SECTION-I		
1.0	Instructions To Tenderers For Filling Technical Bid	2
SECTION-II		
1.0	Description	3
2.0	Scope of Supply.	3
3.0	Concomitant Accessories	3-5
4.0	Optional Accessories	5
5.0	Evaluation Criteria	6
6.0	Other Items to be Quoted	6
7.0	Delivery Schedule Chart	6-7
SECTION-III		
1.0	Basic Design Features	8-13
2.0	General Electric Specification	13-17
3.0	General Characteristic	17-22
4.0	Technical Literature	22-23
5.0	Spares	23
6.0	Consumables	23-24
7.0	Special Features	24
8.0	Deviations	24
9.0	Inspection and Testing at Manufacturer's works.	24-25
10.0	Training	25
11.0	Foundation & Related Drawings	25-27
12.0	Installation, Commissioning and Proving Tests: (On Turnkey Basis)	27-29
13.0	Service Facility in India and Technical Support	29-30
14.0	Bought Out Items	30
15.0	Colour	30
16.0	Warranty Obligation	30-32
17.0	Annual Maintenance Contract	32-35
	SCHEDULE-I	36-37
	ANNEXURE-A	38
	ANNEXURE-B	39
	ANNEXURE-C	40
	ANNEXURE-D	41

SECTION-I

1.0 **INSTRUCTIONS TO TENDERERS FOR FILLING TECHNICAL BID**

1.1 The machine must fully adhere to the legal requirements and regulations of the country or region in which it is intended to be used or sold. Any non-compliance with these mandatory stipulations could have detrimental effects on the validity of the agreement. It is the sole responsibility of the party involved in the tender process to ensure that the machine meets all applicable laws, certifications, safety standards, and environmental guidelines. Failure to comply with any legal obligations may lead to disqualification from the tender process and legal repercussions. To safeguard the integrity of the agreement and avoid any potential issues, the machine's conformity with all relevant legal requirements should be verified and documented prior to submission.

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 the event of any discrepancy between the parametric values stated in the technical specifications of the tender document and those presented in the tenderer's enclosed brochure or other associated documents, unless explicitly addressed in the **deviation cum confirmation statement**, the values as indicated in the Bid Document shall be deemed affirmed and confirmed by the tenderer. Subsequently, the evaluation of the tenderer's offer shall be conducted in accordance with the values provided in the Bid Document.

1.4 Bidders or their representatives are advised to visit the consignee's premises before submitting their bid. They should schedule an appointment with the consignee to familiarize themselves with the manufacturing process, site conditions, and crane facilities etc. This visit will help them prepare a competitive bid.

1.5 The cranes shall be supplied complete in all respects. The tenderer shall furnish complete details regarding type, material of construction, specifications and special features, if any, for the main items. Any variations from the specifications shall be brought out with reasons for the same. Any variations involving lower standards of design, performance and rating are not acceptable.

1.6 All important component make shall be mention in offer in deviation statement

1.7 Whenever any IS/ISO similar standard used in this specification, it shall be latest and updated version.

1.8 In order to assess the manufacturing capability of OEM and to be assured regarding OEM’s manufacturing facility/ facilities in India and hence the ability of its Authorized Distributor to supply the said machine, a self certified Capability Assessment report of the OEM as per Annexure-D must be submitted by the bidder along with their offer. In addition to above, if felt necessary by the Purchaser, an inspection by actual visit to his works/ office can be carried out by representative of Purchaser/ Third party agency as nominated by the purchaser (TPI cost to be borne by the bidder) to verify the details furnished vide Annexure-D. The bidder is bound to comply with the same, without fail.

SECTION-II

1.0 DESCRIPTION:

Pit type CNC Controlled Dynamic Wheel Balancing Machine With Correction Machine (i.e e Milling Machine combined with Dynamic Balance Machine) is required for precision balancing of railway wheel sets conforming to leading parameters as per Schedule-I and sketch- I **on turnkey basis,** as per *SPECIFICATION* given below**.**

2.0 Scope of Supply:

2.1 The scope of supply shall include design, supply, and installation, testing, commissioning and proving of CNC Controlled Dynamic Wheel Balancing Machine With Correction Machine (i.e e Milling Machine combined with Dynamic Balance Machine) **on turnkey basis.** The turnkey work shall include design and construction of foundation and all civil engineering work, electrical and other works related to installation and commissioning of the machine. Electrical cabling and earthing from mains to machine (max. 20 meter) and machine to control panel. The supply shall include all concomitant accessories/equipments as detailed in the specification and any other concomitant accessories/equipments, which the manufacturer considers essential to make the machine fully operational. Leading parameters of the machine shall conform to Schedule- I.

3.0 Concomitant Accessories:

Each machine shall be supplied with following accessories in addition to the standard fittings and accessories. The cost of each listed concomitant accessory should be quoted separately. Wherever for any reason the cost of any concomitant accessory is included in the basic price of the machine, the same should be specifically mentioned.

3.1 Proving rotor similar to shape and size of wheel set with removable, calibrated imbalance weight to facilitate checking of machine accuracy and repeatability 01Set

3.2 Bearing Supports for mounting of jobs 01 Set

3.3 Balancing weights as per clause1.2.16 of section-III 50gm-200 nos.
80gm-200 no's
130gm-200 nos.

3.4 Gluing Weights items

(i) Acetone-50 Liter.

(ii) "Chisel gasket remover"-Loctite product no.79040–10 nos.

(iii) "Activator"-Loctite product no.7075–10 nos.

(iv) "Adhesive"-Loctite product no.324–10 nos.

3.5 Tool kit for maintenance and operation:

Ratchet Handle ½x10". 01No.
Screw Driver 12". 01No.
Allen Key. 01Set
Double ended Spanners 6x7, 8x9, 10x11, 12x13, 01No.each 14x15,16x17, 18x19, 20x22, 24x27, 30x32 and 36x41.

3.6 Wheel set handling System as per clause 1.2.15 of section-III 01Set

3.7 Balancing instrumentation: Suitable Computer based system type with window based software system alongwith LED display, printer etc and CNC Controller.

3.8 Automatic Loading System:

3.9 It shall have a system to load the wheel set on the machine and to remove the balanced wheel set from the machine.

3.10 Encoder based angle Measurement System for display on screen.

3.11 CNC Milling System **as per below details.**

Purpose: The above machine is to remove the exact amount of unbalanced weight at location specified by the balancing machine using computer aided balancing software.

TECHNICAL DATA

a.	Electronic Interface	Interface with Computer based electronics
b.	Drive	Servo motor & drive
c.	Automatic Correction cycle	to be provided
d.	Automatic-loading/unloading system	to be provided
e.	Max. weight capacity including adaptor weight	1000 Kg.
f.	Max. Dia. of work piece	700-1000mm
g.	Work piece Dimensions	Machine should be capable to hold and process below mentioned sizes of various built a) Profile/Face Width: 100-150mm b) Hub Width: 150-210mm c) Bore Diameter: 125-225 mm
h.	OK/NOT OK Indication	to be provided
i.	FEATURES AND FACILITIES	a) The machine is to be equipped with Servo motor & drive. b) With serve operation, and should not have wear as in case of brake motors. With servo control and capable to have controlled acceleration & declaration d) Automatic Milling of Wheel Discs On pressing START Button, the following operations to be executed: • Job is clamped automatically.

		• Unbalanced weight to be machined automatically, • Machine stops automatically. • Job is unclamped automatically.
j.	**AUTOMATIC LOADING/UNLOADING**	Machine to be provided with the loading table which goes up and down to load/unload the job. By pressing a LOAD button, the job shall be automatically loaded onto the machine. By pressing UN-LOAD button, the job shall be automatically loaded onto the machine. The machine should have interface to connect to CNC controller for automatic correction with Dynamic Balancing Machine
k.	CALIBRATION	One set of calibration weight for checking purpose to be supplied along with the machine, wheel sample will be provided by the consignee to make the masterpiece at free of cost.

3.12 Any other accessory/equipment, which the manufacturer considers essential to make the machine fully operational, when installed and commissioned.

3.13 ESSENTIAL SERVICES:

(i) Comprehensive Preventive Maintenance services during 1st & 2nd year of Warranty Period and CAMC for 10 years.

4.0 OPTIONAL ITEMS/ACCESSORIES:

Following optional accessories will be 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.

i. The supplier should quote hand held programming unit as optional accessory for uploading/downloading of software of CNC system The configuration of Hand held programmer unit should be Intel Pentium-M Processor 2 GHz or higher, with 2MB RAM L_2 Cache or higher and 533MHz system bus with intel 915 express chip set family or higher, RAM 512MB DDR or more, 256 GB HDD min., Combo (DVD-CD-RW) Drive, 17" LED display integrated 56 KBPS modem, with nylon

carrying case.

ii. Per meter rate for additional supply and lying of cable of suitable size.
iii. Any other accessories, which in the opinion of the tenderer, can contribute to better performance, should be explained in the offer and price should be quoted separately.

5.0 **EVALUATION CRITERIA**

Total value of the machine will be calculated based on

(i) The cost of basic machine
(ii) The cost of concomitant accessories according to this tender specification
(iii) Cost of other accessories, which in the opinion of the supplier, are essential to make themachine fully functional
(iv) Cost of "TURNKEY" Charges viz., Foundation, installation, commissioning, training etc.
(v) Cost of Preventive maintenance for the warranty period (Two Years)
(vi) Cost of Comprehensive AMC charges for 10 years after completion of warranty period. This will not form a part of contract value.
(vii) 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 will not be part of commercial evaluation:

(i) Optional Accessories with breakup of individual items as specified in clause 3.0.
(ii) Any other 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.

