



BHARAT HEAVY ELECTRICALS LIMITED

BAP – Ranipet, 632406

MM – PURCHASE Department (FGD)

NIT

Date: 16-07-2022

RFQ towards BHEL Ranipet Enq for.: Under Slung Crane for NTPC Mauda

Sub: Requirement for “Design, Manufacture, Pre-dispatch inspection (AIA-TPI), Packing, Forwarding, dispatch, transportation, Supply, Supervision for “installation, Erection, inspection, Testing, commissioning, Trial run” of 2 numbers of Underslung Crane for blower and pump areas of absorber building” for BHEL Site NTPC Mauda by BHEL-Ranipet.

Scope of supply: As subjected above in confirmation with Quality plan and tech Spec. The package consists

SI	Material code	DESCRIPTION	Qty	Delivery req	Quoted/ Not quoted
1	RFW11520 0001	Supply of Underslung Crane with all accessories 10T capacity, monorail elevation at EL (+) 11.1 m, Floor level at EL (+) 0.0 m, Travel length 33m, Distance between 2 monorail 8 m (LT Span), as per tech spec FGD: USLCRANE R00 for oxidation blower and RC pump, at NTPC Mauda	1 set	24-08-2022	
2	RFW11520 0002	Supervision for E&C, inspection and testing and trial run of crane for 2 set of visit where 3 working days per visit at site as per tech Spec/doc at NTPC Mauda	2 Set	24-08-2023	
3	RFW11521 0001	Supply of Underslung Crane 10T capacity, monorail elevation at EL (+) 11.1 m, Floor level at EL (+) 0.0 m, Travel length 20m, Distance between 2 monorail 16 m (LT Span), as per tech spec FGD: USLCRANE R00 for oxidation blower and RC pump, at NTPC Mauda	1 set	24-08-2022	
4	RFW11521 0002	Supervision for E&C, inspection and testing and trial run of crane for 2 set of visit where 3 working days per visit at site as per tech Spec/doc at NTPC Mauda	2 set	24-08-2023	

Destination: BHEL Site, NTPC Mauda

Delivery required date: As per above table or within 5 months from the date of manufacturing clearance, whichever is later. Bidder to quote the best possible delivery from the date of manufacturing clearance. Abnormal quoted delivery, liable for rejection of offer.



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Technical Pre-Qualification requirement (PQR):

SL	Pre-Qualification Requirement (PQR)	Bidder's Reply with Supportive documents
1	Vendor should be a manufacturer of Crane / Hoist. Pls submit the relevant documentary evidences.	
2	List of customer to whom Underslung Cranes / EOT Cranes / Cranes of same capacity or higher supplied to silo/bunker application, FGD application, Coal fired Power plant, Industrial application, Nuclear power plant. Proof of such experience have to be submitted along with the bid in form of relevant documentary evidence.	
3	Minimum one number of Previous inspection and test report to be furnished for the same capacity or higher Capacity along with Previous purchase order of same item.	

Technical requirement

- (a). **Manufacturing: Document Submission**-Drawing, Data sheet and quality plan shall be submitted upon ordering for approval by BHEL. **Manufacturing clearance** will be provided upon approval of drawing with data sheet and QAP. Manufacturing shall be as per attached technical specification in the bid, Approved drawing, Quality plan and Data sheet. **Inspection**: as per CI (b) below stated. **Dispatch Clearance**: Upon submission of inspection reports along with test certificates in original and Packing list dispatch clearance will be provided by BHEL.
- (b). **Inspection**: Inspection (call to be raise by supplier at BHEL COIR portal) before despatch at supplier's works (as per Quality terms and Quality plan) by BHEL/authorised inspection agency (TPI-Third Party Inspection) and **customer NTPC (joint inspection shall be applicable)**, for indigenous supplies at BHEL cost. **Inspection includes for painting and packing** also, as applicable. All the Test and inspection reports shall be sent to BHEL-Ranipet for review and dispatch clearance. Packing list and weighment details shall be sent for release of GMS by Engineering-BAP. Base on release of GMS, CoC No shall be issued by QC-BHEL. On receipt of CoC, and packing list, request letter from commercial-BAP to be submitted to QC-BHEL for issue of MDCC.
- (c). **Packing requirement**: Packing shall be waterproof as per tender technical specification, and the material code with description & Supplier name shall be marked on the packing.
- (d). **Documents**: Accepted IR copy along with relevant test certificates (in original) before despatch to be given to BHEL. This is required for Dispatch clearance.
- (e). **Reverse Auction** shall be conducted, Overall package basis L1 shall be taken for Ordering.
- (f). **Delivery Location**: FOR destination (BHEL Site), as per bid
- (g). **Supervision for Installation, E&C, Trial run, Testing and performance test**: Bidder to quote of overall cost basis including travel, boarding, lodging, local conveyance, tools and tackles etc. No payment will be given other than the quoted cost. **Detailed list of facilities (labours, technicians, Material handling equipment, General tools) required for supervision for E&C, to complete in 3 days shall be submitted along with drawing approval.**
- (h). **CEBG** : Not Applicable
- (i). **PBG for 10%** of supply value valid for agreed guarantee period. In case of not submitted, equivalent values shall be with hold for 36 months, and will be released with supplementary invoice.



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List of documents to be attached (filled in signed stamped copy):

1. NIT copy
2. Tech spec (BHEL) along with all annexures and drawings filled in along with all annexures
3. Painting scheme
4. Filled in QAP (Sample attached) along with CQR and annex Q.
5. Filled-in Make in India declaration on Letter head (format attached)
6. PBG format
7. Udyam portal registration copy if MSE bidder
8. PQR-Technical documents

Buyer Additional terms:

1. Quote shall be in INR only inclusive of Taxes (GST).
2. MSE firm shall upload the UDYAM portal registration certificate
3. Documentary evidences shall be uploaded for PQR
4. Bidder shall submit the filled-in signed stamped copy of documents as listed above
5. PBG for 10% of material value to be submitted shall be valid for 24 months from the date of supply plus 3 months for claim period. BG shall be as per format attached and from the list of consortium of bank as attached.
6. Non Submission of any of required documents as listed below, attracts for offer rejection.
7. Package wise package basis evaluation methodology shall be adopted
8. Payment: For supply, 90% payment through NEFT within 90 days (45 days for MSE and 60 days for Medium category for MSME quote and UDYAM registration certificate submission) after receipt and acceptance of material based on site delivery acknowledgement slip along with BG at BHEL Ranipet. Balance 10% of supply and 100% of supervision for E&C shall be paid within 90 days (45 days for MSE and 60 days for Medium category for MSME quote and UDYAM registration certificate submission) after completion of Supervision for E&C, based on site acknowledgement.

