An ISO 9001 Company

Bharat Heavy Electricals Limited
(High Pressure Boiler Plant)
Tiruchirappalli – 620014, TAMIL NADU, INDIA
CAPITAL EQUIPMENT / MATERIALS MANAGEMENT

ENQUIRY **NOTICE INVITING TENDER**		Phone: +91 431 257 7421/ 7297 Email : vkaruna@bhel.in , hari.r@bhel.in Web : www.bhel.com	
TWO PART BID Tender to be submitted in two Parts	**Enquiry Number:** **2622000017**	**Enquiry Date:** **16.09.2020**	**Due date for submission of quotation:** **12.10.2020**

You are requested to quote the Enquiry number date and due date in all your correspondence. This is only a request for quotation and not an order. **Please note that under any circumstances both delayed offer and late offers will not be considered. Hence vendors are requested to ensure that the offer is reaching physically our office before 14:00 hrs on the Date of tender opening.**

Item	Description	Quantity
10	**Trolley Mounted Idler Unit of 100 Ton Capacity for Job Rotator** as per the technical specification & commercial conditions applicable (to be downloaded from web site **www.bhel.com** or **https://eprocure.gov.in/epublish/app**)	**1 No.**
20	**Trolley Mounted Idler Unit of 150 Ton Capacity for Job Rotator** as per the technical specification & commercial conditions applicable (to be downloaded from web site **www.bhel.com** or **https://eprocure.gov.in/epublish/app**)	**1 No.**

Important points to be taken care during submission of offer

1. **Delivery terms shall be FOR BHEL Stores, Trichy.**
2. **Compliance Form ATP/ TRY/ IND/ 06 to be filled and enclosed along with the offer failing which, the offer will not be considered for evaluation.**
3. **EMD applicable for this enquiry is INR 1,00,000/-**
4. **Delivery period required is 4 months from the date of Purchase Order.**
5. **Erection and commissioning activities shall be done by the supplier, at BHEL, Trichy works.**
6. **Time period required for Erection and Commissioning activities shall be 3 weeks from the date of intimation by BHEL**
7. **Since the enquiry contains two line items, the price bid shall be submitted in separate sealed envelope for each individual line item.**
8. **Procurement of the item through this NIT will be as per Public Procurement (Preference to Make in India), Order 2017 dated 04.06.2020 by DPIIT (DPIIT Order No.P-45021/2/2017-PP (BE-II) dated 04.06.2020), to encourage 'Make in India ' and promote manufacturing and production of goods and services in India.**
9. **All updates, amendments, corrigenda, etc., (if any), for each tender will be posted only on the above websites from time to time, as and when required, until each tender is opened. There will be no publication of such updates, amendments, corrigenda, etc., through newspapers or any other media.**

BHEL's General guidelines / instructions (refer MM/CE/GENL/001- EMD), compliance form and technical specification can be downloaded from BHEL web site http://www.bhel.com or from https://eprocure.gov.in/epublish/app under Enquiry reference "2622000017".

Tenders should reach us before 14:00 hours on the due date Tenders will be opened at 14:30 hours on the due date Tenders would be opened in presence of the tenderers who have submitted their offers and who may like to be present	Yours faithfully, For **BHARAT HEAVY ELECTRICALS LIMITED** **R. HARI** **Engineer** **MM / Capital Equipment** **BHEL, TRICHY - 620 014** Engineer / MM/ Capital Equipment

TROLLEY MOUNTED IDLER UNIT OF 100 TON CAPACITY FOR JOB ROTATOR, Qty. 1 No.

Part A

S. No	BHEL Specification	Bidder's Response
1.0	**QUALIFYING CRITERIA**	
1.1	Only those Bidder / OEM who have manufactured, supplied and commissioned **at least ONE JOB ROTATOR OF 100 TON (OR) HIGHER CAPACITY in the last 10 years** (as on the first date of tender opening) are eligible to quote**.**	
1.2	Bidder has to submit at least ONE Performance Certificate from their customer (end user), for satisfactory performance of the equipment mentioned in S No 1.1 above meeting the following conditions: a) The Equipment must have been supplied within the last 10 years as on the first date of tender opening. b) The Equipment must have performed satisfactorily for at least one year during this period. For obtaining the Performance certificate, a suggestive format is provided at the end of part-A.	
1.3	PO document for the above mentioned supplied equipment to be enclosed	
1.4	BHEL reserves the right to verify the information provided by the Bidder. In case the information provided is found to be false/ incorrect, the offer is liable for rejection.	
2.0	**INFORMATION TO BE PROVIDED BY BIDDER**	
2.1	Bidder shall provide contact details(phone no & email id) including the address of his Agents / Service Centres in India	
2.2	Details of VARIABLE SPEED JOB ROTATORS supplied to other BHEL units if any	
2.3	The BIDDER to furnish Reference List of Customers(max 10 customers) including Contact details(phone no & email id).	
3.0	**The BIDDER to note:**	
3.1	The BIDDER shall submit the offer in **Two Parts** – 1. Technical [with PART A & PART B] & Commercial and 2. Price Bid.	
3.2	The Bidder's offer against each clause in PART A & B of the offer should be filled by the BIDDER compulsorily with complete details.	

S. No	BHEL Specification	Bidder's Response
3.3	The BIDDER shall assure a continuous support for Spares and Service for Ten Years, from the date of commissioning of the equipment at BHEL Works.	
3.4	The Technical Offer shall be supported by Product Catalogue and Data Sheets in original and complete technical details / literature on the quoted equipment.	
3.5	The Commercial Offer (given with the Technical Offer) shall contain the Scope of Supply and the Un-Priced Part of the Price-Bid, for confirmation.	

Suggestive Format of Performance Certificate:

The performance certificate to be produced **on Customer's Letter Head.**

PERFORMANCE CERTIFICATE

1	Make of the equipment	
2	Month & Year of Commissioning	
3	Application for which the equipment is used	
4	Capacity of the equipment in Tons	
5	Performance of the equipment (Strike off whichever is not applicable)	Satisfactory / Not Satisfactory
6	Service support after sales (Strike off whichever is not applicable)	Satisfactory / Not Satisfactory
7	Any Other remarks	
8	This performance certificate was issued on:	…… (DD/MM/YYYY)

Signature & Seal of the Authority
Issuing the Performance Certificate

Contact details of issuing authority
Name & Designation:
Office No/ Mobile no:
Email ID:

TROLLEY MOUNTED IDLER UNIT OF 100 TON CAPACITY FOR JOB ROTATOR, Qty. 1 No.