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:

S. No.	**Activity**	**Activity Code**	**Outer limit of Time Schedule expected**
1.	Issue of LOA	D1	-
2.	Submission of PBG by the Successful Bidder	D2	D1+30days
3.	Issue of AT/Contract (after verification of PBG)	D3	D2+30 days

4.	Submission of GA drawings to consignee by successful bidder/supplier along with information on power and other Utilities required for machine.	D4	D3+45days
5.	Approval of GA drawings by consignee.	D5	D4+45days
6.	Confirmation of availability of clear site by consignee	D6	By D5 (i.e.at the time of approval of GA drg.
7.	Completion of foundation	D7	D6+15 days or LatestbyD8
8.	Supply/Delivery of machine	D8	D5+180days
9.	Power connection for the machine and other on site requirements t	D9	D8+7days
10.	Railway to give call to supplier for The commissioning of machine.	D10	D8+7days
11.	Installation, commissioning and Proving out of Machine by supplier	D11	D9+90daysor D10+90days(which ever is late)
12.	Issue of PTC by consignee	D12	D11+30days
13.	Warranty by supplier	D13	D12+2years
14.	AMC	D14	D13+5years

Notwithstanding the delivery period indicated elsewhere in the tender document, the delivery indicated in this schedule shall be taken as overriding and final.

SECTION-III

1.0 BASIC DESIGN FEATURES:

1.1 FEATURES:

1.1.1 The machine shall be capable of continuous working, and shall be operated normally in two shifts per day (each shift is of 8.0Hrs.).The machine shall be suitable particularly for heavy-duty industrial work.

1.1.2 Rigidity and general characteristics of the machine shall be as per clause3.

1.1.3 All Steel Structures and housings should be surface treated to prevent corrosion and painted.

1.1.4 Suitable industry standard safety of the operator and maintenance personnel should be built in into the design.

1.1.5 It should be possible to easily transport the entire equipment set from one place to another. Lifting Lugs to be provided for lifting with the help of cranes etc.

1.1.6 All parts of the equipments should be capable of working in hot dusty and humid environment. They should work continuously at the rated capacity up to temperatures of 55 degree Celsius and Relative Humidity up to 98%.

1.1.7 The unit shall incorporate the following safety features:

- The machine should be protected from over loading and overheating.
- All the sub-assemblies shall have provision for earthing.
- The control circuit shall be protected by properly rated fuses.
- The unit shall be protected against excessive current.

1.1.8 Suitable interlock shall be provided to prevent machine operations in the event of:

- Faulty sequence of operation
- Fluctuation in supply voltage beyond permissible limits
- Resumption of power supply after power failure
- Non-positioning of safety guards.

1.1.9 Machine Maintainability

a) The machine design shall be such that it requires minimum possible maintenance and gives trouble free service.

b) All assemblies/parts of the machine shall be easily accessible for maintenance.

1.2 SPECIFIC CHARACTERISTIC:

1.2.1 The machine shall be capable of precision balancing of Railway Wheel sets.

1.2.2 The machine shall be such that once calibrated, there should be no need to calibrate it again irrespective of the job weight. Trial runs should not be required when changing to different types or sizes of jobs.

1.2.3 The provision shall exist for setting of:

i. Distance between compensating planes.

ii. Radii at compensating planes.

iii. Distance between compensating planes and bearing planes.

1.2.4 The machine shall have the minimum achievable residual specific imbalance of 0.1micron, or better. The machine should have the minimum readable facility of 0.05 gm mm or better. The balancing quality at service speed and permissible residual imbalance shall conform to ISO 1940 and BS-5892 Pt.3.

1.2.5 The machine shall be capable of indicating the out of balance weight and pin point the location of imbalance.

1.2.6 It shall be possible to adjust the controls to any geometrical configuration and feed in data through the keyboard.

1.2.7 Facility shall be available for separate indication of static as well as couple imbalance.

1.2.8 The machine shall conform to ISO-2953.

1.2.9 Machine Bed

1.2.9.1 The machine bed shall be made of high grade cast iron conforming to IS-210.The bed should have T slots over the entire length for clamping the balancing stands at any location. Movement of the balancing stands on the bed shall be through hand operated chain and sprocket arrangement. Details of the arrangement for movement of balancing stands shall be explained in the bid.

1.2.10 Driving Stand

The machine frame shall be a rigid steel casting or fabricated structure with adequate damping. It shall house the driving motor and starter. Details of the drive system shall be explained in the bid.

1.2.11 Support System

1.2.11.1 The machine shall be of hard bearing design. Sensing of vibrations shall be done by pick-ups. The pick-ups shall be such that they are not affected by magnetic fields, humidity and temperature variations. The system used shall be explained in the bid.

1.2.11.2 The support system shall be such that it does not damage the bearing area of the job being balanced.

1.2.11.3 Cradles shall be provided with rollers to support the job being balanced. The carriage shall be adjustable to accommodate varying journal diameters. The carriage shall be supported on suitable stands fabricated from steel plates and shall be capable of being clamped in any position. Roller set height shall be

adjustable to fit journal diameters of jobs for maintaining job axis alignment. A graduated scale shall be provided for this purpose. Suitable safety guards/clamps shall be provided to prevent jobs having severe imbalance from jumping out. Suitable locking arrangement shall be provided for the cradles.

1.2.11.4 The pedestals shall be of single piece design and provided with suitable arrangement for their movement over entire length of the bed. The pedestals shall be provided with roller carriages.

1.2.12 Drive

1.2.12.1 A belt drive with electronic tachometer shall be provided for indicating the balancing speeds. The belt shall be capable of running on uneven surfaces such as grooves, gear teeth etc. **Details of the drive shall be explained in the bid.**

1.2.12.2 The electric motor shall be squirrel cage induction motor with step less speed control through a variable frequency drive. **Only Siemens/Crompton Greaves/NGEF/ABB make motor shall be accepted.**

1.2.13 Braking

It shall be possible to stop the machine quickly, for which suitable electrical braking system shall be provided. **Details of braking system shall be furnished in the bid.**

1.2.14 Measuring System

1.2.14.1 A computer based measuring and data processing system/micro processor based system with LED display shall be provided. **It shall conform to requirements as detailed in Annexure-I.**

1.2.14.2 **The supplier should explain in detail the working of the computer based electronics and data processing system/micro processor based system with LED display for precision balancing.**

1.2.14.3 The set up dimensions should be easy to preset in the machine, which should eliminate the need of any calibration runs.

1.2.14.4 The LED Display should be used as a read out for unbalancing readings as well for viewing various wheels sets data parameters.

1.2.14.5 The software employed should be menu driven for user convenience

1.2.14.5.1 The wheel set description, dimensions, geometry, balancing tolerances, method of correction (add/remove, polar/component) and balancing speeds should be fed into the electronic memory of the unit via key board.

1.2.14.5.2 Each set of data pertaining to one wheel set should be allotted a code number through which the wheel set data is recalled from the memory at the time of balancing run.

1.2.14.5.3 Adequate memory should be provided for storing data on the hard disc.

1.2.14.5.4 The computer based electronics and data processing system / microprocessor based system with LED display should carry out the entire set of computations digitally and displays the result on the LED screen.

1.2.14.5.5 The correction results should be displayed in bold letters using specially designed graphics to suit the shop floor conditions. The results should be in polar or component form. The number of components and the angle of the first component should be different in the planes and be varied depending upon the job. The unit also determines whether the residual unbalance is within the balancing tolerance or not. The balancing speed should be checked and appropriate messages be displayed on the LED display to avoid balancing at wrong speeds.

1.2.14.6 The computer based electronics and data processing system / microprocessor based system should have following special features.

1.2.14.6.1. Special diagnostics program screen for pinpointing the fault if ever the machine malfunctions.

1.2.14.6.2. Special calibration programs to check machine calibration and if required reset it.

1.2.14.6.3. Printer as per Annexure - I to be attached for periodic print out of the balancing records.

1.2.14.6.4. Setting procedure in diagnostic mode with guiding steps displayed on the LED.

1.2.14.6.5. Correction values displayed in polar form (amount and angle) or the component form (weight addition at fixed points up to 99 components).

1.2.14.6.6. Automatic comparison of wheel set unbalance with its tolerance. When the wheel set comes within tolerance, suitable indication is displayed.

1.2.14.6.7. Comparison of actual machine balancing speed with the desired balancing speed fed-in to ensure that balancing is done at the right speed.

1.2.14.6.8. Possibility of recalling wheel data fed- in previously by giving the wheel code number.

1.2.14.6.9. Display of complete file of wheel codes and description whose data is stored in the memory.

1.2.14.6.10. Electronics to measure the value of unbalance over time and displays values when reading has stabilized.

1.2.14.6.11. Display of unbalance in vector format (vector meter).

1.2.14.6.12. Use up to 99 different types of wheel sets codes.

1.2.14.6.13. All readings can be saved in the hard disc or on Pen Drive to perform various statistical functions staking mean values of initial unbalance, average number of balancing runs etc.

1.2.14.7 The measuring system shall be capable of determining the residual imbalance and indicating if it is within the specified tolerances. It should also be capable of checking the balancing speed. Software shall provide for automatic storage of output till the next measuring run or until manual cancellation. A compatible UPS shall be provided with the system. Make and technical details of the UPS shall be

furnished in the bid.

1.2.14.8 The software shall be capable of the following functions:

i. Fault diagnosis and suggestion of remedial action.
ii. Machine calibration and reset.
iii. Automatic comparison of wheels set imbalance with tolerances.
iv. Comparison of actual balancing speed with specified balancing speed.

1.2.14.9 Correction in one plane shall not affect the other plane during balancing run by more than +/-3% of the imbalance corrected in a plane.

1.2.14.10 Arrangement shall be provided to cut out spurious vibrations while measuring imbalance and to eliminate the need for manual tuning or adjustments. Arrangement provided shall be explained in the bid.

1.2.14.11 A suitable device to correlate the measured angle and the amount of imbalance with the wheel set shall be provided. **Details of the arrangement shall be explained in the bid.**

1.2.15 Wheel set Handling System

1.2.15.1 A handling system capable of loading and unloading of wheel sets conforming to parameters in Schedule –I shall be provided. Details of the handling system shall be furnished in the bid.

1.2.15.2 Wheel Set Handling System: The machine shall be offered with suitable wheel handling system having push button controlled loading and unloading of wheel sets.

1.2.15.3 When push button is pressed, the job loaded on the machine & belt is engaged. After balancing the push button is operated, the belt is disengaged & wheel is unloaded and push back on rails.

1.2.16 Balancing weights

Balancing weights of 50 gms, 80 gms and 130 gms shall be made out of steel with 15 mm X 15 mm cross section to properly fitting to the inner rim of wheel and supplied as concomitant accessory.