For any query: Kindly provide the "USC Mauda" in the subject of mail.

mail: ckbharti@bhel.in; jecashish@bhel.in

Ph: 9488 58 9287 / 7010 75 1675

You may raise the query through GeM also.

TECHNICAL PRE-QUALIFICATION REQUIREMENT (PQR) FOR UNDER SLUNG CRANE (IN CASE OF OPEN TENDER)

SL NO	Technical Pre-Qualification Requirement (PQR) for FOR UNDER SLUNG CRANE	Bidder's Reply with Supportive documents
1	Vendor should be a manufacturer of Crane / Hoist.	
	List of customer to whom Underslung Cranes / EOT Cranes / Cranes of same capacity or higher supplied to silo/bunker application, FGD application, Coal fired Power plant, Industrial application, Nuclear power plant.	
	Minimum one number of Previous inspection and test report to be furnished for the same capacity or higher Capacity along with Previous purchase order of same item.	

Bidder's Seal & signed



Bharat Heavy Electricals Ltd
Boiler Auxiliaries Plant

Ranipet-632 406

FLUE GAS DESULPHURISATION


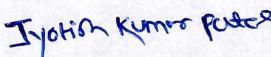
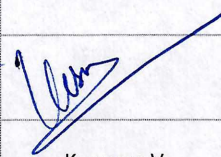
TECHNICAL SPECIFICATION

SPECIFICATION NO: FGD:USLCRANE

REV:00

TECHNICAL SPECIFICATION OF UNDER SLUNG CRANE

REF: FGD: USLCRANE REV: 00

REV	DATE	DESCRIPTION	PREPARED	CHECKED	APPROVED
00	08-09-2020	Fresh Release	 Pradeep Kumar Behera (AE-I/EDC-FGD)	 Jyotish Kumar Patel (SE/EDC-FGD)	 Kesavan V (DGM/EDC-FGD)



Boiler Auxiliaries Plant,
Bharat Heavy Electricals Limited,
 Ranipet - 632406, Tamilnadu, INDIA.

Enquiry No. & Dt.:	
Due Date :	
Supplier's Ref.:	
Date :	

Specification cum Compliance Certificate for UNDER SLUNG CRANES

Note:-

1. The 'Offered' Column and where applicable, the 'Deviations' & 'Remarks' Column of this format shall be filled in by the Vendor and submitted along with the offer. Inadequate / incomplete, ambiguous or unsustainable information against any of the clauses of the specifications / requirements shall be treated as non-compliance.

2. The offer and all documents enclosed with offer should be in English language only.

Name & Address of the supplier:

Telephone No.

Fax No.

e-mail :

Scope: Supply,Testing,Installation, Supervision of Erection & Commissioning of UNDER SLUNG CRANE complying with the following specification

S No.	Description - BHEL's Requirement	Specified	Offered	Deviations	Remarks
A	TECHNICAL DETAILS:				
1.0	APPLICATION:				
1.1	The subject crane is meant for the purpose of handling small to medium components (Recirculation Pump & Oxidation Blower) during maintenance	Vendor to note			
1.2	The Recirculation Pump house & Oxidation Blower room environment will be dust prone, humid, and ambient temperature going up to 45 to 50 ° C.	Vendor to note			
2.0	SCOPE OF SUPPLY:				
2.1	Design, manufacture, supply, Supervision of erection & commissioning of Single Girder Underslung Cranes with Festooning type arrangement of feeding power to trolley assembly, shrouded DSL for long travel with mountings and suitable current collector system.	Vendor to confirm			
3.0	QUANTITY REQUIRED:				
3.1	Single Girder Under Slung cranes as per Enquiry	Vendor to confirm			
3.2	The Vendor shall Offer suitable Festooning type & shrouded typr DSL System	Vendor to confirm			
4.0	MAIN FEATURES (Crane Operational Features):				
4.1	Speed System: single speed drive	Vendor to provide			
4.2	End Clearance: End clearance to be fixed to suit the workshop building clearances as per the enclosed tender ANNEXURE IV.	Vendor to submit the clearance drawing .			
5.0	CONTROL:				
5.1	Type of Control / Operation: Through pendent type control. (Operating level shall be 1000 mm approx.. above Floor level)	Vendor to confirm			
5.2	Control Voltage: 110 V AC	Vendor to confirm			