Part B - Technical Specification

S. NO.	BHEL SPECIFICATION		BIDDER'S OFFER with technical details
1.0	**APPLICATION:** The trolley mounted Idler Unit Job Rotator is meant for the movement of large diameter cylindrical pressure vessels of approximate 200 tons from one work centre to another mounted on a set of drive and idler rollers, positioned on self-powered trolley type job rotators and moved on broad-gauge rails (90 lbs/yard). The load bearing capacity of the trolley mounted idler unit shall not be less than 100T (Individually) and is to be used in pair with the existing trolley mounted drive unit Job rotator at BHEL to handle Job weight of 200 tons. (Please refer ANNEXURE-A for existing trolley mounted drive unit details).	Bidder to note and Confirm	
1.1	**JOB DETAILS**: Plain cylindrical shells of multiple diameters welded in line and with hemi-spherical end-covers at the free-ends. The finished shells have nozzles/attachments/Buttering welded to the outer periphery of the shells (as indicated in the Cross-Sectional View). The job dimensions are given as follows:- a) Minimum diameter of the job: 900 mm b) Maximum diameter of the job: 3500 mm c) Minimum length of the job: 5000 mm d) Maximum length of the job: 10000mm e) Minimum weight of the job: 10 Tons. f) Maximum weight of the job: 200 Tons.	Bidder to note	
2.0	Design, Manufacture and supply of the equipment along with prove out and training at BHEL works as per BHEL specifications shall be in Supplier's scope	Bidder to confirm	
3.0	**TECHNICAL PARAMETERS**		

S. NO.	BHEL SPECIFICATION		BIDDER'S OFFER with technical details
3.1	Weight Carrying Capacity of Idler unit : 100 Metric Ton.	Bidder to confirm	
3.2	Eccentric Loading: 10 % of the maximum Weight carrying capacity.	Bidder to confirm	
3.3	Length of the Job rotator (Idler) across rail line: Not to exceed 3500 mm	Bidder to confirm	
3.4	Width of the Job rotator (Idler) along rail line	Bidder to specify	
3.5	Idler wheel diameter: The roller diameter should be designed such that any part of the idler assembly does not foul with the Lug during rotation as per the enclosed Annexure-B.	Bidder to confirm and provide details	
3.6	Idler wheel width: The thickness of the wheel to be designed such that it doesn't foul with any of the job parts while operation. The job details and location of the Idler is Indicated in the Annexure- B. The width should be preferably not more than 110 mm (Including bolt heads).	Bidder to specify	
3.7	Idler Rotator bearing Housing width: The size of the bearing housing should be designed to accommodate job lug such that any part of the idler assembly does not foul with the Lug during rotation as detailed in the enclosed Annexure-B	Bidder to confirm and provide details	
3.8	Height of the Job rotator: Around 1970 mm including trolley height (i.e., floor to top of idler rotator) required to match with the existing drive rollers	Bidder to confirm and provide details	
3.9	Surface speed (Constant) of existing drive unit: 600 to 750 mm/min	Bidder to note	
3.10	Idler rotator wheel material: 2 numbers of solid forged steel	Bidder to confirm	
3.11	Wheel Contact Surface Hardness : 300-350 BHN	Bidder to confirm	
3.12	Wheel Surface Profile: Crowning Surface with an angle of 3 degrees	Bidder to confirm	
3.13	**Trolley details**		
3.13.1	Number of trolley wheels for movement of Idler: Four numbers	Bidder to confirm	
3.13.2	Track Gauge: Broad Gauge -1676 mm	Bidder to confirm	
3.13.3	Trolley Traverse Speed (variable) of existing drive unit: 2 to 24 m/min	Bidder to note	
3.13.4	Trolley travel distance: 80 m	Bidder to note	

S. NO.	BHEL SPECIFICATION		BIDDER'S OFFER with technical details
3.13.5	Trolley wheels: Forged steel wheels with the single flange construction, duly hardened and to suit rail profile.	Bidder to confirm	
3.13.6	Trolley wheel axles: Forged steel axles and duly heat treated	Bidder to confirm	
3.13.7	Trolley Wheel Diameter to be suitably designed/selected to match the existing rotator height of 1970mm	Bidder to confirm and provide details	
3.13.8	Clearance of rotator base to floor level	Bidder to specify	
4.0	**DESIGN & CONSTRUCTIONAL FEATURES**		
4.1	The design and construction of the traversing trolleys of the idler rotators shall be rigid and sturdy enough to take the vibrations due to job rotation and traversing on rails.	Bidder to Confirm & Specify	
4.2	Wheel Support: The wheels are to be supported on heavy duty roller bearings and high grade steel axles. Heavy Duty Roller Bearings (Preferably double side sealed) shall be of TIMKEN / FAG / SKF make or any other make acceptable to BHEL.	Bidder to confirm	
4.3	The rotator wheel shall be able to withstand damage due to impact loading, job temperature up to 150 deg C.	Bidder to confirm	
4.4	Painting: The ROTATOR to be painted as follows: a) One coat of Primer (Zinc Chromate) with 25 microns of DFT (Dry Film Thickness) and 48 hours of compulsory curing after painting. b) Two coats of Enamel Paint [Colour Apple Green] each with a DFT of 25 microns and intermittent curing of 16 hours. c) Weight carrying capacity & Self weight shall be painted legibly on each unit.	Bidder to confirm	
4.5	Welding return cable connection on the positioner: Suitable arrangement to be provided for connecting the welding return cables and to ensure the proper conductivity of welding current through job, rotator wheels to the welding machine. The maximum welding current to be carried is 1200A.	Bidder to confirm	