1.2.17 Gluing Weights Procedure for Consignee

1.2.17.1. If residual imbalance is less than 50 gms., there is no need to attach additional weights.

1.2.17.2. If residual imbalance is more than 50 gms., then place the D marking gauge on the journal. Mark points on the inner side of the rim with chalk as per angle of imbalance on the left and right wheel respectively.

i. Choose a balancing weight suitable for the imbalance from pre-measured balancing weights of 50 gms, 80 gms and 130 gms.

ii Dip the weight in Acetone for 10 minutes and clean with a clean cloth.

iii. Spray Loctite product no. 79040 “Chisel gasket remover” on the weight sand the surface of the wheel where the weight is to be glued.

iv. After 10 minutes clean the wheel surface with a wire brush/scrapper.

v. Spray "Activator" Loctite product no. 7075 on the prepared surface of the wheel as well as of the weight.

vi. After about 10 minutes, apply the Loctite product no. 324 "adhesive" on the weight and immediately glue the weight on the wheel surface.

vii. Clamp the weight on to the surface with C-clamp.

viii. Remove the C-clamp after 10 minutes of drying.

ix. The same procedure as per above steps should be used for every weight to be glued.

1.2.17.3. Provide a green band 10 mm wide with pain tradially on the rim face along the balancing weights, so that location of the balancing weight can be identified if original balancing weights get detached during service.

1.2.18 Controls

It shall be possible to operate the machine from an ergonomically designed centralized control panel. Details of controls provided shall be furnished in the bid.

1.2.19 Safety Features

1.2.19.1. The machine design shall ensure safety of the operator and machine a tall time. Details of safety features provided shall be furnished in the bid.

1.2.19.2. Arrangement to prevent the wheel set from rolling out during balancing shall be provided. **Details of the arrangement shall be furnished in the bid.**

1.2.20 Operation sequence

Bidders shall furnish full operation sequence with elemental break-up of timings for balancing a wheel set. The timing shall include machine set up, loading, balancing and unloading. The total cycle time for a wheel set shall be in dictated in the bid.

2.0 GENERAL ELECTRICAL SPECIFICATION

2.1 The provision of this General Specification shall apply, where ever relevant.

2.2 All equipments and material shall comply with appropriate Indian Standards (latest), International Standards or National Standards of the country of origin provided the latter are equivalent to or better than the former. The tenderer shall indicate the Standards applicable. The following standards are applicable in particular.

(Corresponding International Standards like ASA, NEMA, BSS, DIN etc. may also be quoted).

IS: 325-1979(latest) - Three phase induction motors (corresponding to IEC pub-34-1) (Latest).

IS: 1248(Latest) - Direct acting indicating analogue electrical measuring instruments and their accessories (corresponding to IEC Pub-51) (Latest).

IS: 1231-1974(Latest) - Dimensions of three phase induction motors (corresponding to IEC Pub-72-1) (Latest).

IS: 1271-1985(Latest) - Classification of insulation material for electrical Test Benchry & apparatus sin relation to their thermal stability in service (corresponding to IEC-Pub-85) (Latest).

IS: 6875(Latest) - Push Buttons and related control switches corresponding to IEC Pub/73) (Latest).0

IS: 375-1963(Latest) - Marking and arrangement of switch gear, bus bars, main connection & auxiliary wiring.

IS: 996-1979(Latest) - Single phase small AC and universal electrical motors.

IS: 1356(Latest) - Electrical equipment of machine tools.

IS: 2516(Latest) - Circuit breakers (corresponding to IECPub-56) (Latest)

2.3 Unless specified in the main specification, the AC motors and starters shall be of the following type. Tenderer is, however, free to give alternative proposal along with justification, if in his view alternative proposal in warranted by site conditions. Type of motor type of starter.

	TYPEOFMOTOR	**TYPEOFSTARTER**
2.3.1	Any type of AC motor starting current of which does not exceed 75 amps.	Direct online.
2.3.2	AC squirrel cage, introduction motors, starting current of which is above 75 amps. if started direct on line	Star delta or Auto transformer type.
2.3.3	AC slip ring type motor	Resistance type air/fan Cooled
2.3.4	AC synchronous or synchronous induction motor.	Suitable makers standard.
2.3.5	DC motor	Resistance type/Thyrist or type.

2.4 The control gear for AC/DC motors shall incorporate the following protection devices as concomitant accessories.

2.4.1 **No Voltage Protection**- No voltage protection shall be provided so that machine will not start up again by itself when, following an interruption the supply is

restored.

2.4.2 **Short Circuit Protection -** To protect against short circuits due to insulation failure of faulty connections HRC fuses shall be provided for each motor. The rating of the fuse shall be such as to take care of the over current due to motor starting.

2.4.3 **Over Load Protection -**To prevent motors from overloading, overload protection shall be provided separately for each motor. Three phase motors shall be protected by overload tripping device son each phase.

2.4.4 **Single Phasing Protection -**A separate current sensitive delayed action single phasing prevent or shall be provided for each motor separately. Overload protection shall not be treated as single phasing preventor.

2.5 Control equipment shall be mounted in separate drip proof enclosures. Control enclosures and compartments are to be so designed as to give adequate protection against ingress of dust, oil, coolant or chips. All control devices like contractors etc. shall be front mounted on a rigidly fabricated metal panel for ease of operation. All other electrics shall be installed that they are readily accessible when the doors and covers are opened. Hinged covers shall be interlocked with the Test Bench tool control to prevent operation of the machine when cover is open.

2.6 The motor shall be totally enclosed with or without fan cooled frame. Screen protected drip proof type motor may be provided if it is mounted inside protective enclosures.

2.7 The electrical equipments shall comply with the requirement of Indian Electricity Act and Rules (latest).

2.8 All instruments shall be of the Industrial Grade “A” (IS-1248) switch board type the range of the instrument shall be such that the maximum load expected in the circuit shall produce a deflection of 60% to 80% of the full scale.

2.9 The supplier shall furnish 3 sets of complete electrical and electronic wiring diagrams in full details to enable the maintenance staff to locate faults in the circuits, 3 sets of part catalogues, maintenance manuals operating instructions with details of coils and windings, used in the equipment to facilitate repairs and maintenance should also be supplied.

2.10 For main motor class minimum “B” Class insulation shall be provided. If any other class of insulation is proposed, detailed justification for providing different class of insulation shall be given.

2.11 Motors shall be designed to withstand frequent starts, stops and reversals as demanded in the operation of the machine.

2.12 Two earthing terminals shall be provided on all electric motors including the control gear.

2.13 POWER SUPPLY

2.13.1 The machine shall be suitable for operation on 415 volts 3 phase 50 cycles AC 3 wire or 4 wire system with neutral solidity earthed. The supply voltage may very up to +10% -20%. The frequency may vary up to$\pm$ 3%. However, full rated power of

the motor shall be available at the lower voltage. Firm should confirm satisfactory performance of the machine at incoming power supply in the range 415V+10%-20% and 50 HZ±3% frequency or should provide voltage stabilizer as specified against clause 2.13.2 below of required capacity.

2.13.2 The voltage estabilizer , if required, shall conform to:

i) Input Voltage - 320 to 460 volts 3phase 4wire supply.

ii) Output Voltage - 415volts

iii) Regulation - ±1%from No load to Full load.

iv) Rate of correction - 20volts per second per phase.

v) Wave from distortion- NIL

vi) Efficiency - Not less than 97%.

vii) Winding and class of insulation- Copper wire wound with "B" class of insulation or better.

2.13.3 In case of machines equipped with NC, SS, CNC, Thyristor controlled devices and other sophisticated electronic gadgets including microprocessors etc. which are susceptible to power line spikes and surges, a suitable voltage stabilizer and ultra isolation transformer of adequate capacity to cover for the entire electrical load of the machine shall be offered as a concomitant accessory conforming to Specification for voltage stabilizer as mentioned in clause 2.13.2 above and isolation transformer to the parameters mentioned below.

i) Transformer ratio- 1:1

ii) Winding - Copper wire wound with "F" class insulation or better.

iii) Protection - To arrest spikes and surges to the order of 3 KV for 200-400 micro seconds duration.

iv) Common mode rejection ratio - 120dB

v) Isolation - Capacitance 005 Pf: resistance greater than 1000 Mega Ohms.

2.13.4 Voltage stabilizer shall be equipped with a protective relay to trip to trip the AC power supply to the machine instantaneously with audio and visual indication to the operator. Settings of the protective relay for low and high voltage shall be 320 volts and 460 volts respectively.

2.14 ATMOSPHERIC CONDITIONS

The ambient temperature at the site at which the machine will be installed may vary from-4ºCto+55ºC over the year. The relative humidity may be as high as 98%. The atmosphere is expected to be dusty. The machines offered shall be suitably tropicalised to work under these atmospheric conditions without any adverse effect on their performance.

2.15 The temperature rise shall not reach such a value that there is a risk of injury to any insulating material or adjacent parts.

2.16 The drive shall be capable of operating at any one of the speed required independent of the load in accordance with the requirements of the machine.

2.17 Information/data shall be furnished as per the format of submission of technical bid.

3.0 GENERAL CHARACTERISTIC

3.1 RIGIDITY AND STABILITY

3.1.1 The machine shall be robust, rigid and of sturdy construction. It shall be designed to meet heavy duty demands of various operations on the machine under normal Workshop environment for such machines. It shall be free for vibrations even when working at full capacity.

3.1.2 All machine castings shall be made of close grained high grade cast iron like Mechanite or equivalent materials meeting IS-210 Standards to ensure durability and rigidity. The casting shall be thermal stress relieved to ensure stability and continued accuracy.

3.1.3 All machine fabrications of critical load bearing assemblies like beds, columns etc. shall be adequately strengthened and stress relieved.

3.1.4 Change in ambient temperature shall not affect the performance of the machine.

3.1.5 There shall be no change in the performance of the machine either on switching on the machine or after continuous running.

3.1.6 There shall be no resonant vibrations throughout the working range of the machine at all load levels.

3.2 SAFETY CONTROLS

3.2.1 The machine shall incorporate safety devices to provide protection to the operator and machine against all possible operational and machinery failures.