S No.	Description - BHEL's Requirement	Specified	Offered	Deviations	Remarks
5.3	Input Power Supply: 415 ± 10% Volts , 50 ± 3% Hz, 3 Phase- AC.	Vendor to confirm			
5.4	Duty Class: Class – 3 [Indoor Service]	Vendor to confirm			
5.5	Mechanism Group Classification : M 6	Vendor to confirm			
5.6	DESIGN STANDARD OF CRANE : IS – 807 & 3177 / 2006	Vendor to confirm			
5.7	WIRE ROPE HOIST: The electric hoist shall be designed and constructed in accordance with the latest revision of IS:3938 and shall be suitable for duty class 2.	Vendor to confirm			
6.0	STRUCTURAL FABRICATION (Constructional Details):				
6.1	Bridge/Girder: Under slung crane for capacity as per Enquiry.	Vendor to confirm			
6.2	The following shall be carried for Girders, end carriage, crab, gear box and rope drum	Vendor to confirm			
6.3	The Plates of thickness 25mm and above shall be ultrasonically tested.	Vendor to confirm			
6.4	NDT requirements on weldments shall be as follows : a) Butt weld in tensions : 100% RT and 100% DPT b) Butt weld in compression : 10 % RT and 100 % DPT c) Butt welds in rope drum : 100 % RT and 100 % DPT d) Fillets Welds : Random 10 % DPT	Vendor to confirm			
6.5	Raw Material: Steel plates conforming to IS 2062 tested and certified for quality by reputed inspection authorities, shall be used.	Vendor to confirm and produce certificates.			
6.6	Welded Joints (To be followed for Girder fabrication):				
6.7	Welding Electrodes for all Horizontal Welding E 7018 Electrode only should be used.	Vendor to confirm			
6.8	Welding Electrodes for all Vertical Welding E 7048 Electrode only should be used.	Vendor to confirm			
6.9	Welded Joint Testing: All Butt Welded Joints (both compression/ tension and flanges / web joints) shall be subjected to 100% X-Ray Testing and X-Ray Films to be produced for BHEL evaluation and form part of the documentation.	Vendor to confirm			
6.10	Splice Joints: No splice joint is allowed in Girder Fabrication. [Girder shall be of single piece only].	Vendor to confirm			
6.11	Wheel Assembly:				
6.12	The Wheel Assemblies of Cross Travel (CT) and Long Travel (LT) shall be of Live Axle System with L-Type Bearings only. Details to be submitted by the vendors.	Vendor to submit details			
6.13	Heat Treatment & NDT Examination:				
6.14	The Trolleys shall be stress relieved, if necessary, by thermal heat-treatment process after welding & NDT. All welding shall be tested by NDT means [MPI, LPI & RT] after stress relieving operation.	Vendor to confirm and produce necessary certificates			
6.15	Machining Operation:				
6.16	All mechanical mating surfaces and wheel seating areas are to be machined to the required finish and protected.	Vendor to confirm			
7.0	Painting Instructions:				
7.1	As per ANNEXURE III	Vendor to confirm			
8.0	MECHANICAL ELEMENTS:				

S No.	Description - BHEL's Requirement	Specified	Offered	Deviations	Remarks
8.1	Gears: Gears in all the Stages shall be helical in design and to be of machined, lapped and hardened	Vendor to confirm			
8.2	Gear Box Casing: Shall be of fabricated type and stress relieved by thermal heat-treatment process, prior to machining.	Vendor to confirm			
8.3	Reduction gear shall be tested for reduction ratio, backlash & contact pattern. Gear box shall be subjected to no load run test, to check for oil leakage, temperature raise, noise and vibration.	Vendor to confirm			
8.4	Rope Drum: The hoist mechanism shall consist of a grooved rope drum driven by electric motor through gears. Rope Drum Shall be of fabricated type and stress relieved. The circumferential weld joints shall be tested by 100 % X-Ray quality. Each end of the rope shall be anchored to the drum in such a way as the anchorage is readily available for maintenance. Each rope shall have two (2) full turns of the drum when the hook is at its lowest position and one (1) spare groove when the hook is at its highest position. The leading rope taken by the drum should not slope sideways when slack and it should not be caught between the gear wheel.	Vendor to confirm			
8.5	BOTTOM BLOCK The bottom block shall be of enclosed type and shall have guard against rope jamming in normal use. It shall have standard forged swivel shank hook fitted on antifriction thrust bearing. Lock to prevent hook from rotation and locking arrangement to prevent accidental unlocking shall be provided. Pulley of the bottom block shall be provided with antifriction bearings				
8.6	ROPE GUIDE: Rope guides shall have wear resistant property. It shall prevent slack rope and retain wire rope in the barrel grooves.				
8.7	Type of Coupling: Only Geared Couplings to be used for <i>a) Between Electric Motor and Gear Box, b) Between Gear Box and Rope Drum and c) Between Gear Box and Trolley Wheels.</i>	Vendor to confirm			
8.8	Wheels: Shall be of forged and Wheel Tread hardened to 300-350 BHN . Wheels shall be fitted with L-Type Bearings	Vendor to confirm			
8.9	Wheels: Shall be of forged and Wheel Tread hardened to 300-350 BHN . Wheels shall be fitted with L-Type Bearings	Vendor to confirm			
8.10	Mechanical Joints: Fit Bolts (as per IS 3640 –1982) for all joints coming in main members.	Vendor to confirm			
8.11	Pulley Dimension: Rope Pulley diameter shall be 23 times that of Rope diameter.	Vendor to confirm			
8.12	Lifting Hook: Hooks shall be of C-type as per IS 15560 & with antifriction bearing and provided with latches.	Vendor to confirm			
8.13	All test including proof load test as per relevant IS standard shall be carried out. Certificate shall be submitted to BHEL for review.	Vendor to confirm			
8.14	MPI/DPT shall be carried out after proof load test	Vendor to confirm			
8.15	Lubrication:				
8.16	Suitable lubrication system shall be provided for gear box, all rotating parts wherever applicable. One number grease gun shall be supplied per project.	Vendor to furnish			

S No.	Description - BHEL's Requirement	Specified	Offered	Deviations	Remarks
8.17	Bidder's scope shall also include supply and filling of all chemicals, reagents, resins, lubricants, grease, filters and consumable items for operation up to COD including top up requirements at the time of issuance of PAC/declaration of COD. All lubricants proposed for the plant operation shall be suitable for all operating and environmental conditions that will be met on site consistent with good maintenance procedures as instructed in the maintenance manuals.	Vendor to furnish			
8.18	Bumpers (End Stoppers):				
8.19	Bumpers of adequate size shall be provided both in CT & LT to stop the crane in the event of an overshoot by the operation.	Vendor to provide			
8.20	Guards: Suitable guards shall be provided for all rotating parts like couplings, wheels etc..	Vendor to provide			
8.21	FORGINGS (wheel,gears,pinions,axle,hooks&hook trunion) a) All forgings greater than or equal to 50mm diameter or thickness shall be subjected to ultrasonic test .b) DPT/MPI shall be done after hardfacing and machining	Vendor to provide			
8.22	WIRE ROPE:				
8.23	Wire rope shall be of pre-formed type, hemp cored, regular lay 6/36 construction and Braking loads for the hoist rope shall not be less than six times the calculated load in the ropes at the drum, based on rated load on hook plus the weight of the bottom block plus the weight of the rope. The rope shall be of sufficient length so that two full wraps shall remain on the drum at the extreme low position of the hook. Minimum number of falls of rope shall be four (4).Hoisting rope shall confirm to IS 2266.The rope shall be hot dip galvanised. The rope shall be free from kinks and shall be continuous.	Vendor to confirm			
9.0	ELECTRICAL ELEMENTS:				
9.1	Electrical system comprises of 63A Fuse or to Suit Switch Unit/MCB, Control panel,Pendent Push Button Station, DSL, Pendent cable, Hoist, Long travel & Cross travel motors with brake, other electrical item etc., to make the system complete. All these items are included in the scope of supply of the vendor.	Vendor to confirm			