S. NO.	BHEL SPECIFICATION		BIDDER'S OFFER with technical details
4.6	Markings/Indications to be provided on Rollers: a) A scale to be fixed on the base frame to identify the range of job diameters that can be loaded at that particular pitch. b) Self-weight and weight carrying capacity of the rotators should be painted legibly. The same should be punched on name plate on the job rotator	Bidder to confirm	
4.7	Provision for locking of trolley wheels in one position to avoid movement and interlock for release, prior to the start of trolley movement/traverse.	Bidder to confirm	
4.8	The trolley for traverse has to be integral with the idler rotator base and shall not give away in no circumstances and has to individually carry 100 tons where the Total job weight of approx. 200 tons (as indicated in Annexure B) is shared with the already existing drive and Idler.	Bidder to confirm	
4.9	Suitable provisions shall be provided for lubricating/greasing the bearings and gears.	Bidder to confirm	
4.10	Idler rotator shall be supported on a minimum of 4 steel wheels and two pairs of which (on either side) shall be pivoted so that the load is equally shared in case of any rail-track mis-alignment.	Bidder to confirm	
4.11	Wheel Pitch Adjustment: Each wheel assembly with Housing/Bracket and Integral Drive Unit shall be movable on the Rotator Base Frame, through a hand driven screw-rod. It shall be possible to locate and lock each wheel assembly on the Rotator Base Frame at required pitches to cover the job diameter range. The drive arrangement to be designed to avoid loading on the screw-rod while loading / after loading the job on the wheels.	Bidder to confirm	
4.12	Wheel Positioning: There shall be suitable arrangement for locking the wheel assembly with the base frame, to prevent movement under working/loaded conditions. Locking pins may be of EN24 with 40- 45 HRC or better.	Bidder to specify	

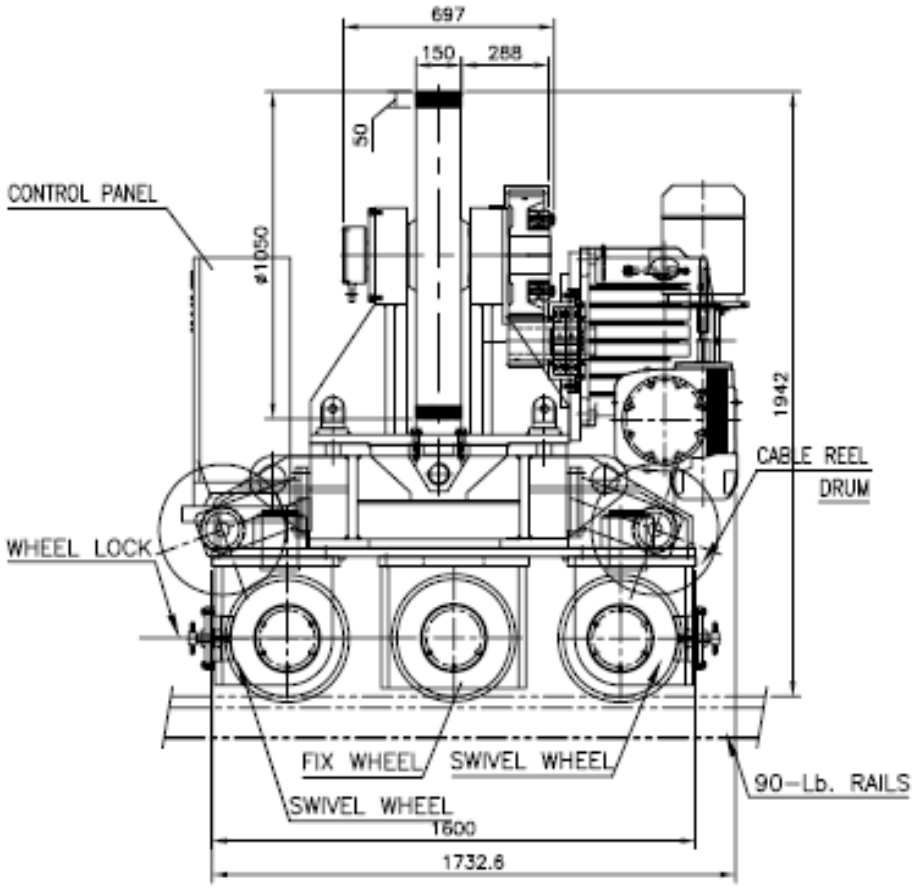
S. NO.	BHEL SPECIFICATION		BIDDER'S OFFER with technical details
4.13	Wheel Alignment: The alignment of the wheel face in the plane perpendicular to the wheel shaft axis to be maintained within 1mm for the entire stroke of the wheel assembly positions on the base frame.	Bidder to confirm	
4.14	Hardness and finish of Base frame slide: The sliding surfaces of the base frame shall be hardened and machined.	Bidder to confirm	
4.15	Lifting: Provision to be provided at 4 suitable locations for lifting the entire rotator unit by EOT Crane in a geometrically balanced state.	Bidder to confirm	
5.0	**STRUCTURAL FABRICATION**		
5.1	Rotator Base Frame and Heavy Wheel Bracket / Housing: Steel Fabrication Procedures to be followed. The Base Frame work shall be with steel plates of sufficient thickness, including REINFORCING RIBS. Bidder to provide the load calculation details for the selected thickness of Base frame, Side plates, ribs and diameter of the screw rod.	Bidder to confirm and provide details	
5.2	Raw Material: Only certified steel plates shall be used for fabrication. Test Certificates to be produced for BHEL verification and it forms part of the documentation.	Bidder to confirm	
5.3	Welded Joints: No Butt Joints are allowed for Plate Build–Up to increase effective length.	Bidder to confirm	
5.4	Welding Electrodes: For all Welding E7018 Electrode/higher grade shall be used.	Bidder to confirm	
5.5	Welded Joint Testing: All Fillet Welded Joints shall undergo Non Destructive Testing like Liquid Penetrant Test (LPI) and Magnetic Particle Inspection (MPI). Testing Documents to be produced for BHEL verification and forms part of the documentation.	Bidder to confirm	
5.6	Heat Treatment: The Structural Items (Base Frame / Wheel Housing, etc.) shall be Stress Relieved by thermal heat-treatment process after welding and NDT examinations.	Bidder to confirm	