3.2.2 Suitable interlock shall be provided to prevent machine operations in the event of:

3.2.2.1 Faulty sequence of operation.

3.2.2.2 Fluctuation in supply voltage.

3.2.2.3 Resumption of power supply after power failure.

3.2.2.4 Non-positioning of safety guards.

3.2.2.5 Failure of hydraulic system (where applicable)

3.2.2.6 Failure of lubricating system (In case of automatic including drop in pressure lubrication)

3.2.3 A fault or damage in the control circuit or interruption re-establishment after an interruption of fluctuation in whatever manner in the power supply to the machinery must not lead to dangerous situations in particular.

3.2.3.1 The machinery must not start unexpectedly.

3.2.3.2 The machinery must not be prevented from stopping if command has already been given.

3.2.3.3 No moving part of the machinery or piece held by the machinery shall fall or be ejected.

3.2.3.4 The protection devices must remain effective.

3.2.4 The machine shall be fitted with an emergency stop device to enable actual or

impending danger to be averted. This device must be:-

3.2.4.1 Conveniently located.

3.2.4.2 Clearly identifiable.

3.2.4.3 Stop the machine as quickly as possible without causing additional hazards.

3.2.4.4 The emergency stop must remain engaged. It should be possible to disengage itonly by appropriate operation. Disengaging the control must not restart the machinery but only permit restarting.

3.2.5 Safety features shall also include

3.2.5.1 Safety device against overload for all mechanical and electric items to the extentpossible.

3.2.5.2 Safety stops against over-running of slides.

3.2.6 Guard and protection devices shall protect exposed persons against risks related to moving transmission parts (such as pulleys, belts, gears, rack and pinion, shafts etc.) and moving parts directly involved in the process to the extent possible. This shall meet the following requirements:-

3.2.6.1 Be of robust construction

3.2.6.2 Not give rise to any additional risk

3.2.6.3 Not be easy to bypass or render non-operational

3.2.6.4 Be located at an adequate distance from danger zone

3.2.6.5 Cause minimum obstruction to the view of the production process.

3.2.6.6 Rigidly connected and not prone to rattling

3.2.6.7 Enable essential work to be carried out without the guard or protection device having to be dismantled.

3.2.7 A load meter shall be provided to indicate the load on the machine. The meter shall have a suitable mark to indicate the maximum load the machine can take. Full details of the above and other safety features indicating how each one functions must be explained in the offer.

3.3 OPERATIONAL CONTROLS

3.3.1 The operation of the machine shall be by push buttons or levers. The basic rules for the direction of operation of controls and the corresponding direction of movements of the machine tools shall be as per IS:2987-1985.

3.3.2 The control devices shall be

3.3.2.1 Clearly visible and identifiable.

3.3.2.2 Ergonomically positioned for safe operation without hesitating or loss of time, and without ambiguity.

3.4 LIGHTING

3.4.1 Integral lighting suitable for the operations concerned where its lack is likely to cause a risk despite ambient lighting of normal intensity shall be provided.

3.4.2 The manufacturer must ensure that there is no area of shadow likely to cause nuisance, that there is no irritating dazzle and that there are no dangerous stroboscopic effects due to lighting provided by the manufacturer.

3.4.3 Integral parts requiring frequent inspection and adjustment and maintenance areas must be provided with appropriate lighting.

3.4.4 The machine lighting should be of low voltage so as to prevent any hazard to the operator.

3.5 MACHINE MAINTAINABILITY

3.5.1 Predictive Maintenance:

Sensor Integration: Install sensors to monitor critical components such as hydraulic systems, bearings, and motor performance.

Data Analytics: Implement predictive maintenance algorithms to analyze sensor data and predict potential failures.

Condition Monitoring: Continuous monitoring of machine conditions to detect anomalies and trends.

3.5.2 Remote Monitoring and Diagnostics:

IoT Integration: Connect the press to the Internet of Things (IoT) for real-time monitoring.

Remote Diagnostics: Enable technicians to remotely diagnose issues, troubleshoot, and update software.

3.5.3 Modular Design:

Modular Components: Design the press with modular components to simplify replacements and upgrades.

Plug-and-Play Modules: Allow for easy replacement of components without extensive reconfiguration.

3.5.4 Quick Change Tooling System:

Tooling System Design: Implement a quick change tooling system to reduce setup times

Tool Library Management: Store and manage tooling information digitally for quick retrieval.

3.5.5 Automatic Lubrication System:

Automated Lubrication: Install an automatic lubrication system to ensure consistent and proper lubrication of critical components.

Lubrication Monitoring: Implement sensors to monitor lubrication levels and provide alerts when maintenance is required.

3.5.6 Advanced Control Systems:

Adaptive Control Algorithms: Utilize adaptive control algorithms for real-time adjustments based on material variations and machine conditions

Energy Optimization: Implement energy-efficient control systems to reduce overall power consumption.

3.5.7 Augmented Reality (AR) Maintenance Assistance:

AR Maintenance Guides: Provide AR-assisted maintenance guides for technicians to visualize instructions and information

Remote Assistance: Enable remote technical support using AR technology for complex problem-solving.

3.5.8 Digital Twin Technology:

Digital Twin Creation: Develop a digital twin of the press for virtual testing and simulations.

Performance Analytics: Use digital twin data for performance analytics and predictive maintenance.

3.5.9 Enhanced HMI (Human-Machine Interface):

Intuitive Interface: Design a user-friendly interface for operators and maintenance personnel.

Diagnostic Tools: Include advanced diagnostic tools within the HMI for troubleshooting

3.5.10 Documentation and Training:

Interactive Manuals: Provide interactive digital manuals for maintenance procedures.

Training Simulators: Develop training simulators for maintenance personnel.

3.5.11 Spare Parts Management:

Automated Reordering: Implement automated systems for reordering critical spare parts

Digital Spare Parts Catalog: Maintain a digital catalog of spare parts with easy ordering and tracking capabilities.

3.5.12 Environmental Monitoring:

Temperature and Humidity Sensors: Install sensors to monitor environmental conditions that may impact machine performance.

Corrosion Resistance: Implement materials and coatings to enhance resistance to environmental factors.

3.5.13 The machine shall be so designed as to require minimum possible maintenance and to give trouble free service.

3.5.14 All assemblies/parts of the machine shall be easily accessible for maintenance.

3.5.15 The machine shall not require major dis-assembly for checking and replacement of a particular part, especially for parts requiring periodical check up and replacement.

3.5.16 The manufacturer must provide means of access e.g. stairs, ladders, cat walks etc. to allow access safety to all areas used for production, adjustments and maintenance operations.

3.6 WEAR COMPENSATION ADJUSTMENT

The original built in accuracy of the machine shall be capable of being maintained conveniently and economically by suitable adjustments for taking up wear on slides, bearings and load screws. The system of adjustments incorporated shall be explained in the offer.

3.7 COOLANT SYSTEM (WHERE APPLICABLE)

3.7.1 Suitable coolant system with pump, motor, tank, filter etc. shall be provided. The coolant pump shall be as per IS:2161-1962. The filter shall be of reusable type and indigenously available. If reusable filter cannot be offered the filter cartridge shall be readily available in India. Source of supply shall be indicated. Adequate no. of filters for 2 years working on double shift basis shall be offered as spare. Details of the coolant system shall be indicated in the offer.

3.7.2 The supply of coolant shall be in ample volume. Provision to re-circulate the coolant shall be available. A chip and coolant tray shall be provided. The volume of coolant flow shall be indicated. It shall be adjustable.

3.7.3 An enclosure shall be provided to prevent the coolant from splashing outside the machining zone. Details of enclosure shall be provided. Specific requirements of coolant system for grinding machines etc. shall be clearly indicated.

3.8 LUBRICATION SYSTEM (WHERE APPLICABLE)

3.8.1 The machine shall be provided with an automatic lubricating system for ensuring delivery of adequate quantity of lubricant to areas requiring continuous lubrication. Suitable arrangements must be provided for indication of failure of the lubricating system

3.8.2 The system shall be provided with interlock to prevent machine operating/starting in the event of the failure lubrication system.

3.8.3 Reusable filters capable of filtering chips, dust particles etc. shall be provided. Indicators for showing clogged condition of filters shall be available. The filters shall be indigenously available. If reusable filter cannot be offered the filter cartridge shall be readily available in India. Source of supply shall be indicated. Adequate no. of filters for 2 years working on double shift basis shall be offered as spare.

3.8.4 Lubrication and filter cleaning chart shall be displayed on a metal plate at a conspicuous location on the machine indicating :-

(a) Specific location of points on the machine to be oiled lubricated/greased.
(b) Periodicity of lubrication of these points.
(c) Filter to be cleaned.
(d) Periodicity of cleaning filters.
(e) Periodicity of replenishing lubricating oil for the centralized system.
(f) Any other similar relevant information.

3.8.5 Points where manual lubrication is needed shall be separately indicated. Frequency of lubrication shall be also clearly mentioned.

3.8.6 Lubricating oils used in the machine shall be available in India. Successful tenderer will be required to indicate brand names of approved oils manufactured by various Indian Oil Companies.

3.8.7 First fill of lubricating oils used in the machine shall be provided with the machine. Details of lubricating system provided shall be indicated.

3.9 PNEUMATIC SYSTEM (WHERE APPLICABLE)

3.9.1. The compressed air supply will be provided by the customer at the machine within pressure range of 4.5-7.5 kg/cm2 and a moisture content or 1000 ppm. The pneumatic system of the machine should be designed accordingly. An alarm shall be provided for low air pressure.

3.9.2. Suitable filter/moisture trap shall be provided by the contractor in the system of pneumatic air intake. The filter shall be reusable type and indigenously available. If reusable filter cannot be offered, the filter cartridge shall be easily available in India. Source of supply shall be indicated. Adequate no. of filters for 2 years working on double shift basis shall be offered as spare.

3.9.3. Air pressure regulator, if necessary, shall be provided by the tenderer.

3.9.4. The make of pneumatic control equipment shall be of reputed make. The makes shall be indicated.

3.10 HYDRAULIC SYSTEM (WHERE APPLICABLE)

3.10.1. Hydraulic circuit must be equipped with the following safety and inspection equipments:

(a) Pressure gauges at all places, where pressure has to be set up or inspected.

(b) Safety valves for hydraulic circuit if relief valve does not fulfill this function.