S No.	Description - BHEL's Requirement	Specified	Offered	Deviations	Remarks
9.2	<p>Motors: The motors shall meet IS 325 or equivalent international standards. The motor shall be designed for frequent reversal, braking and acceleration similar to crane duty. The motor shall be rated for S4 duty 40% cyclic duration factor. Maximum continuous rating shall have at least 10% margin over maximum load demand including voltage and frequency variations, temperature rise and other variations. The body shall have two earthing points on opposite sides. The motor shall be provided with an enclosure fully meeting the requirements of IP 55 as per IS 4691 meant for outdoor service. In addition rain-hood shall be provided for the motors. The motor shall be Totally Enclosed Fan Cooled (TEFC) type or Totally Enclosed Surface Cooled (TESC) type. Motors shall have minimum class "F" type insulation with temperature rise limited to class "B". The winding shall be suitable for successful operation in hot, humid, & tropical climate with the ambient temperature of 50 degree centigrade. The temperature rise shall be limited to 70 degree C (by resistance method) over an ambient of 50 degree C. The insulation shall be given fungicidal and tropical treatment as per IS 3202. The frame shall be cast and rigid. The motors shall be designed for both directions of rotation. The terminal box shall be weather and water tight and suitable for outdoor service, having a degree of protection of IP 55. It shall be provided with removable front cover for making connections. Neoprene gaskets at cover joints shall be provided. The terminal box shall be suitable to withstand 31 MVA for 0.25 seconds without damaging the box with fuse protection. Nickel-plated brass double compression cables glands and ATC lugs shall be provided to receive the power cables. If the hoist motor is placed inside the rope drum, then the motor lead wires can also be taken out without necessity of a terminal box. The motor vibration and noise shall be within the limits specified in IS 12065 and IS 12075. The noise level shall be limited to 85dB.</p>	Vendor to confirm			
9.3	<p>SWITCHES: Heavy-duty power switches with quick make and brake mechanism meeting relevant IS requirements shall be provided. The switches shall be adequately rated to get complete protection even under abnormal operating conditions.</p>	Vendor to confirm			
9.4	<p>PUSH BUTTONS: The Pendant Push Button station shall have the following Push Buttons: a) Hoist, b) Lower, c) Forward, d) Reverse & e) Emergency Stop. The Emergency stops Push Button shall be Lockable type. The Pendant Push Button station shall have the following LED clustered type indicating lamps: a) SUPPLY ON, b) HOIST MOTOR Raise/Lower, c) CT MOTOR Forward/Reverse, d) HOIST MOTOR TRIP and e) CT MOTOR TRIP. The Pendant Push Button station shall be supported from the Control Panel with hot dip galvanized Link Chain. The Pendant Push Button Station shall be connected to the Control Panel using multi-core copper flexible control cable of 10 m length. The Enclosure of Pendant Push button station shall be designed for IP 55 degree of protection. Push buttons shall be spring return type with 2NO+2NC self-reset contacts rated for 5A at 415volts AC. The push buttons for different operations like "HOIST/ LOWER, FORWARD / REVERSE", "STOP" shall have different colours. All Push buttons shall be as per relevant IS. The Push buttons shall be properly shrouded so as to prevent water & dust entry.</p>	Vendor to confirm			

S No.	Description - BHEL's Requirement	Specified	Offered	Deviations	Remarks
9.5	<p>CONTACTOR: All Contactors shall be suitable for DOL application with coils suitable for the control voltage provided by the supplier. Contactor construction shall be rugged. For control purpose, only auxiliary contactors shall be used. Relays are not acceptable in place of Auxiliary Contactors. The power contactors shall have Mechanical interlocking in addition to Electrical interlocking so that at any point of time only any one of the two Power contactors (either up or Down, Left or Right) will be energized. The contactor shall be AC4 duty for inching operation.</p>	Vendor to confirm			
9.6	<p>THERMAL OVER LOAD RELAYS: Thermal over load relays wherever provided shall be ambient temperature compensated with suitable setting ranges. The relay shall be auto reset type. The relay shall be provided with a door mounted hand reset push button. The O/L relay shall have inbuilt single phasing protection as built-in feature.</p>	Vendor to confirm			
9.7	<p>FUSES Only HRC fuses of plug-in type with Class-4 AC duty shall be provided. Fuse base shall be rugged. Adequate shrouding shall be provided for live accessible parts and it shall be possible to replace any fuse without damages of contacts when the circuit is alive.</p>	Vendor to confirm			
9.8	<p>INDICATING LAMPS: LED clustered type indicating lamps of low watt consumption with suitable built-in series resistor shall be used. LED and lenses shall be inter-changeable and easily replaceable from the front. The indication lamps shall be properly shrouded so as to prevent the dust and water entry. Indicating lamp shall be provided for "HOIST MOTOR ON", "CT MOTOR ON", "HOIST MOTOR TRIP", "CT MOTOR TRIP", "SUPPLY ON" ETC.</p>	Vendor to confirm			
9.9	<p>WIRING: The control panel wiring shall be complete in all respects and ready for connection of external power for terminating external cables. Necessary double compression Nickel plated Brass cable glands along with suitable terminal blocks and lugs to receive trailing cable and pendant push button cable shall be provided. The cable glands, lugs and terminal blocks shall not be supplied loose. Point to point wiring shall be adopted. Not more than two wires shall be terminated at each terminal. Wiring shall be neatly laid out and bunched together suitably. The wiring shall be done with minimum 2.5 sq.mm multi stranded copper, PVC insulated 1100V wires. Crab wiring: Junction box shall be avoided for wiring of crab and in bridge end.</p>	Vendor to confirm			
9.10	<p>TERMINATION All power and control wires shall be terminated on terminal block/component using crimping type Annealed Tinned Copper lugs/connectors. CLIP-ON type terminal block shall be used. The terminal blocks shall be used for control wiring. The terminal blocks shall be complete with insulated barriers, terminal studs, washers, nuts, lock nuts and identification strips with terminal numbering.</p>	Vendor to confirm			