S. NO.	BHEL SPECIFICATION		BIDDER'S OFFER with technical details
5.7	Machining Operation: All mechanical mating sliding surfaces are to be machined and ground to the required finish after heat treatment.	Bidder to confirm	
5.8	Surface Cleaning: All steel parts are to be shot blasted or chemically treated for surface cleaning, after completion of all operations but prior to painting.	Bidder to confirm	
6.0	**OTHERS**		
6.1	The existing drive dimensions indicated in **Annexure-A** are approx. only and has not considered any tolerances. Supplier may visit BHEL and ensure the exact dimensions required before manufacturing the Idler units.	Bidder to note	
6.2	General arrangement drawings showing the design calculation shall be furnished by the supplier along with the offer.	Bidder to confirm	
6.3	Shrink disc of suitable capacity Make: Precision transmatic devices or equivalent.	Bidder to specify	
6.4	LEAD SREWS SIZE shall be EN8 material TR70X10P with suitable hardness or better.	Bidder to specify	
6.5	Drawings and Documents after receipt of P.O.: The following documents and details are to be submitted for BHEL Approval, within one month after the receipt of PO - prior to taking up the manufacture of the ROTATORS. BHEL shall approve the drawings within 2 weeks' time: a) GA Drawing of the ROTATOR along with the trolley unit. b) Sub-Assembly Drawing for Wheels alongwith list of bought out items c) Weight of the Complete ROTATOR Note: All the drawings should have the major & critical dimensions and list of bought out items with make and specification. BHEL shall accord approval for the submitted drawing and documents within 2 weeks' time.	Bidder to confirm	
6.6	Spares for & Mechanical Components for two years of normal operation shall be quoted with item-wise break-up. BIDDER to Quote for spares as	Bidder to confirm	

S. NO.	BHEL SPECIFICATION		BIDDER'S OFFER with technical details
	mentioned below: a) Bearings for each wheel assembly – 1 Set b) Shrink Disc- 2 Nos. c) Box Nut – 1 Set d) Pulleys & Couplings used in the Rotator - 1 Set		
6.7	**Accessories/Tools:** The following to be supplied:- a) Hand wheel/ Ring spanner for driving the lead screw for pitch adjustment of wheels – 1 No. b) Mechanical tool kit – 1 set c) Any other accessories. Bidder to specify	Bidder to confirm	
7.0	Operation & Maintenance manuals. (Maintenance manual shall include assembly, spare list with component details, General Arrangement and Sub-Assembly Drawings etc.) Hard copy – 3 sets Soft copy in CD – 1 no.	Bidder to confirm	
8.0	The equipment shall be offered for pre-despatch inspection in operation & test by BHEL Engineers before despatch at supplier's works. PDI charges if any shall be quoted by the bidder separately in their offer	Bidder to confirm	
9.0	Assembly and Commissioning of the ROTATOR and Performance Prove – Out for Carrying Capacity and Smooth Functioning of the ROTATOR (at BHEL Works) shall be the RESPONSIBILITY of the Technical Representative of the Supplier.	Bidder to confirm	
10.0	The equipment shall be guaranteed for 12 Months from the date of commissioning at BHEL works or 18 Months from the date of dispatch whichever is earlier.	Bidder to confirm	

