First fill of oils and lubricants. | (Quantity of each item shall be indicated in the bid). |
| 4.2.1.2 | Electrical cables for connecting control cabinet to machine | 10m |
| 4.2.1.3 | Maintenance Tools (List of tools be furnished in the bid). | One set |
| 4.2.1.4 | Retractable rails with their drive | One set |
| 4.2.1.5 | Hauling device – (i) Rail Cum Road Shunter (ii) Winching Arrangement | One no. One no. |
| 4.2.1.6 | Toolings | For each machine 2 nos. of tool holders and 50 nos. of tool inserts of each type including for brake disc machining. |
| 4.2.1.7 | Compatible voltage stabilizer(Ref. Cl.- 2.13.2 of Section V) | One no. |
| 4.2.1.8 | Compatible ultra isolation transformer (Ref. Cl. 2.13.3 of Section V) | One no. |
| 4.2.1.9 | Hydraulic hold down device for outboard journals | One set for each machine |
| 4.2.1.10 | Drive rollers (as spare in addition to those fitted on the machines) | One set |
| 4.2.1.11 | Common Conveyor type swarf disposal system for both machines with two nos. bottom open able chip trolleys. | One set |
| 4.2.1.12 | Electrostatic oil filtration equipment (Ref. Cl 1.2.10 of section V) | One No for each machine. |
| 4.2.1.13 | Checking gauges for all wheel profiles mentioned in the drawings as per Annexure E of Section VI | One set for each machine |
| 4.2.1.14 | Pumping unit with motor for clearing accumulated water inside pit | One unit |
| 4.2.1.15 | Brake disc machining arrangement for LHB wheel sets.(As per clause 1.2.7.6 of Section-V) | One set for each machine |
| 4.2.1.16 | Chip Crusher(As per clause 1.2.12.2 of Section-V) | One set for each machine |
| 4.2.1.17 | Digital RFT Gauge | One No for each machine. |
| 4.2.1.18 | Compressor of suitable capacity for working and cleaning of machine. Details flow, pressure & tank capacity must be indicated. | One No. |
| 4.2.1.19 | Railing for the machine pit | One set. |

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| 4.2.2 | Concomitant works: | |
| 4.2.2.1 | The scope of supply shall also include the following concomitant works. The cost of these works shall be quoted separately and the cost shall be included for the purpose of commercial evaluation. | |
| 4.2.2.1.1 | Construction of Cover shed for housing under floor wheel lathe (Ref. Cl. 1.2.15 of section V) | |
| 4.2.2.2 | Linkage of Track(Ref. Cl. 1.2.16 of section V) | |
| 4.2.2.2.1 | Inside Shed (for shed size Ref. cl. 1.2.15.3 of section V) | : As required |
| 4.2.2.2.2 | Outside shed (ref. Cl. 1.2.16.2 of section V). Bidder shall furnish the rate in respect of track linkage per meter of length basis. | : 500 meters (max.) |
| 4.2.2.3 | Power supply connection (Ref.Cl.1.2.17 of section V). Bidder shall furnish the rate in respect of per meter of length basis. | : 500 meters (max.) |
| 4.3 | OPTIONAL ACCESSORIES: | |
| | Following optional accessories is quoted by the tenderer. Cost of optional accessories shall be quoted separately and shall not be included in the basic price of the machine. Cost of optional accessories will not be taken for commercial evaluation of the firms. | |
| 4.3.1 | Firm should also quote charges for modification in software for any other profile, not specified in the tender, on each profile basis for future requirement, due to amendment in wheel profile drawings at later stage. | |
| 4.3.2 | Suitable device for turning of wheel sets of the locomotives shall be quoted as optional accessory. Distance between coupled axles may vary from 1500 to 2650 mm. Details of the device and its working procedure shall be explained in the bid. | |
| 4.3.3 | Measurement system for the running wheel set. Measurement system for the running wheel set shall be installed on the line feeding the rolling stock to the CNC Tandem Under Floor Wheel Lathe.This will enable the non-contract laser based pre-measurement of all the wheels of rolling stock before it reaches CNC Under Floor Wheel Lathe. This will result in identification of the proper wear and diameter of all the wheel sets of the rolling stock. This data is directly uploaded to the CNC system of Under Floor Wheel Lathe to enable wheel set re-profiling in proper order. System shall enable measurement of following parameters of all the wheel sets when the rolling stock is moving at a speed of max. 10 KMPH. 4.3.3.1 Diameter of both the wheels of wheel set within $\pm 1.5\text{mm}$ 4.3.3.2 Flange thickness of both the wheels of wheel set within $\pm 0.25\text{mm}$. 4.3.3.3 Flange height of both the wheels of wheel set within $\pm 0.25\text{mm}$. 4.3.3.4 Distance between inside faces (back to back distance) of two wheels of wheel set within $\pm 0.5\text{mm}$. Details of system shall be explained in the offer. | |
| 4.3.4 | Remote Control Office: An air-conditioned remote office (separate) equipped with adequate lighting arrangement, fans etc from which it is possible to manage turning operations of both the machines. This remote office is provided with CNC and monitor that is connected to the one on the each machine that allows remote working. Moreover, monitors connected to cameras shall be located close to the machining area that grant a complete view of the machining processes. The basic supply shall include: - a) Min. 4 cameras and related support on each machine. b) Min. 4 camera covers. c) 1 no. CNC monitor with related keyboard for each machine. | |