S No.	Description - BHEL's Requirement	Specified	Offered	Deviations	Remarks
9.11	<p>CONTROL PANEL</p> <p>Control panel shall be provided to house the electrical components like fuses/MCB, contactors, relays, isolators, switches, and control supply transformers etc along with necessary wiring. The components shall be clearly identified by labels. The panel shall be made of sheet steel of minimum 2mm thick and shall be dust and vermin proof, suitable for outdoor condition. Adequate number of DOUBLE COMPRESSION type cable glands (heavy duty) of brass with nickel plating and Annealed Tinned Lugs shall be provided for incoming and outgoing power and control cables. The cable glands shall be provided with dummy plugs. The door, removable cover plates, and metal-to-metal joints shall be fully neoprene gasketed. The control panel shall be designed for IP 55 degree of protection.</p>	Vendor to confirm			
9.12	<p>PAINTING OF CONTROL PANELS: (The below details are Tentative, Final details will be given in during drawing approval stage)</p> <p>1) Surface treatment with minimum seven tank process 2) Panel 2 coats of synthetic Enamel paint. 3) Shade- Siemens Grey 4) The minimum coating thickness of power coated surfaces shall be minimum of 80 microns.</p>	Vendor to confirm			
9.13	<p>CONTROL SUPPLY TRANSFORMER:</p> <p>Dry type, step down control supply transformer 415V / 110V AC shall be provided to derive control supply for starter operation & indication. The transformer shall have minimum class 'B' insulation. The rating of the transformer shall be decided based on maximum power consumption plus 25% margin. The transformer shall meet IS 12021.</p>	Vendor to confirm			
9.14	<p>FUSE SWITCH UNIT/MCB:</p> <p>Metal enclosed, FOUR POLE fuse switch unit (TPN)/MCB of 63A, 415V, 3 phase 4 wire AC, rating suitable for outdoor location shall be provided to receive purchaser's supply. The enclosure shall be suitable for IP 55 degree of protection. Suitable Nickel-Chromium plated brass DOUBLE COMPRESSION glands and crimp type ATC lugs to receive purchaser's 4C-16 sq. mm Al armoured/ unarmoured FRLS cable & vendor's 4C-4 sqmm copper un-armoured cable shall be provided. Cable glands and lugs shall also be provided for the flexible trailing cable. The FSU/MCB shall be provided with 2 No's of earthing terminals with M12 screws, nuts and washers. The FSU/MCB shall be located at a fixed location about 5 m away from the start position of the hoist. The Fuse Switch unit/ MCB shall be wall mounted.</p>	Vendor to confirm			

S No.	Description - BHEL's Requirement	Specified	Offered	Deviations	Remarks
9.15	CABLE: IS 694 Part I&II, IS 3961, IS 1554, IS 9968, IS 6380. 1)The trailing cable shall be 1100 V grade extra flexible having 4 cores and as per IS 9968. The trailing flexible cable shall carry the power supply to the Hoist from the Switch Fuse unit. The conductor cross section shall be minimum 4 sq.mm multistranded tinned copper of class 5 of IS 8130. the insulation shall be heat resistant elastomeric compound based on ETHYLENE PROPYLENE RUBBER (EPR) with continuous withstanding temperature of 90 Deg C The inner sheath shall be heat resistant elastomeric compound with black colour. The outer sheath shall be marked with cable size, voltage grade by embossing , sequential marking at every one meter of length by embossing	Vendor to confirm			
9.16	2) The power cables between HOIST / CT MOTORS / LT MOTORS to control box, the pendent cable and other control cables shall be as per IS 1554. The conductor shall be multi stranded PLAIN ANNEALED copper with minimum cross section of 1.5 sqmm for control. The insulation shall be extruded PVC. The inner sheath shall be extruded PVC and the outer sheath shall be extruded-PVC. In addition, the outer sheath shall be marked with cable size, voltage grade, the word FRLS at every 5 meters and sequential marking of length at every one meter. The sheath shall be black in colour.	Vendor to confirm			
9.17	Crane Operation: Through pendent type control. (Operating level shall be 1000 mm approx.. above Floor level)	Vendor to confirm			
9.18	The Crane Control Voltage shall be 110 V AC	Vendor to confirm			
9.19	Type of Brakes:				
9.20	Hoist Brakes: Shall be of DC EM Brakes only	Vendor to confirm			
9.21	CT & LT Brakes: Shall be of Thruster Brakes only.	Vendor to confirm			
9.22	BRAKES: The brakes shall apply when either the motor starter or the main power switch is in OFF position or in the event of "power failure". The braking capacity of the brakes shall be 150% of the rating of the hoist.	Vendor to confirm			
9.23	Protection: All Panels, Limit-Switches and Motors shall have IP 54 protection.	Vendor to confirm			
9.24	Electric Contactors: All Panels shall have SIEMENS/L&T/GE contactors suitable for Crane operations.	Vendor to confirm			
9.25	Contactors Rating: The rating of all Contactors shall be at least 50% higher than the respective electric motor full load current, at the specified duty cycle.	Vendor to confirm			
9.26	Long Travel Motion: A Dual Drive Mechanism shall be provided for LT (Long Travel) Motion.	Vendor to confirm			
9.27	Illumination:				
9.28	2 Nos. of 400 Watts HPMV Lamps & fittings shall be provided under the Bridge and 1 No. shall be provided under CT Trolley. Fittings shall be of non-integral type. (Total lights 3 Nos.)	Vendor to confirm			
9.29	All Electric Panels shall be provided with suitable illumination for visibility and trouble shooting.	Vendor to confirm			
9.30	Drives : single speed drive shall be provided for a) Main Hoist, c) Long Travel and d) Cross Travel.	Vendor to confirm			