ANNEXURE A

AVAILABLE DRIVE DETAILS



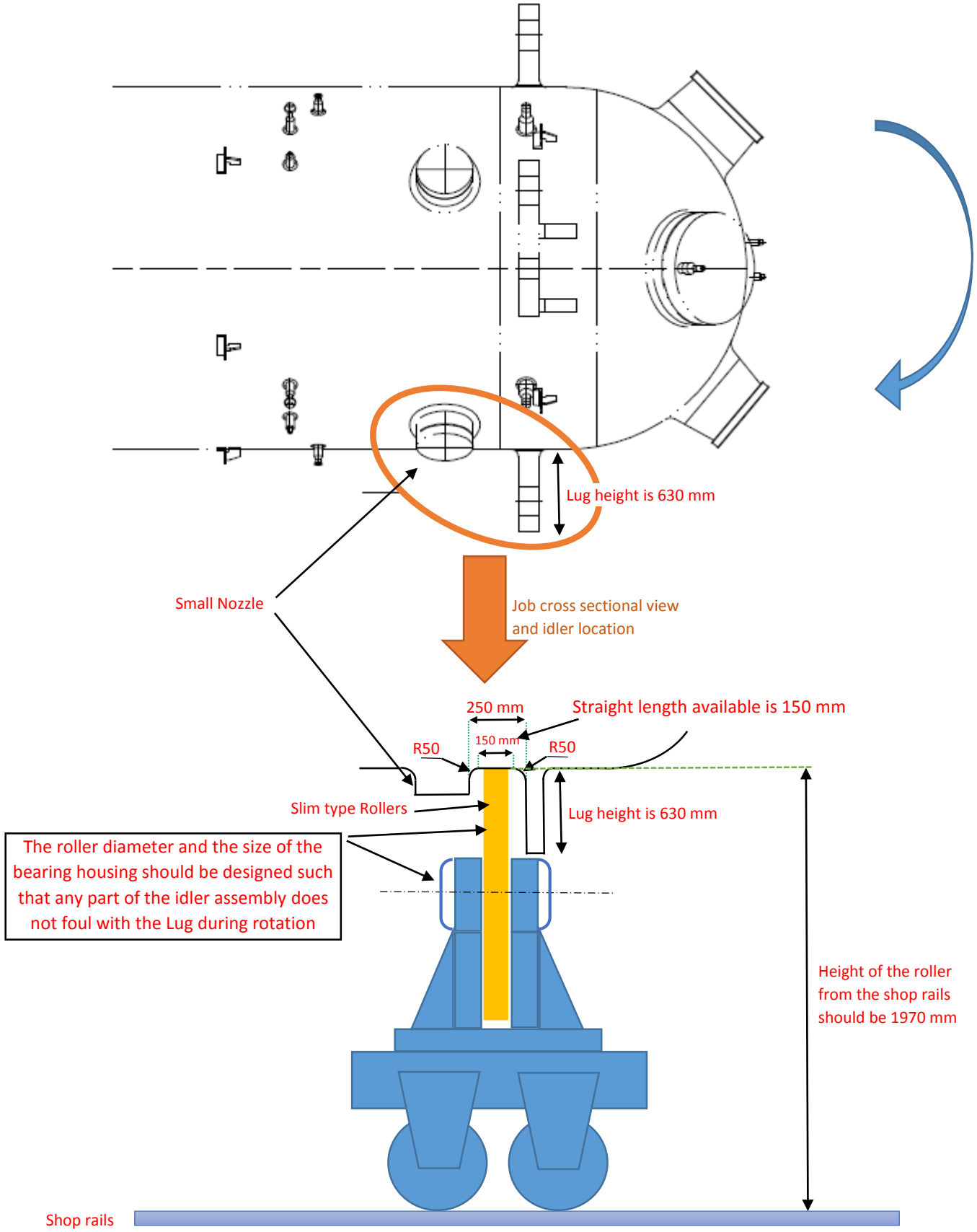
TECHNICAL SPECIFICATIONS OF EXISTING DRIVE UNIT

200 TON CAPACITY JOB ROTATOR WITH POWER TROLLEY

1	ROTATING CAPACITY – DRIVE UNIT	Kg	200,000
2	LOAD SUPPORTING CAPACITY- DRIVE UNIT	Kg	150,000
3	JOB DIA.RANGE	mm	900 to 3000
4	PITCH SETTING FOR ROLLER HOUSING	mm	120
5	POLYURETHANE ROLLER SIZE(DIA X WIDTH)	mm	1050 x 150
6	LOAD DRIVING CAPACITY OF TROLLEY (DRIVE UNIT)	Kg	200,000
7	TROLLEY WHEEL (FORGED STEEL) SIZE	mm	410Ø x 375Ø x 98 W
8	SPEED RANGE OF MOTORISED TROLLEY	Meter/Min.	2 to 24 Meter/Min

TROLLEY MOUNTED IDLER UNIT OF 100 TON CAPACITY FOR JOB ROTATOR

ANNEXURE B: SLIM IDLER LOCATION AND JOB DETAILS



INTENDED IDLER

TROLLEY MOUNTED IDLER UNIT OF 150 TON CAPACITY FOR JOB ROTATOR, Qty. 1 No.

Part A

S. No	BHEL Specification	Bidder's Response
1.0	**QUALIFYING CRITERIA**	
1.1	Only those Bidder / OEM who have manufactured, supplied and commissioned **at least ONE JOB ROTATOR OF 150 TON (OR) HIGHER CAPACITY in the last 10 years** (as on the first date of tender opening) are eligible to quote**.**	
1.2	Bidder has to submit at least ONE Performance Certificate from their customer (end user), for satisfactory performance of the equipment mentioned in S No 1.1 above meeting the following conditions: a) The Equipment must have been supplied within the last 10 years as on the first date of tender opening. b) The Equipment must have performed satisfactorily for at least one year during this period. For obtaining the Performance certificate, a suggestive format is provided at the end of part-A.	
1.3	PO document for the above mentioned supplied equipment to be enclosed	
1.4	BHEL reserves the right to verify the information provided by the Bidder. In case the information provided is found to be false/ incorrect, the offer is liable for rejection.	
2.0	**INFORMATION TO BE PROVIDED BY BIDDER**	
2.1	Bidder shall provide contact details(phone no & email id) including the address of his Agents / Service Centres in India	
2.2	Details of VARIABLE SPEED JOB ROTATORS supplied to other BHEL units if any	
2.3	The BIDDER to furnish Reference List of Customers(max 10 customers) including Contact details(phone no & email id).	
3.0	**The BIDDER to note:**	
3.1	The BIDDER shall submit the offer in **Two Parts** – 1. Technical [with PART A & PART B] & Commercial and 2. Price Bid.	
3.2	The Bidder's offer against each clause in PART A & B of the offer should be filled by the BIDDER compulsorily with complete details.	

S. No	BHEL Specification	Bidder's Response
3.3	The BIDDER shall assure a continuous support for Spares and Service for Ten Years, from the date of commissioning of the equipment at BHEL Works.	
3.4	The Technical Offer shall be supported by Product Catalogue and Data Sheets in original and complete technical details / literature on the quoted equipment.	
3.5	The Commercial Offer (given with the Technical Offer) shall contain the Scope of Supply and the Un-Priced Part of the Price-Bid, for confirmation.	

Suggestive Format of Performance Certificate:

The performance certificate to be produced **on Customer's Letter Head.**

PERFORMANCE CERTIFICATE

1 Make of the equipment

2 Month & Year of Commissioning

3 Application for which the equipment is used

4 Capacity of the equipment in Tons

5 Performance of the equipment Satisfactory / Not Satisfactory
(Strike off whichever is not applicable)

6 Service support after sales Satisfactory / Not Satisfactory
(Strike off whichever is not applicable)

7 Any Other remarks

8 This performance certificate was issued on: …… (DD/MM/YYYY)

Signature & Seal of the Authority
Issuing the Performance Certificate

Contact details of issuing authority
Name & Designation:
Office No/ Mobile no:
Email ID:

TROLLEY MOUNTED IDLER UNIT OF 150 TON CAPACITY FOR JOB ROTATOR, Qty. 1 No.