(c) Equipment for checking of temperature in the circuit or in the pump wherever necessary.

(d) Arrangement to show if the filters (including those in the pump set) are choked and need cleaning. The filters shall be of reusable type and indigenously available. If reusable filter cannot be offered, the filter cartridge shall be readily available in India. Source of supply shall be indicated. Adequate no. of filters for 2 years working on double shift basis shall be offered as spare.

(e) Alarm for low oil level.

3.10.2. The sump aggregate shall have the following:

(a) Oil level sight gauges or any other equipment showing the minimum and maximum oil levels in sump.

(b) A drain plug at the lowest portion of the tank.

(c) It shall be possible to drain the oil from the tank without disconnecting any pipes or other fittings.

3.10.3. The temperature of oil in hydraulic circuits shall not exceed 60 degrees C in any case. Suitable arrangement shall be incorporated to ensure that the oil is not overheated under local weather conditions at continuous normal working of the machine.

3.10.4. Facilities for bleeding of air in case of air lock shall be provided.

3.10.5. The hydraulic reservoir, pump and allied equipment shall be suitably segregated from the machine in order to remove major source of heat.

3.10.6. Hydraulic oils used on the machine shall be available in India. Successful tenderer will be required to indicate brand names of approved oils supplied by various Indian oil Companies.

3.10.7. First fill of hydraulic oils used on the machine shall be provided with the machine.

4.0. TECHNICAL LITERATURE:

4.1 One copy of the printed illustrative catalogue showing features of the machine and its elements must be enclosed with each copy of the bid.

4.2 The technical literature shall must have clearly defined electrical circuits, pneumatic circuits, lubrication circuits and machine assembly drawings alongwith the details of all the components mentioning about make, qty, description etc.

4.3 The technical literature shall be provided for the complete machine, including imported and indigenously purchased components / sub- assemblies. The successful tenderer will have to furnish 4 (four) copies each of the following manuals directly to the consignee along with the machine. Out of these 04 sets, the bidder shall be required to submit one set of all documents in best available condition one month prior to the training for the machine. One set of technical literature should cover the following details:

i. Operational & Maintenance manual of the machine.
ii. Operational & Maintenance manual of the servo controlled voltage stabilizer.
iii. Operational & Maintenance manual of the ultra isolation transformer.
iv. Instruction & Maintenance manual for Hydraulic Oil Cooling Unit.
v. User manual for Tool changer system (if provided).
vi. Technical & Maintenance manual for Hydraulic System
vii. Technical & Maintenance manual for Lubrication System.
viii. Operator Guide for CNC Control System (if provided).
ix. Programming Guide for CNC Control System (if provided).
x. Diagnostic & Trouble shooting Guide for CNC Control System (if provided).
xi. Start-up Guide for CNC Control System (if provided).
xii. Machine Software Listing (if provided).
xiii. Soft and hard copies of PLC Program in ladder form with cross reference listing and PLC project file.
xiv. Drawings of tooling & fixtures, hard copies in A-2 size as well as soft copy in PDF format.
xv. Wiring diagram, in which length of wires must be mentioned, hard copies in A-3 size as well as soft copy in PDF format.
xvi. Mechanical drawings (spindle assembly, table assembly, column assembly), hard copies in A-1 size as well as soft copy in PDF format.
xvii. Spare part manual including part lists no., hard copies in A-4 size as well as in PDF format.
xviii. Lay out drawings in A-1 size, which clearly shows the position of all type of electrical components in machine.

4.4 Backup of machine software, machine data/ parameters shall be provided in 1TB portable SSD Hard Disk(Make-WD, Seagate, Sandisk, Crucial only)

Note: All manual and literature should be in English/Hindi.

5.0 SPARES

5.1 Since the machine will be under comprehensive preventive maintenance during warranty period of two (02) years and under AMC for ten (10) years after the warranty period, it is the sole responsibility of bidders to stock such spares as required for smoother execution of PMC during warranty and AMC in order to achieve response time in compliance to machine availability as per stipulated requirements.

5.1.1 Spares shall be supplied along with the machine, if ordered.

6.0. CONSUMABLES:

6.1. The list of consumable spares shall be furnished and quoted along with their unit rate.
6.2. Consumables shall be supplied along with the machine or as per agreed time table, if ordered.

7.0. SPECIAL FEATURES:

Special features incorporated in the machine, if any, shall be indicated separately in the bid clearly indicating the advantages.

8.0 DEVIATIONS:

8.1 The tenderer shall certify that the offered machine fully meets the specification. Various design features incorporated in the machine to fulfill different technical performance requirements shall be fully explained in the offer. However, minor deviations from these specifications which do not affect or in any way interfere with the stipulated performance standards or would result in improved safety/ reliability or would reduce recurring maintenance/operating cost of the machine, can be considered for acceptance. The tenderer in such eventuality shall clearly indicate the details of these deviations and their implications in the offer.

8.2 All Deviations shall be clearly indicated in the deviation statement.

9.0 (A) INSPECTION AND TESTING AT MANUFACTURER'S WORKS:

9.1 The machine shall be inspected and tested during different stages of its manufacture starting from raw material till the completion of machine, by the purchaser or his authorized representative at the supplier's or his sub-supplier's works. The Quality Assurance Programme shall be submitted by the tenderer along with the bid. The bidder must submit the exhaustive QAP incorporating the tests /stage inspection as followed by them.

9.2 A load and functional test must be carried out at the manufacturer's works. Rigidity of the machine shall be demonstrated to the satisfaction of appointed inspector or inspecting agency.

9.3 Manufacturers must have suitable facilities at their works for carrying out various performance tests on the sub-assembly/assembly/machine. The tenderer shall clearly confirm that all facilities exist and shall be made available to the inspecting authority.

9.4 A Sample Inspection Chart for inspecting the equipment shall be supplied along with the bid. The inspection chart should indicate all the tests that are carried out during the machine manufacture and also the tests to be offered to inspecting agency. The standard to which this inspection chart conforms should be clearly indicated. Against each test, acceptable limit/ range of values shall be indicated.

9.5 (a) A balancing test on proving rotor similar to wheel set assembly shall be carried out at manufacturer's work. Rigidity of machine shall be demonstrated to the satisfaction of appointed inspector or inspecting agency. Optimum balancing level of 0.1 micron per plane shall be demonstrated at manufacturer's works on this proving rotor.

(b) The claimed cycle time shall be proved out at the time of commissioning at the consignee's premises over two 8-hours shifts.

OR

9.0 (B) INSPECTION AND TESTING AT CONSIGNEE'S WORKS:

9.1 Manufacturers should have suitable facilities at their premises for carrying out various performance tests on the sub-assembly/ assembly/ machine, as may be applicable, to

establish quality and reliability. The tenderer should clearly confirm and furnish the facilities available and make them available to the inspecting authority.

9.2 A Sample Inspection Chart for inspecting the equipment should be supplied along with the bid, indicating the tests that are carried out during the machine manufacture and also the tests to be offered to inspecting agency at manufacturer's premises/ consignee's end. The standard to which this inspection chart conforms should be clearly indicated. Against each test, acceptable limit/ range of values shall be indicated.

9.3 **In case, considering the nature and working of the machine, commissioning and prove out of machine shall be done by the purchaser or his authorized representative at the consignee's works, 80% payment will be made after inspection, testing and commissioning of machine at consignee end**. The Quality Assurance Programme shall be submitted along with the bid. The bidder must submit the exhaustive QAP incorporating tests /stage inspection as followed by them.

9.4 A load and functional test must be carried out at the consignee's works. Rigidity of the machine shall be demonstrated to the satisfaction of appointed inspector or inspecting agency.

9.5 (a) A balancing test on proving rotor similar to wheel set assembly shall be carried out at consignee's work. Rigidity of machine shall be demonstrated to the satisfaction of appointed inspector or inspecting agency. Optimum balancing level of 0.1 micron per plane shall be demonstrated at manufacturer's works on this proving rotor.

(b) The claimed cycle time shall be proved out at the time of commissioning at the consignee's premises over two 8-hour shifts.

NOTE: Bidder shall clearly indicate the proposed place of inspection and testing EITHER as per clause 9.0 (A) OR as per clause 9.0 (B) in their bid.

10.0. TRAINING:

10.1. Free training by the firm shall be imparted in operation and maintenance of the machine. The training to be imparted shall cover operation, troubleshooting and repair of all mechanical, hydraulic, electrical & electronics equipments (CNC Control & AC Drives) and CNC/PLC part programming. This training shall be provided to 4 person nominated by the consignee, for a period of 2 weeks free of cost at the manufacturer's premises. Two weeks training will also be provided to one person free of cost from M&P/RCF in design and construction of the machine. All charges pertaining to travel, boarding and lodging shall be borne by Indian Railways.

10.2. Subsequently, technical experts from the manufacturer will fully and adequately provide training to operators and maintenance staff nominated by the consignee at the time of commissioning of the machine.

10.3. The supplier will be responsible for co-coordinating with the consignee the travel plans of trainees to ensure that the training is imparted on the machine at its assembly and testing stage. The bidder shall also submit training schedule along with the offer.

Note: All training should be imparted in English/Hindi only.

11.0. FOUNDATION & RELATED DRAWINGS

11.1. SUBMISSION OF GA, FOUNDATION & RELATED DRAWINGS FOR

APPROVAL:

11.1.1. For each machine, the supplier shall first submit 01 copy of GA, foundation drawings with details of construction of foundations, complete layout of machine elements like bed, hydraulic tank, coolant tank, electrical panel, Servo Controlled Voltage Stabilizer etc. and other related diagrams (Mechanical, Hydraulic, Electrical & Electronics) along with machine weight, overall dimensions, electrical load with length of 3 phase, 415 V AC electric power cable for approval as per time schedule specified in Section-II to consignee and to enable the consignee for making necessary arrangements for Installation & Commissioning of Machine on receipt. After getting approval from consignee, the supplier shall supply directly to each consignee 6 copies of approved GA, foundation drawings and related diagrams as per time schedule specified in Section-II from the date of approval of GA drawing for information only. This information should be furnished on the pattern indicated in detail in the following IS Specifications (Latest) or relevant international standards

i) IS: 2974 (Pt.I Para 4.1) for reciprocating type machine.
ii) IS: 2974 (Pt.III Para 3.1) for rotary type machine (medium & high frequency.
iii) IS:2974 (Pt.IV para 4.1) for rotary type machines of low frequency.
iv) IS: 2974 (Pt.V para 3.1) for impact type machines other than hammers.