S No.	Description - BHEL's Requirement	Specified	Offered	Deviations	Remarks
9.31	Limits: Each hoist shall be provided with both rotary and counter weight limits. Limit switches shall be provided for both CT & LT. The limit switches shall have enclosures designed for IP 55 degree of protection. Proximity switches are not acceptable in place of Limit Switches.	Vendor to confirm			
9.32	DSL & Current Collector System:				
9.33	Cranes shall be provided with shrouded type DSL.	Vendor to confirm			
9.34	Supervision of Erection of DSL and supply of fixing elements are vendor's scope.	Vendor to confirm			
9.35	Current collection system suitable for the above cranes shall be offered along with the crane.	Vendor to confirm			
9.36	PENDANT PUSH BUTTON STATION The Pendant Push Button station shall have the following Push Buttons. Hoist, Lower, Forward, Reverse & Emergency Stop. The Emergency Pus Button shall be Lockable type. The Pendant Push Button station shall have the following LED type Indicating lamps. SUPPLY ON, HOIST MOTOR ON, CT MOTOR ON, HOIST MOTOR TRIP, CT MOTOR TRIP. The Pendant Push Button station shall be supported from the Control Panel with hot dip galvanized Link Chain. The Pendant Push Button Station shall be connected to the Control Panel using multi-core copper flexible control cable of 10m length. The Enclosure of Pendant Push button station shall be designed for IP 55 degree of protection. Push button shall be spring return type with 2NO+2NC self reset contacts rated for 5A at 415 volts AC. The push buttons for different operations like "HOIST/LOWER, FORWARD/REVERSE", "STOP" shall have different colours. All push buttons shall be as per relevant IS. The Push button shall be properly shrouded so as to prevent water & dust entry.	Vendor to confirm			
9.37	EARTHING: The structure, motor frames and enclosures of electrical equipment shall be effectively connected to earth complying with Indian Electricity Rules and IS 3043. The earthing materials from hoist to FSU/MCB shall be in supplier's scope.	Vendor to confirm			
9.38	WARRANTY: The warranty period shall be twenty four (24) months from the date of Supply or eighteen (18) months from the date of commissioning, whichever earlier.	Vendor to confirm			
10.0	START UP & COMMISSIONING SPARES: Start-up & Commissioning Spares shall be part of the main supply of the EOH. Start-up & commissioning spares are those spares, which may be required during the start-up, and commissioning of the equipment/system. Bidder shall provide an adequate stock of such start up and commissioning spares to be brought by him to the site for the equipment erection and commissioning. The spares must be available at site before the equipments are energized	Vendor to confirm			
10.1	FIRST FILL OF CONSUMABLES: Bidder's scope shall also include supply and filling of all chemicals, reagents, resins, lubricants, grease, filters and consumable items for operation up to COD including top up requirements at the time of issuance of PAC/declaration of COD. All lubricants proposed for the plant operation shall be suitable for all operating and environmental conditions that will be met on site consistent with good maintenance procedures as instructed in the maintenance manuals. First fill of consumable shall be part of the main supply.	Vendor to confirm			

S No.	Description - BHEL's Requirement	Specified	Offered	Deviations	Remarks
10.2	The vendor shall offer electrical/ electronic / mechanical spares for 2 years trouble free operation of the crane. (Unit Price along with quantity of each item of spare shall be offered in the price bid)	Vendor to offer			
10.3	SPECIAL TOOLS & TACKLES: Any special tools & tackles required for the entire equipment to disassemble, assemble or maintain the units, they shall be included in the quotation and furnished as part of the initial supply of the machine. List of special tools & tackles shall be decided by bidder as per his proven practice. When special tools are provided, they shall be packaged in separate, boxes with lugs and marked as "Special Tools for (tag / item number)." Each tool shall be stamped or tagged to indicate its intended usage. Levers and eye bolts for the removal of parts to be serviced shall be submitted with special tools.	Vendor to offer			
11.0	MAKES OF BOUGHT OUT ITEMS: (Shall be as per the list given below)				
11.1	Hoist Hooks: Herman Mohhta/Hercules/Silpa Udyog/Smriti Forgings/ Karachiwala	Vendor to specify			
11.2	Wire Ropes: USHA MARTIN/ BHARAT WIRE ROPES / MAYUR / ARADHYA	Vendor to specify			
11.3	Electric Motors: GE/Bhrat Bijlee/Siemens/KEC/ABB/Crompton / NTPC APPROVED	Vendor to specify			
11.4	DC EM Brake Unit: BCH / NTPC APPROVED	Vendor to confirm			
11.5	Thruster Brake Unit: Electromag / Speed-O-Control / Omega / NTPC APPROVED	Vendor to specify			
11.6	Limit Switches (Gravity Type): Siemens / EMM / BCH / SOC/SKC	Vendor to specify			
11.7	Contactors: Siemens / L&T / GE	Vendor to specify			
11.8	Over - Load Relay: Siemens / L&T / GE	Vendor to specify			
11.9	HRC Fuses: Siemens / L&T / GE	Vendor to specify			
11.10	Rotary limit switch: Siemens/Omega/SOC	Vendor to specify			
11.11	Resistance Box: Stromkraft / BCH / Ohmark	Vendor to specify			
11.12	Switch fuse unit: Siemens / L & T / GE	Vendor to specify			
11.13	Moulded Case C.B: Siemens / L & T / GE	Vendor to specify			
11.14	PushButtons: L&T/SIEMENS/TEKNIC/BCH/CONTROLS&SWITCHGEAR/TELEMECHANIQ UE/GE	Vendor to specify			
11.15	Couplings: WMI / Fenner / ALFEX / NTPC APPROVED	Vendor to specify			
11.16	Bearings: SKF / FAG only	Vendor to specify			
11.17	Cables: Reputed Makes & ISI Approved	Vendor to specify			
11.18	Bridge Light Fittings: Philips/GE/Crompton	Vendor to specify			
11.19	Other Elements: Vendor to specify the item and makes.	Vendor to submit			
11.20	NOTE: Make of various components for NTPC projects are subject to NTPC approval. No additional delivery or price implication is acceptable due to NTPC comment on make of components. Mix up of make for same item is not acceptable in any enquiry.	Vendor to confirm			
12.0	DOCUMENTS/DETAILS for APPROVAL: The following documents / details shall be submitted to BHEL for Approval within 20 days of PO placement , prior to taking up the manufacture of the crane.	Vendor to confirm			