Part B - Technical Specification

S. NO.	BHEL SPECIFICATION		BIDDER'S OFFER with technical details
1.0	**APPLICATION:** The trolley mounted Idler Unit Job Rotator is meant for the movement of large diameter cylindrical pressure vessels of approximate 250 tons from one work centre to another mounted on a set of drive and idler rollers positioned on self-powered trolley type job rotators and moved on broad-gauge rails (90 lbs/yard). The load bearing capacity of the trolley mounted idler unit shall not be less than 150T (Individually) and is to be used in pair with the existing trolley mounted drive unit Job rotator at BHEL to handle Job weight of 250 tons. (Please refer ANNEXURE-A for existing trolley mounted drive unit details).	Bidder to note and Confirm	
1.1	**JOB DETAILS**: Plain cylindrical shells of multiple diameters welded in line and with hemi-spherical end-covers at the free-ends. The plain shells have different diameters across the cross-section (refer the sketches given in ANNEXURE – B) and finished shells have nozzles/attachments/Buttering welded to the outer periphery of the shells (as indicated in the Cross-Sectional View). The job dimensions are given as follows:- a) Minimum diameter of the job: 900 mm b) Maximum diameter of the job: 4000 mm c) Minimum length of the job: 5000 mm d) Maximum length of the job: 26000mm e) Minimum weight of the job: 30 Tons. f) Maximum weight of the job: 250 Tons.	Bidder to note	

S. NO.	BHEL SPECIFICATION		BIDDER'S OFFER with technical details
2.0	Design, Manufacture and supply of the equipment along with prove out and training at BHEL works as per BHEL specifications shall be in Supplier's scope	Bidder to confirm	
3.0	**TECHNICAL PARAMETERS**		
3.1	Weight Carrying Capacity of Idler unit : 150 Metric Ton.	Bidder to confirm	
3.2	Eccentric Loading: 10 % of the maximum Weight carrying capacity.	Bidder to confirm	
3.3	Length of the Job rotator (Idler) across rail line: Not to exceed 4500 mm	Bidder to confirm and provide details	
3.4	Width of the Job rotator (Idler) along rail line	Bidder to specify	
3.5	Idler wheel diameter: Around 1050 mm	Bidder to specify	
3.6	Idler wheel width: 150 mm(minimum)	Bidder to specify	
3.7	Height of the Job rotator: Around 2300 mm including trolley height (i.e., floor to top of rotator wheel)	Bidder to confirm and provide details	
3.8	Surface speed (Constant) of existing drive unit: 600 to 750 mm/min	Bidder to note	
3.9	Idler rotator wheel material: 2 numbers of solid forged steel	Bidder to confirm	
3.10	Wheel Contact Surface Hardness : 300-350 BHN	Bidder to confirm	
3.11	Wheel Surface Profile: Crowning Surface with an angle of 3 degrees	Bidder to confirm	
3.12	**Trolley details**		
3.12.1	Number of trolley wheels for movement of Idler: Four numbers	Bidder to confirm	
3.12.2	Track Gauge: Broad Gauge -1676 mm	Bidder to confirm	
3.12.3	Trolley Traverse Speed (variable) of existing drive unit: 2 to 24 m/min	Bidder to note	
3.12.4	Trolley travel distance: 80 m	Bidder to note	
3.12.5	Trolley wheels: Forged steel wheels with the single flange construction, duly hardened and to suit rail profile.	Bidder to confirm	
3.12.6	Trolley wheel axles: Forged steel axles and duly heat treated	Bidder to confirm	
3.12.7	Trolley Wheel Diameter: Dia. 440 x 100 mm Thick	Bidder to confirm	
3.12.8	Clearance of rotator base to floor level: 200 mm (minimum)	Bidder to confirm	

S. NO.	BHEL SPECIFICATION		BIDDER'S OFFER with technical details
4.0	**DESIGN & CONSTRUCTIONAL FEATURES**		
4.1	The design and construction of the traversing trolleys of the idler rotators shall be rigid and sturdy enough to take the vibrations due to job rotation and traversing on rails.	Bidder to Confirm & Specify	
4.2	Wheel Support: The wheels are to be supported on heavy duty roller bearings and high grade steel axles. Heavy Duty Roller Bearings (Preferably double side sealed) shall be of TIMKEN / FAG / SKF make or any other make acceptable to BHEL.	Bidder to confirm	
4.3	The rotator wheel shall be able to withstand damage due to impact loading, job temperature up to 150 deg C.	Bidder to confirm	
4.4	Painting: The ROTATOR to be painted as follows: a) One coat of Primer (Zinc Chromate) with 25 microns of DFT (Dry Film Thickness) and 48 hours of compulsory curing after painting. b) Two coats of Enamel Paint [Colour Apple Green] each with a DFT of 25 microns and intermittent curing of 16 hours. c) Weight carrying capacity & Self weight shall be painted legibly on each unit.	Bidder to confirm	
4.5	Welding return cable connection on the positioner: Suitable arrangement to be provided for connecting the welding return cables and to ensure the proper conductivity of welding current through job, rotator wheels to the welding machine. The maximum welding current to be carried is 1200A.	Bidder to confirm	
4.6	Markings/Indications to be provided on Rollers: a) A scale to be fixed on the base frame to identify the range of job diameters that can be loaded at that particular pitch. b) Self-weight and weight carrying capacity of the rotators should be painted legibly. The same should be punched on name plate on the job rotator	Bidder to confirm	

S. NO.	BHEL SPECIFICATION		BIDDER'S OFFER with technical details
4.7	Provision for locking of trolley wheels in one position to avoid movement and interlock for release, prior to the start of trolley movement/traverse.	Bidder to confirm	
4.8	The trolley for traverse has to be integral with the idler rotator base and shall not give away in no circumstances and has to individually carry 150 tons where the Total job weight of approx. 250 tons (as indicated in Annexure B) is shared with the already existing drive and Idler.	Bidder to confirm	
4.9	Suitable provisions shall be provided for lubricating/greasing the bearings and gears.	Bidder to confirm	
4.10	Idler rotator shall be supported on a minimum of 4 steel wheels and two pairs of which (on either side) shall be pivoted so that the load is equally shared in case of any rail-track mis-alignment.	Bidder to confirm	
4.11	Wheel Pitch Adjustment: Each wheel assembly with Housing/Bracket shall be movable on the Rotator Base Frame, through a hand driven screw-rod. It shall be possible to locate and lock each wheel assembly on the Rotator Base Frame at required pitches to cover the job diameter range. The drive arrangement to be designed to avoid loading on the screw-rod while loading / after loading the job on the wheels.	Bidder to confirm	
4.12	Wheel Positioning: There shall be suitable arrangement for locking the wheel assembly with the base frame, to prevent movement under working/loaded conditions. Locking pins may be of EN24 with 40- 45 HRC or better	Bidder to specify	
4.13	Wheel Alignment: The alignment of the wheel face in the plane perpendicular to the wheel shaft axis to be maintained within 1mm for the entire stroke of the wheel assembly positions on the base frame.	Bidder to confirm	
4.14	Hardness and finish of Base frame slide: The sliding surfaces of the base frame shall be hardened and machined.	Bidder to confirm	
4.15	Lifting: Provision to be provided at 4 suitable locations for lifting the entire rotator unit by EOT Crane in a geometrically balanced state.	Bidder to confirm	