11.2. APPROVAL OF GA DRAWING (Applicable for machines wherever delivery period is linked with approval of GA drawing)

To be governed by Time Schedule in clause 7 of section-II and following stipulations.

11.2.1 General Arrangement Drawings will be sent by the 'Contractor' to the Consignee as per Time Schedule annexed in LOA/AT. The 'Contractor' should ensure that drawings sent to consignee are complete in all respects as specified in technical specification. The GA drawings shall be approved by the consignee and given back to the contractor as per the Time Schedule in the LOA/AT.

11.2.2 Delays in submission of drawings by Contractor will be added to the delay in supply of machine in case submission of GA drawing is delayed beyond stipulated time as per time schedule and LD will be levied as per IRS Conditions of contract. Thus the number of days delay in submission of GA drawing plus the number of days delay in supply of machine together will be taken as the delay in supply of machine, — for the purpose of calculations of LD. However if the contractor supply the machine before original delivery period as per Specification and the number of days by which machine has been supplied earlier than original delivery period that many days will be subtracted from the delay in submission of GA drawings and LD will be levied accordingly. Delays in approval of the drawings by consignee will not be on account of Contractor,except as detailed below.

11.2.3 In case Consignee finds some deficiencies in the Drawings and returns the same for rectification to the 'Contractor', the contractor must return the rectified drawings within 30 days from the date of issue of letter by Consignee. This period will not be counted towards LD calculation. The consignee shall ensure that all deficiencies in the Drawings shall be pointed for clarifications to the firm together at one time only instead of piecemeal multiple reference.

11.2.4 A repeat back reference(s) by Consignee to Contractor pointing out further

defects/deficiencies in the Drawings, will be considered a delay on account of the contractor, except for special circumstances like change in location, review of arrangement etc. Thus, Contractors must take utmost care in ensuring completeness as per requirements of the Consignee.

11.2.5 Where GA Drawing cannot be approved by consignee due to clear site not being available etc., the Consignee must inform Contractor and M&P/RCF, explaining the exact delay. However, initiative must be taken by Contractor to obtain such a certificate from Consignee. Contractor must bring any difficulty/dispute to the notice of M&P/RCF immediately.

11.2.6 In their own interest, contractor must maintain a log of events in this respect with clear dates and regularly inform consignee and M&P/RCF to avoid wrong levy of LD. Consignees must cooperate with Contractors by providing all assistance, including clear information about any expected delays in site availability, promptly and in writing.

11.2.7 If an order has been placed on the firm, the firm will have to advise the consignee well in advance regarding requirement of road permit and assistance required from the consignee, if any, so that delay on this account is avoided. Firm should also visit the site before dispatch of machine to assess the condition of path to be used for movement of trailer.

11.3 DISPATCH OF THE MACHINE FROM MANUFACTURER WORKS:

11.3.1 The supplier should normally dispatch the machine only after the foundation is ready for installation and commissioning of the machine on arrival.

11.3.2 In case of delay on part of consignee in providing the clear site for construction of foundation or any other facility as specified in the contract to the supplier, the supplier will report the matter to M&P/RCF and consignee.

11.3.3 In case proving of component at manufacturer works, the supplier should request for the same as soon as possible after receiving contract keeping allowance of transit time etc. and approximately 60 days for consignee to handover the parts after receipt of the request accompanied by appropriate and valid bid guarantee. In the event of consignee certifying the non- availability of prove out components, such components will be deemed to be proved out at manufacturer works. However the firm will prove out these components at consignee subject to the availability.

12.0. INSTALLATION, COMMISSIONING AND PROVING TESTS: (ON TURNKEY BASIS)

12.1. **Joint Check** — The contractor or his agent would be required to carry out a joint check at consignee's end, along with the consignee, before unpacking is done, to avoid subsequent complaints regarding short shipment/transit damages. It is necessary that this joint receipt inspection be done immediately on receipt of the machine by consignee & bidder's representative to avoid commissioning delays due to shortages/transit damages. After receipt of the machine as above a Joint Receipt Inspection note (JRI) as per Annexure-A shall be prepared by the consignee and the firms representative indicating the tentative time schedule for various activities of installation and commissioning. For Indian manufacturers, JRI note shall accompany the bill for 80% payment.

12.2. **RESPONSIBILITIES OF CONSIGNEE AND BIDDER**

12.2.1. The consignee shall be responsible for-

i) Provision of a clear covered (except where shed is in the scope of contract) site for construction of foundation as per the schedule to ensure its readiness before arrival of machine at site.

ii) In case where construction of shed is also in the scope of contractor the consignee shall ensure site is encroachment and encumbrance free.

iii) Electricity, water and compressed air for installation and commissioning of machine shall be provided free of cost within one week of arrival of machine at site.

iv) Whenever a road mobile crane has to be arranged by the supplier for material handling, a clear approach for it up to the site has to be provided.

v) Clear covered space for storage of material/equipment required for working/ construction of foundation and installation of the machine etc.

vi) The consignee shall arrange the raw material for prove out at their end within 15 days of the dry run of the machine (installation, power connection, auxiliary connection like air, water connection) failing which such components will be deemed to have been proved out. The components supplied by the consignee in time will be required to be proved out as per time schedule chart.

12.2.2. The bidder shall be responsible for-

i) Design of foundation as well as flooring (if required) of sufficient thickness, suiting local soil conditions at the site.

ii) Advise consignee in time regarding schedule for requirement of clear site for construction of foundation and other infrastructure, resources & facilities required.

iii) Construction of foundation as well as flooring (if required) of sufficient thickness suiting local soil conditions, for machine shall be completed by the bidder at the site provided by the consignee before receipt of the machine at their premises.

iv) Provision of all tools and equipment, technical and unskilled manpower, material handling accessories/ equipment and material for installation and commissioning.

v) Unloading of the machine on receipt (both imported and indigenous machine) and its movement to the site of installation including provision of road mobile crane.

12.3. The bidder should ensure the proper earthing for the machine and its peripherals/accessories.

12.4. Consignee will provide only 415 V+10%-20%, 3 phase 50 Hz+3°/» AC supply at a single point (mains). All types of cables, connections, circuit breakers etc. required for connecting power supply point to different parts of the machine/control cabinets, shall be the responsibility of the bidder. Requirement of grounding/earthing with required material shall also be incorporated by the bidder during construction of foundation.

Electrical work like laying of power/electrical cables & earthing wires from mains to machine control panel (upto 20 meters) as well as within the machine, with supply of all materials shall also be carried out by the supplier.

12.5. The supplier shall demonstrate machine performance for successful commissioning at the consignee's works. The M&P shall be deemed to be “commissioned” at consignee premises on the date when it is tested and meets with the specified capabilities/functions according to the technical specifications. In addition to above, in case of tooled-up M&P ,

the M&P shall be deemed to be "Commissioned" at consignee premises on the date when "prove out" components specified as per the relevant clause of technical specification have been successfully proved out meeting the productivity requirements of Technical specification. The consignee shall arrange the raw material for prove out at their end within 15 days of dry run of the machine (installation, power connection, auxiliary connections like air, water etc.) failing which such components will be deemed proved out. The components supplied by consignee in time will be required to be proved out as per time schedule chart. Any delay in providing the "raw material or any other input" for proving out shall not be logged on supplier's account.

A Joint Commissioning Note (JCN) to this effect shall be made as per the format at Annexure-B. After issue of JCN the performance shall be watched for a period of one month, after which the PTC shall be issued. The issue of PTC cannot be delayed by more than 60 days from the issue of JCN. If some minor breakdowns are noticed after the issue of JCN, these shall be attended as per warranty obligations and suitable extension of the warranty period, under intimation to M&P/RCF. If no intimation is given to M&P/RCF and the PTC is not issued till the expiry of 60 days from the issue of JCN, then the issue will be discussed in a meeting between CPE/RCF and the consignee. Based on this, decision to issue PTC will be taken by CPE/RCF, the concerned technical officer and PCME/RCF.

12.6. If an assembly/sub-assembly requires to be taken back to the manufacturer's premises for repair/replacement either before commissioning or during warranty, the manufacturer or his agent would be required to submit BG of suitable amount. In case the entire machine has to be taken back, a Bank Guarantee for the cost of the machine would have to be submitted. The bank guarantee should be of adequate value so as to cover the cost of the assembly/sub-assembly/paid up cost of the machine.

12.7. The performance appraisal report/ Warranty Discharge certificate in the format as per the Annexure-C would be issued by consignee on completion of warranty period should be prepared by the consignee and given to the firm. Copies of this performance appraisal report/ Warranty Discharge certificate should also be sent to PCMM, PFA/RCF and CPE. On getting the performance appraisal report/ Warranty Discharge certificate, the firm will request PCMM for release of WBG. If this report is not received within the validity of WBG, the WBG should either be extended for one year or encashed as the case may be as provided under the rules.

13.0 SERVICE FACILITY IN INDIA AND TECHNICAL SUPPORT

13.1 The tenderer will clearly spell out in the offer the facilities available with him or his agent for providing adequate after-sales service in India during warranty period. The complete details such as organization for after sales service, availability of technically competent engineers and warehousing facilities for spares should be clearly indicated. Bidders not offering complete servicing/repair facilities in India to ensure quick response to maintenance/ servicing calls are not likely to be considered.

13.2 After the warranty period and AMC period, if any, the manufacturer or his agent shall agree to provide service supports for trouble shooting and obtaining spare parts. The manufacturer shall be obliged to provide spare parts required by the Purchasers for a period of 15 years from the date of delivery of the machine at the ultimate destination to

safeguard against obsolescence.

13.3 Tenderer who are OEM, shall undertake to supply spare parts for a period of expected life of machine. Other tenderers shall submit undertaking from OEM for supply of spare parts for a period of expected life of the machine.

13.4 During warranty period, the supplier or his authorized agent shall attend for break down as soon as possible, but in no case later than 72 hours of receipt of intimation of the breakdown.