S No.	Description - BHEL's Requirement	Specified	Offered	Deviations	Remarks
13.0	Drawings / Documents:				
13.1	GA Drawing of the Crane.	Vendor to submit			
13.2	GA Drawing of Crab with Trolley.	Vendor to submit			
13.3	GA Drawing of Individual Mechanisms.	Vendor to submit			
13.4	Sub-Assembly Drawing for Wheels, Hook Blocks, Gear Boxes & Hoist Drums.	Vendor to submit			
13.5	Calculations for Selection of Electric Motors, Gear Reducers, Brakes, Couplings, etc.	Vendor to submit			
13.6	Calculations for Bridge Girder, Crab, End - Carriage and their connections.	Vendor to submit			
13.7	Calculations for Steel wire rope selection	Vendor to submit			
13.8	Wiring Diagram with Logic Circuits.	Vendor to submit			
13.9	Cable Selection based on current rating.	Vendor to submit			
14.0	Technical Details:				
14.1	Total Weight of the Crane including all Electrical Equipments.	Vendor to specify			
14.2	Total Weight of Trolley including all Electrical Equipments.	Vendor to specify			
14.3	Weight of each Bridge assembled and ready for erection with and without Mechanical and Electrical Equipment.	Vendor to specify			
14.4	Weight of each End - Carriage: In assembled and ready for erection condition.	Vendor to specify			
14.5	Total Weight of Structural, Mechanical and Electrical Equipments. (To be indicated separately)	Vendor to specify			
15.0	INSPECTION: The following Schedule of Stage Inspections shall be strictly adhered prior to dispatch from the Supplier's Works.	Vendor to confirm			
16.0	STAGE-I Inspection:				
16.1	Verification of Test Certificate for Raw Materials used for Girders, Trolleys, Gear Box Casings, etc.	Vendor to confirm			
16.2	Verification of X-Ray Report of Butt-Joints coming in the Girders and Random Testing on the Welds, by physical examination.	Vendor to confirm			
16.3	Trolley Frame Fabrication before setting the Mechanisms.	Vendor to confirm			
16.4	Steel Casting				
16.5	DPT and machined surface shall be carried out	Vendor to confirm			
17.0	STAGE- II Inspection:				
17.1	Inspection of Bridges and End – Carriages with Wheel Assembly and Alignment checking	Vendor to confirm			
17.2	Verification of Span & Diagonal Dimensions, Checking of Wheel Alignment, Mechanical Assemblies and Total Alignment as per IS-3177	Vendor to confirm			
17.3	Free running of the all the Mechanisms.	Vendor to confirm			
18.0	STAGE- III (Final Inspection):				
18.1	Measurement of CAMBER in the Bridges.	Vendor to confirm			
18.2	Full / Rated Load Test and Deflection Test.	Vendor to confirm			
18.3	Deflection and Permanent Set Measurement.	Vendor to confirm			

S No.	Description - BHEL's Requirement	Specified	Offered	Deviations	Remarks
18.4	25% OVER-LOAD Lifting Ability Check.	Vendor to confirm			
18.5	Electric Hoist shall be tested as per IS 3938				
19.0	SUPERVISION OF CRANE ERECTION & COMMISSIONING:				
19.1	Supervision of Crane Erection & Commissioning: Supervision for Crane Erection & Commissioning of the Crane and Performance Prove –Out for 100% of Crane's Capacity , 125% lifting/ holding test and Smooth Functioning of the Crane (at BHEL site / Customer site) shall also be the RESPONSIBILITY of the supplier.	Vendor to confirm			
19.2	Crane Erection & Cabling: Supervision for Complete crane erection/installation, wiring/cablng of the various components at BHEL shall be the scope of the supplier.	Vendor to confirm			
19.3	Supervision for DSL current collector fixing and cabling from current collector to crane main switch also shall be the scope of the supplier. Current collector and its holding brackets, Cable is crane supplier scope.	Vendor to confirm			
19.4	All safety equipments like safety boot, safety belt, helmet, gloves, goggles etc. required for erection personnel shall be brought by the vendor.	Vendor to confirm			
19.5	Erection of Cranes and its accessories will be done by owner as per vendor's Erection Manual and check List. However,the bidder shall make two visit for the supervision of erection, pre-commissioning & post- commissioning check-up, start-up, testing and trial runs of all the items covered under the scope of supply. Number of days required for supervision of E&C shall be specified by vendor in their offer. However,Minimum visit shall be as per Enquiry for handling RC pumps & oxidation blower to be included for supervision of E&C. Travel charges (visa/passport, all the to/fro travel charges to the site), TA/DA, boarding and lodging shall be borne by the bidder and shall be inclusive in this portion. The charges quoted for the supervision will be considered for L1 evaluation. However, BHEL reserves the right to engage the services of the bidder for supervision of E&C.	Vendor to confirm			
20.0	O & M MANUALS: 10 Copies of Erection, Operation & Maintenance Manual, containing the following technical drawings & details shall be submitted.	Vendor to confirm			
21.0	Drawings & Details:				
21.1	Crane GA Drawing	Vendor to confirm			
21.2	Crab Assembly Drawing	Vendor to confirm			
21.3	Total Crane Wiring Schematics	Vendor to confirm			
21.4	Detailed Wiring Diagrams for Sub-Systems / Panels	Vendor to confirm			
21.5	Wheel Assembly Drawings	Vendor to confirm			
21.6	Bottom Block Assembly Drawing	Vendor to confirm			
21.7	Gear Box Assembly Drawings	Vendor to confirm			
21.8	Coupling Drawing and Details	Vendor to confirm			