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| | d) Min. 1 monitors for cameras for each machine. e) Options for CNC interface on lathe and related cabling. | | | |
| 4.3.5 | Connection of drainage line from under floor wheel lathe shed to nearest point of existing drainage line of shed/depot/unit. Rate should be quoted on per meter basis. | | | |
| 4.3.6 | Operation of CNC Under Floor Wheel Lathe as per clause 1.2.20 of Section-V | | | |
| 4.3.7 | Any accessory which can improve the productivity, performance, reliability, efficiency, or enhance the capability of the machine as a whole or part thereof, should be quoted as optional accessory. | | | |
| 5.0 | EVALUATION CRITERIA : The financial bids shall be evaluated and inter-se ranking of offers shall be determined by taking sum total of all costs as below: | | | |
| 5.1 | Cost of the basic machine, Cost of the concomitant accessories ,Cost of Preventive maintenance during warranty according to tender specifications | | | |
| 5.2 | Cost of concomitant works according to tender specifications. | | | |
| 5.3 | Cost of Turnkey Charges viz. foundation, installation & commissioning etc. | | | |
| 5.4 | Net Present Value (NPV) of the total Cost of comprehensive CAMC for five years after the warranty as per clause 17 of Section-V. | | | |
| 5.5 | Duties and taxes as quoted by the bidder, insurance, and freight | | | |
| 6.0 | OTHER ITEMS TO BE QUOTED: The following items will need to be quoted additionally though these will not be part of commercial evaluation: | | | |
| 6.1 | Optional Accessories with breakup of individual items as specified in clause 4.3 of section IV | | | |
| 6.2 | Consumables as per clause 6 of Section-V with break up of individual items as applicable. | | | |
| 7.0 | DELIVERY SCHEDULE CHART: In the event of acceptance of the offer, the machine(s) shall be supplied as per the following Milestone Chart: | | | |
| | SN. | Activity | Activity Code | Outer Limit of Time Schedule expected by Railways |
| | 1. | Issue of LOA | D1 | - |
| | 2. | Submission of PBG By Successful Bidder | D2 | D1+30 days |
| | 3. | Issue of Contract By Central Railways (after verification of PBG) | D3 | D2+30 days |
| | 4. | Submission of GA drawings and requisition for the trial component(s) (if applicable) to consignee by Successful Bidder/Supplier along with information on power and other utilities required for machine. | D4 | D3+45 days |

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| | 5. | Approval of GA drawings by consignee (to be governed by clause 11.2 of section-V) and confirmation of availability of components to be proved out at manufacturer premises and Indemnity Bond required for proving prove out components. | D5 | D4+45 days | |
| | 6. | Confirmation of availability of clear site by consignee | D6 | D5 (i.e At the time of approval of GA drg.) | |
| | 6.1 | Construction of shed, linkage of track, power supply connection by supplier. | D6.1 | D 6+210 days | |
| | 7 | Completion of Foundation | D7 | D 6.1+150 days or latest by D8 | D6+ 150 or latest by D8 |
| | 8 | Supply/Delivery of machine | D8 | D 6 + 210 days | |
| | 9 | Power connection for the machine and other on site requirement to be provided by railways. | D9 | D8 + 7 days | |
| | 10 | Railway to give call to supplier for the commissioning of machine | D10 | D8 + 7 days | |
| | 11. | Installation, commissioning and proving out of machine by supplier | D11 | D10 + 90 days | |
| | 12. | Issue of PTC by consignee | D12 | D11 + 30 days | |
| | 13. | Warranty by supplier | D13 | D11 + 2 years | |
| | 14. | Comprehensive Annual Maintenance Contract | D14 | D13 + 5 years | |
| | Note: Notwithstanding the delivery period indicated elsewhere in the tender document, the delivery indicated in this schedule shall be taken as overriding and final. | | | | |
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8.0 Payment Terms :

8.1 Payment for supply of machine - 80 % amount of the cost of Machine along with Concomitant Accessories shall be released against I/C issued by the TPI agency and Joint Receipt Inspection Note as per Annexure B of Section – VI duly certified by the consignee gazetted officer and Balance 20% payment shall be released on issue of Prove Out Test Certificate as per Annexure H of Section – VI against submission of WBG for 10 % of the value of contract (excluding CAMC charges) towards security for warranty period valid till 02 months beyond the expiry of warranty period.

8.2 Payment for concomitant works (covered Shed, Linkage of Track and Power Supply Connections etc.) – 80% on issue of completion certificate by the consignee and Balance 20% on issue of Prove Out Test Certificate as per Annexure H of Section – VI alongwith submission of WBG valid till 02 months beyond the expiry of warranty period.

8.3 Payment for Foundation, Installation, Testing, Commissioning and Proving out – 80% on issue of Joint Commissioning Note as per Annexure – C of Section – VI by the consignee and Balance 20% on issue of Prove Out Test Certificate as per Annexure H of Section – VI alongwith submission of WBG valid till 02 months beyond the expiry of warranty period.

Note: The supplier shall arrange certification by a RCC Consultant, who should be a Chartered Engineer registered with the Institution of Engineers, that: -

- a) The design of the machine foundation &
- b) Construction of the foundation

is in accordance with the latest version of the relevant part of the Indian Standard for Code of Practice for design & construction of machine foundation as specified in IS:2974.

The original certificate issued by the consultant for certification of both the design & construction of the foundation and a copy of his registration certificate from the Institution of Engineers shall be submitted by the supplier to the consignee.