14.0 BOUGHT OUT ITEMS

14.1 The bidder shall furnish along with the offer a list of all critical items/ sub-assemblies which are bought out by the bidder and proposed to be used, along with the manufacturer's name, brand model etc. **The successful bidder may be required to produce invoices to ensure genuineness of such products / verification by the Inspecting agency.**

15.0 **COLOUR:**

The machine and its accessories shall be painted in Apple Green Colour No.281 to IS:5-1978,(if any specific colour code standardized by BIS is available, the same be given). The machine can also be painted in equivalent RAL/DIN/other International Standards. If there is a standard color scheme of the manufacturer, the same can also be considered and may be specified

16.0 WARRANTY OBLIGATION

The following conditions regarding Maintenance and reliability shall also apply:-

16.1 The machine shall be designed for a life of 20 years with regular maintenance and all the main structural members of the machine shall be guaranteed for 20 years against cracks and breakages etc. during the course of normal operations. Tenderer to submit suitable undertaking to this effect.

16.2 The machine shall at all times give contractual out-put and accuracy. Any deficiency or break down for a total of 02 hr. or more for a day would be treated as failure for the day, for the purpose of extending warranty period in terms of clause IRS conditions of contract.

16.3 Maximum permissible down time till it is restored back to the contractual output and accuracy levels, in any quarter of the year during the warranty period, shall be 150 hrs. in case the total breakdown period in any one of year during warranty period, exceeds 500 hrs., penalty will be levied on the bidder for breakdown period on working days basis(excluding holidays). Penalty will be calculated as %age of Annual Preventive Maintenance charges and will be deducted from the respective annual payments as under:

16.3.1 Penalty Clause: Complaint Resolution

a. **Fast Complaint Resolution:**

1. In the event that the Client raises a complaint regarding the quality, performance, or adherence to contract terms by the Service Provider, the Service Provider shall

acknowledge to initiate a resolution process within 24 hours of receiving the complaint.

2. Failure to initiate the resolution process within the specified timeframe shall result in an immediate penalty equivalent to 1/2% per week of the total contract value for each unresolved complaint.

b. **Prompt Rectification:**

1. Upon identification of any issue leading to a complaint, the bidder shall undertake all necessary measures to rectify the issue within 48 hours from the initiation of the resolution process(i.e after completion of first 24 hrs of receiving of complain).

2. Should the Service Provider fail to rectify the issue within the stipulated timeframe, a penalty equivalent to 1/2% per week of the total contract value for each unresolved complaint shall be applied.

c. **Calculation and Application of Penalties:**

1. Penalties shall be calculated based on the total contract value specified in this Agreement.

2. The maximum penalty for any breach under this clause shall not exceed 10% of the total contract value.

d. **Cumulative Penalties:**

1. The penalties outlined in this clause are cumulative and do not replace other penalties stipulated in this Agreement.

16.3.2 Contractor shall provide regular and scheduled maintenance for all supplied items as per the manufacturer's guidelines and industry standards. Maintenance shall include inspections, cleaning, adjustments, and necessary repairs to ensure the items remain in optimal working condition. The maintenance schedule shall be submitted to the consignee for approval within 15 days after the commissioning.

16.3.3 In the event of any maintenance-related issues or concerns, OEM/supplier shall have web-based complaint management system to lodge a complaint. The web-based system shall possess the following qualities:

a. User-Friendly Interface: The system should be intuitive and easy to navigate, allowing users to submit and track complaints seamlessly.
b. Secure Access: Authorized users shall require login credentials to maintain confidentiality and prevent unauthorized access.
c. Mobile Compatibility: The system should be accessible on various devices for convenient complaint submission.
d. Instant Notifications: Users shall receive automated updates on complaint submission, acknowledgment, and resolution.
e. Categorization and Priority Setting: Users should categorize complaints and set priorities for clarity and urgency.
f. Attachment Support: Users can attach relevant documents, images, or videos to provide context.

g. Timeline Tracking: A built-in timeline or dashboard shall enable real-time tracking of complaint progress.
h. Communication History: All interactions related to a complaint shall be documented within the system.
i. Multi-Language Support: The system shall accommodate users from diverse linguistic backgrounds.
j. Escalation Mechanism: Unresolved complaints shall be escalated through an automated process.
k. Data Analytics and Reporting: The system shall generate reports on complaint trends and resolution metrics.
l. Data Security and Compliance: The system shall adhere to data protection regulations and industry standards.

16.3.4 The contractor shall acknowledge complaints within 24 hours and provide an estimated resolution timeline. Any unexpected issues or breakdowns shall be addressed within 24 hours.

16.3.5 Documentation of all maintenance activities and reports, including complaint resolution, shall be submitted to the consignee through the web-based system on a monthly basis. These reports shall detail the maintenance performed, parts replaced, and recommendations.

16.3.6 The contractor shall ensure that qualified and trained personnel perform maintenance tasks. If a specialized repair is needed, personnel with expertise shall be deployed.

16.3.7 Should the contractor fail to address maintenance concerns within the agreed-upon timeframe, the consignee reserves the right to engage third-party maintenance services, with costs borne by the contractor.

16.3.8 Additionally, the contractor shall conduct an annual comprehensive inspection and maintenance review, providing a detailed report on the item's condition, risks, and preventive measures.

16.3.9 Failure to adhere to the maintenance schedule, timely resolution of complaints, provision of proper documentation, or neglecting the annual comprehensive inspection may result in penalties, deductions, or contract termination."

16.3.10 **Personnel at consignee premises for service support:** The firm must provide one technically skilled manpower, with minimum qualification of ITI, proficient in all technical aspects related to the machinery, including expertise in IoT implementation. This manpower should be available on a full-time basis throughout the entire warranty period and stationed at the office of Dy.CPE-II/ RCF/KXH. The cost of the machinery as quoted by the bidder should encompass the expenses associated with the aforementioned manpower. Any separate cost quoted in the bid for manpower will not be considered during commercial evaluation of the bid."

17.0 ANNUAL MAINTENANCE CONTRACT

17.1 Tenderers are required to quote for a comprehensive Annual Maintenance Contract for the machine supplied against this specification for a period of ten years on yearly basis giving the rates for each year i.e. first year, second year..so on., which will be inclusive of all spares, material and labour costs. The duties and taxes as applicable should be indicated separately. All consumables spares and materials shall form a part of the scope of comprehensive AMC except as follows.

a. Diesel/Fuel, lubricating oils or coolant

b. Major machines elements/structural members which are under guarantee for a period specified in clause 16.1 as stipulated in 'warranty obligations' requirement.

17.2 AMC shall be operated, managed and paid by the Dy. Chief Plant Engineer (Mechanical Maintenance). Dy. Chief Plant Engineer (Mechanical Maintenance) shall indicate the bill payment authority & custodian of the AMC BG. No further agreement is required for operating AMC at consignee end.

17.3 AMC is included in commercial evaluation criteria vide clause 5 of Section-II but will not be a part of contract value.

The detailed terms and conditions of AMC shall be as given in following clauses.

17.3.1 The duration of AMC shall be 10 years from the date of expiry of warranty. Rates for AMC shall be quoted by the tenderer on yearly basis, which will remain applicable during the duration of AMC and not subject to any variation except any statutory changes in taxes and duties as compared to quoted rates.

17.3.2 The tenderer must provide AMC services at the consignee location without any precondition. The AMC should include complete responsibility for the bought out sub assemblies and components like CNC system, diesel engine, AC unit etc. *AMC Services shall be done by qualified service personals of OEM Only*

17.3.3 The details of preventive maintenance services including cleaning of machine to be provided under AMC shall be provided by the tenderer in the following format.

S.No	**TYPE OF PREVENTIVE SCHEDULE**	**PERIODICITY**	**ITEM TOBE CHECKED**	**ITEMS OF REPLACEMENT**	**EXPECTED PLANT DOWN TIME**

17.3.4 Preventive maintenance shall preferably be conducted on weekends through mutual agreement with the consignee. Each preventive maintenance schedule normally shall not exceed one day. The total shutdown time for preventive maintenance should be kept as low as possible but not more than 60 hours/month (averaged over the quarter) including time for cleaning, weekly, fortnightly, monthly, quarterly schedules etc. The preventive maintenance regime offered must be aimed at achieving minimum 90% uptime of the plant excluding the plant down time for preventive maintenance schedules.

17.3.5 *In case of AMC, the tenderer shall ensure 24x7 availability of qualified service engineer (At least one representative should stay at RCF in order to minimize response time) at the consignee premises to attend the machine in case a failure occurs and no grace period shall be provided. If no qualified service engineer is available to attend the machine in case a failure occurs then suitable penalty (apart from the penalty levied due to non-availability of machine) shall be levied on the tendered (Rs. 6000/day basis).* Complaints shall be lodged by consignee by fax, e-mail or per bearer at address given by the tenderer. The responsibility to keep the failure reporting address details current will rest with the tenderer.

17.3.6 Incase preventive maintenance is carried out alongwith breakdown maintenance schedule; preventive maintenance time will be deducted from breakdown time of the plant.

17.3.7 Penalty Clause: Penalty shall be levied on the tenderer for maintaining plant up time below the limit of 90% calculated on working days basis, after discounting for grace period and preventive maintenance period. Penalty shall be calculated as %age of quarterly payment

and will be deducted from the respective quarterly payments. Penalty calculation will be done over quarter

S.No.	Availability Slab	Applicable Penalty
1.	90% to 80%	0.5% for every 1% (or part there of} reduction in availability of plant below 90%.
2.	**below80%**	1% for every 1% (or part thereof) reduction in availability of plant below 80%.

17.3.8 A Bank Guarantee equal to 1/4 of annual value (highest of the annual values if the rates offered for various years are different) of AMC subject to a minimum value of 1.25% of the quoted cost of machine including concomitant accessory (in case the annual AMC rate quoted is less than 5% of the cost of machine), will be submitted by the renderer to the consignee 90 days before the expiry of warranty. AMC will have the validity of 10 years 6 months. The bidder can submit multiple BG for lesser duration to cover the period of 10 year 6 months ensuring the uninterrupted validity of the AMC BG for 10 year 6 months. The confirmation for the submission of this BG will be returned on completion of AMC period. In case, the tenderer fails to provide AMC services successfully, the AMC BG will be forfeited. This will be in addition to penalty as per clause 17.3.7 above. This provision would not be applicable where the advance payment is made.