S. NO.	BHEL SPECIFICATION		BIDDER'S OFFER with technical details
5.0	**STRUCTURAL FABRICATION**		
5.1	Rotator Base Frame and Heavy Wheel Bracket / Housing: Steel Fabrication Procedures to be followed. The Base Frame work shall be with steel plates of sufficient thickness, including REINFORCING RIBS. Bidder to provide the load calculation details for the selected thickness of Base frame, Side plates, ribs and diameter of the screw rod.	Bidder to confirm and provide details	
5.2	Raw Material: Only certified steel plates shall be used for fabrication. Test Certificates to be produced for BHEL verification and it forms part of the documentation.	Bidder to confirm	
5.3	Welded Joints: No Butt Joints are allowed for Plate Build–Up to increase effective length.	Bidder to confirm	
5.4	Welding Electrodes: For all Welding E7018 Electrode/higher grade shall be used.	Bidder to confirm	
5.5	Welded Joint Testing: All Fillet Welded Joints shall undergo Non Destructive Testing like Liquid Penetrant Test (LPI) and Magnetic Particle Inspection (MPI). Testing Documents to be produced for BHEL verification and forms part of the documentation.	Bidder to confirm	
5.6	Heat Treatment: The Structural Items (Base Frame / Wheel Housing, etc.) shall be Stress Relieved by thermal heat-treatment process after welding and NDT examinations.	Bidder to confirm	
5.7	Machining Operation: All mechanical mating sliding surfaces are to be machined and ground to the required finish after heat treatment.	Bidder to confirm	
5.8	Surface Cleaning: All steel parts are to be shot blasted or chemically treated for surface cleaning, after completion of all operations but prior to painting.	Bidder to confirm	
6.0	**OTHERS**		

S. NO.	BHEL SPECIFICATION		BIDDER'S OFFER with technical details
6.1	The existing drive dimensions indicated in **Annexure-A** are approx. only and has not considered any tolerances. Supplier may visit BHEL and ensure the exact dimensions required before manufacturing the Idler units.	Bidder to note	
6.2	General arrangement drawings showing the design calculations and BOM shall be furnished by the bidder along with the offer.	Bidder to confirm	
6.3	Shrink disc of suitable capacity Make: Precision transmatic devices or equivalent.	Bidder to specify	
6.4	LEAD SREWS SIZE shall be EN8 material TR70X10P with suitable hardness or better.	Bidder to specify	
6.5	Drawings and Documents after receipt of P.O.: The following documents and details are to be submitted for BHEL Approval, within one month after the receipt of PO - prior to taking up the manufacture of the ROTATORS: a) GA Drawing of the ROTATOR along with the trolley unit. b) Sub-Assembly Drawing for Wheels alongwith list of bought out items c) Weight of the Complete ROTATOR Note: All the drawings should have the major & critical dimensions and list of bought out items with make and specification. BHEL shall accord approval for the submitted drawing and documents within 2 weeks' time.	Bidder to confirm	
6.6	Spares for & Mechanical Components for two years of normal operation shall be quoted with item-wise break-up. BIDDER to Quote for spares as mentioned below: a) Bearings for each wheel assembly – 1 Set b) Shrink Disc- 2 Nos. c) Box Nut – 1 Set d) Pulleys & Couplings used in the Rotator - 1 Set	Bidder to confirm	

S. NO.	BHEL SPECIFICATION		BIDDER'S OFFER with technical details
6.7	**Accessories/Tools:** The following to be supplied:- a) Hand wheel/ Ring spanner for driving the lead screw for pitch adjustment of wheels – 1 No. b) Mechanical tool kit – 1 set c) Any other tools/accessories. Bidder to specify	Bidder to confirm	
7.0	Operation & Maintenance manuals. (Maintenance manual shall include assembly, spare list with component details, General Arrangement and Sub-Assembly Drawings etc.) Hard copy – 3 sets Soft copy in CD – 1 no.	Bidder to confirm	
8.0	The equipment shall be offered for pre-despatch inspection in operation & test by BHEL Engineers before despatch at supplier's works. PDI charges if any shall be quoted by the bidder separately in their offer	Bidder to confirm	
9.0	Assembly and Commissioning of the ROTATOR and Performance Prove – Out for Carrying Capacity and Smooth Functioning of the ROTATOR (at BHEL Works) shall be the RESPONSIBILITY of the Technical Representative of the Supplier.	Bidder to confirm	
10.0	The equipment shall be guaranteed for 12 Months from the date of commissioning at BHEL works or 18 Months from the date of dispatch whichever is earlier.	Bidder to confirm	

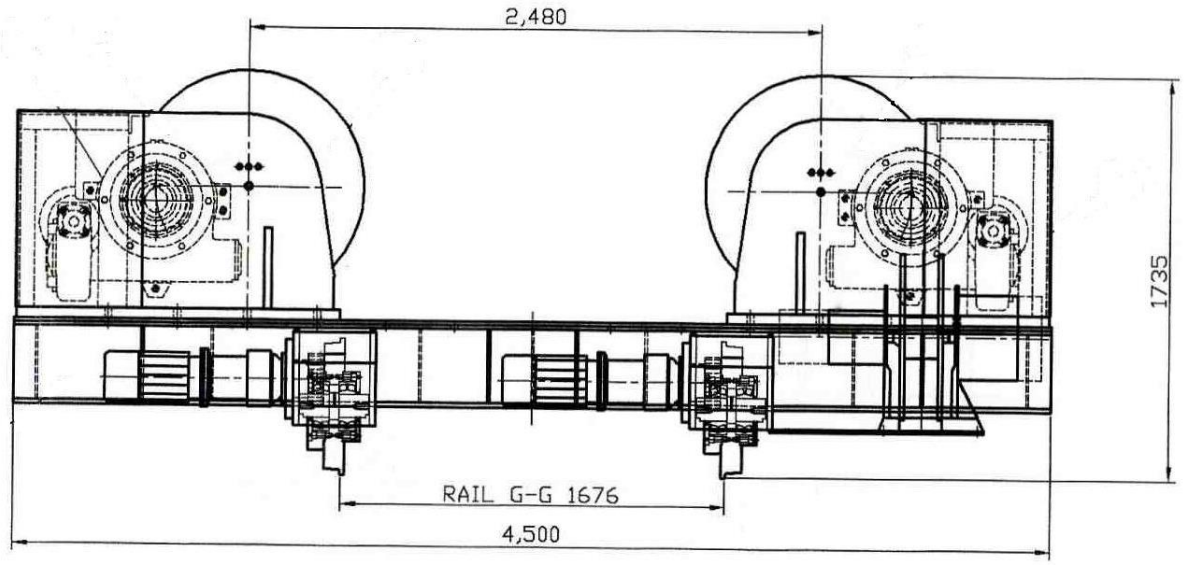
ANNEXURE A

EXISTING DRIVE DETAILS

TECHNICAL SPECIFICATIONS OF EXISTING DRIVE UNIT

400 TON CAPACITY JOB ROTATOR WITH POWER TROLLEY

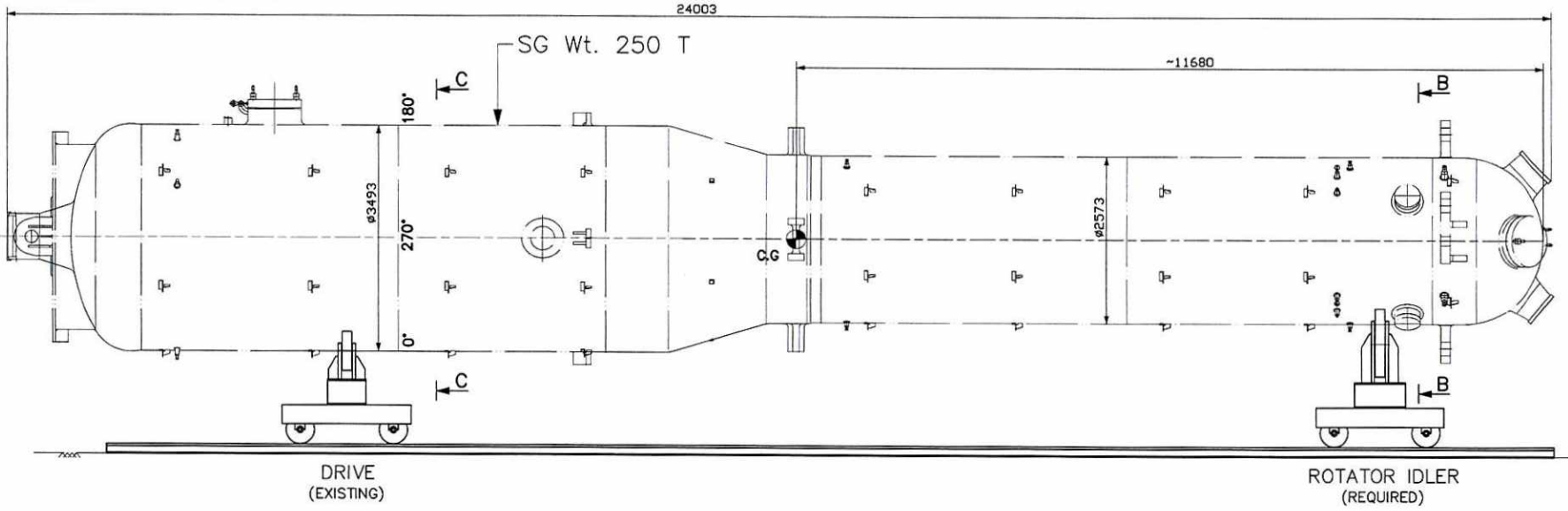
1	ROTATING CAPACITY – DRIVE UNIT	Kg	400,000
2	LOAD SUPPORTING CAPACITY- DRIVE UNIT	Kg	200,000
3	SURFACE PERIPHERAL SPEED	mm/min	750

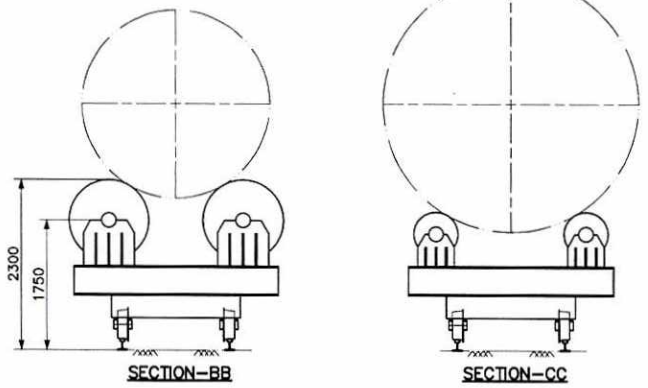


ANNEXURE-B

DRAWING NO: 3-HE-170-02822

ALL DIMENSIONS ARE IN MILLIMETERS





TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd
UNIT: HIGH PRESSURE BOILER PLANT
TIRUCHIRAPALLI - 620014

05-229/D

	NAME	SIGNATURE	DATE	NO. OF VAR
DRN	K.R.		080618	
CHD	RRV		080618	
APPD	A.S.		080618	

DEPT	GRADE OF UNTOL DIM	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG	ITEM NO	No OF ITEMS
NC	C/M/F					
CODE 150						

TITLE: ROLLER ARRGMT FOR SG MOVEMENT

CARD CODE: U 01

DRAWING NO : 3-HE-170-02822

REV: 00

Size A3

TROLLEY MOUNTED IDLER UNIT OF 150 TON CAPACITY FOR JOB ROTATOR ANNEXURE B