17.3.9 Plant up time of less than 60% for two consecutive quarters will constitute complete failure of renderer to provide the AMC services successfully and will result in forfeiture of AMC BG, besides other action like noting adverse performance of the bidder and/or agent for future tenders and their offer in the subsequent tenders will not be considered for placement of any order. This will be in addition to penalty clause 17.3.7 above for the period of actual performance.

17.3.10 As per clause 5.0 of section II, where AMC is part of evaluation of offer, it is the sole responsibility of bidders to stock all spares and materials as required for smoother execution of AMC in order to achieve response time in compliance to machine availability as per stipulated requirements.

17.3.11 In all cases of plant failure except as mentioned in clause 17.3.10.2, any other spare part or material necessary to restore the plant to proper working order will be arranged by the tenderer as a part of AMC.

17.3.12 In case of damage to the machine on account of any external factor, viz., floods, earthquake, fire, arson or sabotage, entire cost of spare parts and material necessary for repair of the plant shall be borne by the railways. However, the tenderer shall provide services of their engineers free of cost as a part of AMC to restore the plant to working order.

17.3.10.1 In case of damage to the plant as mentioned in para 17.3.10.2, any spare parts and material necessary to restore the plant to proper working order shall be arranged by the tenderer and charged on actual basis duly certified by authorized railway official in the next quarterly bills. The rates charged for such spare parts shall be based upon the spare part rate list provided by tenderer. The tenderer shall furnish documents to support the rates charged for spares used for repair under para 17.3.11(a).

17.3.13 Normally quarterly payment (@ 1/4*’ of the annual quoted rates) under AMC will be

made to the tenderer within 30 days from the end of that quarter subject to submission of the following documents by the tenderer to the paying authority assigned by the consignee:

a. Consignee's certificate for work done with calculation of down time and penalty applicable.

b. A certificate by consignee that no spare part is due with the tenderer as per clause 17.3.10 above.

c. Bills submitted by the tenderer & accepted by consignee.

d. Attested photocopy of the AMC BG.

17.3.14 The AMC contract can be terminated in following ways:
Consignee may terminate the AMC in the event of failure of tenderer to provide AMC services of the AMC agreement in addition to encashing of AMC BG as per clause 17.3.8.

17.3.15 Other general conditions shall be governed by Section-I, II and III as applicable to respective specification.

SCHEDULE-I

1. **Leading Parameters**

i. Bearing distance range :50 to 2500 mm

ii. Journal diameter range :30to210mm

iii. Bearing width range :100to450mm

iv. Balancing speed range :200to1000rpm (Infinitely variable)

v. Residual imbalance in each plane: 0.1 microns (gm-mm/Kg.)

vi. Minimum readable imbalance :0.5gm-cm

vii. Limits for out of balance moment: As perTable7of BS 5892Pt.3

viii. Power supply :415V+/-10%,50Hz.+/-3%

ix. Unbalance reduction ratio :94%(minimum)

2. **Job parameters**

i. Maximum weight of job: 3000 Kg.

ii. Maximum length of job :3000mm

iii. Maximum job diameter :750 to1250mm

iv. Taper on wheel tread :1 in 20

v. Surface hardness at tread :241to 277BHN

vi. Surface finish :25 microns Ra

vii. Service speed :120 to 200Kmph

No deviation in above parameters is permitted.

ANNEXURE-I COMPUTER SYSTEM

Only IBM, Compaq, Lenovo, HP makes are acceptable:

CPU	Inteli5 CPU@3.10GHz or Higher
Mother Board	IntelQ77chipset OEM Certified
Memory	4GB DDR3 RAM or Higher
Hard Disk Drive	1TB 7200RPM or Higher
Monitor	17”LED (Support1366x768NIResolution) of same make of CPU
Multi Media Card	Soundcard, Inbuilt/2amplified speakers and Microphone
Key Board	104KeysBoard
Mouse	Optical Mouse with Mouse Pad
Ports	Minimum 4USB Ports in front and 4 USB Ports on back side.
Cabinet	Desktop/Mini Tower
DVD Drive	DVD RW drive
Printer	HP office jet Pro6230 e printer or HPdeskjet7000 wide format printer or similar.
Networking Facilities	Ethernet Card in built in motherboard.
Operating system	Microsoft Window 11 professional or latest along With licensed MSoffice latest version and Norton 360 Antivirus with two year licensed pack.

ANNEXURE-A

JOINT RECEIPT INSPECTION NOTE

***Note**: With the issue of JRI, payment is released to the contractor, as per the terms of contract. Consignee shall satisfy themselves that the conditions of contract are met before issue of the JRI.*

Date……..

Sub: Receipt of consignment for machine…….
Ref: RCF/KXH Contract No…….

1.	Name of consignee/Railway	
2.	Machine name	
3.	Quantity	
4.	Name of supplier	
5.	Consignment of the machine received on	
6.	The foundation & associated works essential for "Safe Installation of Machine" are ready (for turnkey contracts only) *****	

***** *If there are Delays on account of Consignee such as clear site is not given, then the condition 6 will not be a valid ground for holding JRI.*

It is certified that the consignment of the machine has been received complete and in good condition as per specification shown in the contract.

Tentative plan for installation and commissioning of the machine is as under:

1.	Date of clear site provided	
2.	Contract	Turnkey/Non-turnkey
3.	**Status of readiness of foundation:**	
3(a)	Already constructed on	
3(b)	Under construction & likely date of its completion	
3(c)	Construction yet to be started from and likely date of its completion	
4.	Status of availability of electrical power, water and compressed air etc.	Available/Not-available
5.	Number of components to be proved out on the machine	
6.	Likely date for start of erection/installation	
7.	Likely date for switch-on the machine	
8.	Likely date of completion of commissioning of the machine	

Representative of firm
Designation

Representative of consignee
Designation
(Minimum Gazetted level)

ANNEXURE –B

JOINT COMMISSIONING NOTE

Date:……

Sub: Commissioning of (name of machine)…….

Ref: RCF/KXH AT No…….

1.	Name of consignee/Railway	
2.	Machine name	
3.	Quantity	
4.	Name of supplier	
5.	Machine received on	

6. All the parameters of the machine are found okay. The proving test on the machine was conducted from …… to …….. and machine is working satisfactorily.

7. Machine has finally been commissioned on…….. . The machine has been handed over for regular use and kept under one month observation to watch its performance.

8. Following minor deficiencies (if any) found during joint observation trials are to be attended/rectified by the firm during one month observation and before issuing the PTC for the machine:

   a.

   b.

   c.

Representative of firm
Designation

Representative of consignee
Designation
(Minimum Gazetted level)

ANNEXURE –C

PERFORMANCE APPRAISAL FORM/ WARRANTY DISCHARGE CERTIFICATE

APPRAISAL ON COMPLETION OF WARRANTY PERIOD

Dated:……

To, M/s. ……

1.	RCF PO No.	
2.	Consignee/Railway	
3.	Name of supplier	
4.	Machine Name	
5.	Machine received on	
6.	Machine commissioned on	
7.	PTC issued on	
8.	Warranty period expired on	
9.	**Performance during warranty period:**	
9(a)	Total number of breakdowns	
9(b)	Total downtime in number of days	
10(a)	Any warranty complaint pending on date	Yes/No
10(b)	If yes, then the date and nature of defect(s)	

11. In case, Reliability clause of the machine during warranty period is also given in, then following details of breakdown hours for preceding eight quarters may also be furnished.

Quarter	Period From -------To--------	Breakdown hours
1		
to		
8		

In view of the foregoing, the successful Warranty Completion, all obligations in respect of Warranty for the said machine on part of _____ (Supplier Name) stand discharged/ not discharged as on ____ (date)

Signature----------
Name----------

Designation: DY.CME (User Shop)
Office Stamp

PCMM/RCF
PFA/RCF
CPE/RCF
Note:
i.) This appraisal may please be sent immediately on completion of warranty period. If any extension of warranty period required, may please also be mentioned with details.

ANNEXURE-D

PROFORMA FOR ASSESSING MANUFACTURING CAPABILITY OF THE OEM TO MANUFACTURE CNC CONTROLLED DYNAMIC WHEEL BALANCING MACHINE WITH CORRECTION MACHINE

Tender No. ..... Date of Opening.....

1. NAME OF THE OEM/ BIDDER

2. LOCATION & ADDRESS

Postal Address

i) Head Office

ii) Works/Factory

Telephone No. (with STD code)/ Mobile Number

i) Regd. Office

ii) Works/Factory

3. DESCRIPTION OF FACTORY/WORKS

i) Total Land area (in Sq. meters)

ii) Total covered area(in Sq. meters)

iii) Different Sub-units (with details of covered/uncovered area, etc.)

iv) Special features, if any:

4. NO. OF PERSONNEL EMPLOYED (CATEGORY-WISE)

i) Managerial*

ii) Supervisory*

iii) Skilled artisans

iv) Unskilled

* The qualification may also be indicated.

5. GENERAL INFORMATION- TECHNICAL

Description of different departments in the Factory/Works along with an organization chart

Detailed description of machinery and plant in each department (make and year of procurement).

For special type of equipment /machinery, copy of pamphlet/ write-up to be furnished to support the description.

Details of raw-materials held in stock (state whether imported/indigenous).

Production capacity of the quoted items

i) Per month

ii) Per year

List of other items, which the firm regularly manufactures and corresponding production capacity.

6. DESIGN CAPABILITY

Details of Qualified Personnel (indicating qualification and experience)Other facilities available.

7. MANUFACTURING PROCESS

Level of in-house facilities

Important items for which work done by outside vendors.

Brief details of manufacturing process relevant to the items quoted.

8. QUALITY ASSURANCE

Does the factory have an established Quality Assurance Programme? If yes, please enclose a copy of the write up? If not, what plans are there if any for setting it up?

Details of Quality Assurance Organization. Quality Control Testing Facilities and Laboratory equipment available. In-house facilities available for inspection and QC. Availability of gauges (details to be furnished)

9. AFTER-SALES-SERVICE

Facilities available at works and branch offices/ authorized service centres/ service delivery partners.

Signature.....