S No.	Description - BHEL's Requirement	Specified	Offered	Deviations	Remarks
21.9	Specifications/Ratings of All Bought-Out-Items	Vendor to confirm			
21.10	Warranty / Guarantee Card for all Bought-Out-Items.	Vendor to confirm			
21.11	Trouble Shooting Chart for Main and all Sub-Systems	Vendor to confirm			
22.0	PERFORMANCE GUARANTEE:				
221.	The Performance of the Total Crane and / or the Components / Sub-Assemblies / Bought-Out-Items shall be guaranteed for a minimum period of 24 months from the date of acceptance of the crane at NTPC site.	Vendor to confirm			
23.0	PACKING & FORWARDING				
23.1	The Under slung cranes and accessories shall be properly packed so as to avoid damage during transit & storage. Wooden crate shall be covered with GI sheet of minimum 1mm thickness and same shall be used for packing various equipment / items as per shipping list. Lining with plastic sheet (water Proof) shall be provided inside the crate to avoid water entry during transit / storage. Two sets of manual (hard copies) with drawing & data sheet shall be sent along with the packing box. Each packing shall be accompanied with packing slip & all relevant drawings.	Vendor to confirm			
23.2	Each package or shipping units shall be clearly marked or stenciled on at least two sides - NTPC SITE (ADDRESS AS PER ENQUIRY). In addition, each package or shipping unit shall have the symbol painted in red on at least two sides of the package, covering one fourth of the area of the side.	Vendor to confirm			
24.00	ANNEXURE I - DATA SHEET (VENDOR TO SUBMIT FILLED COPY OF DATA SHEET ALONG WITH THEIR OFFER)	Vendor to confirm			
25.00	ANNEXURE II- DETAILS OF UNDER SLUNG CRANES	Vendor to confirm			
26.00	ANNEXURE-III- PAINTING SCHEME FOR MATERIAL HANDLING EQUIPMENTS	Vendor to confirm			
27.00	ANNEXURE-IV- RC PUMP & OXIDATION BLOWER CRANE GA	Vendor to confirm			
28.00	ANNEXURE-V- TYPICAL GA OF UNDER SLUNG CRANES	Vendor to confirm			

ANNEXURE - I

DATA SHEET
(VENDOR TO SUBMIT FILLED COPY ALONGWITH THEIR OFFER)

NTPC FGD PROJECT		
	DETAILS OF UNDER SLUNG CRANES FOR OXIDATION BLOWER AND RECIRCULATION PUMP HANDLING	
PROJECT NAME: MOUDA FGD PROJECT		
1.0	Capacity: SINGLE UNDER SLUNG CRANES	As per Enquiry
2.0	Quantity	As per Enquiry
3.0	Main Hoist (minimum)	As per Enquiry
4.0	SPAN (Wheel Centre to Wheel Centre Dimension):	
4.1	Long Travel Span for Recirculation Pump Area	Please Refer the Attached ANNEXURE IV
4.2	CT Span	Vendor to submit
5.0	Height of Lift:	
5.1	Hoist height for Oxidation blower & Recirculation Pump Area	Please Refer the Attached ANNEXURE IV
6.0	Bay Length:	
6.1	Oxidation blower & Recirculation Pump Area	Please Refer the Attached ANNEXURE IV
7.0	DUTY CYCLE: (Related to Drive Motor & Mechanisms)	
7.1	Hoists	40 % CDF
7.2	Long Travel	40 % CDF
7.3	Cross Travel	40 % CDF
8.0	SPEED: (Operating / Working Speed - Maximum)	
8.1	Main Hoist	7.5 mtrs./minute.
8.2	Cross Travel (CT)	12.0 mtrs./minute.
8.3	Long Travel (LT)	12.0 mtrs./minute.
9.0	MOTOR DETAILS: Vendor to provide details like capacity of motor, Frame size, make, type and No. of poles etc.	Vendor to confirm & submit details
9.1	Main Hoist	Vendor to submit
9.2	Cross Travel (CT)	Vendor to submit
9.3	Long Travel (LT)	Vendor to submit
10.0	GEAR BOX SIZES:	
10.1	Main Hoist	Vendor to specify
10.2	Cross Travel (CT)	Vendor to specify
10.3	Long Travel (LT)	Vendor to specify
11.0	Acceleration:	
11.1	Cross Travel (CT)	Vendor to specify
11.2	Long Travel (LT)	Vendor to specify
12.0	Hoist Rope Details: (Size & Number of Falls)	
12.1	Main Hoist rope Size	Vendor to specify
12.2	Falls	
13.0	CONTROL (Remote control)	
13.1	Through pendent type control	Vendor to confirm
13.2	Control Voltage: Shall be 110V AC	Vendor to note
13.3	Input Power Supply: Shall be 415 ± 10% Volts , 50 ± 3% Hz, 3 Phase- AC.	Vendor to note
13.4	Duty Class: Class – 3 [Indoor Service]	Vendor to confirm
13.5	Mechanism Group Classification:	M 6
13.5	Design Standard: The crane design standard as per IS – 807 & 3177 / 1999.	Vendor to confirm
13.6	WIRE ROPE HOIST: The electric hoist shall be designed and constructed in accordance with the latest revision of IS:3938 and shall be suitable for duty class 2.	Vendor to confirm
14.0	Wheel Sizes:	
14.1	Cross Travel (CT)	Vendor to specify
14.2	Long Travel (LT)	Vendor to specify
15.0	Brake Drum Sizes:	
15.1	Main Hoist	Vendor to specify
15.2	Cross Travel (CT)	Vendor to specify
15.3	Long Travel (LT)	Vendor to specify

(VENDOR TO SUBMIT FILLED COPY OF ABOVE DATA SHEET ALONGWITH THEIR OFFER)

ANNEXURE - II

Details of Under slung Crane for RC pumps and Blower Handling										PROJECT : MOUDA FGD		
SL NO	AREA	TYPE OF CRANE	CAPACITY OF CRANE	CRANE LONG TRAVEL MONO-RAIL I-BEAM BOTTOM ELEVATION (in BHEL Scope)	FLOOR LEVEL	TRAVEL LENGTH	LONG TRAVEL SPAN	DISTANCE BETWEEN LT MONORAIL TO SHED COLUMN CENTRE ON BOTH SIDE	CRANE LONG TRAVEL MONORAIL I-BEAM (in BHEL Scope)	MAXIMUM HEIGHT OF BOTTOM OF LONG TRAVEL MONORAIL I-BEAM TO CRANE HOOK	ACTUAL HEIGHT OF BOTTOM OF LONG TRAVEL MONORAIL I-BEAM TO CRANE HOOK - VENDOR TO SPECIFY IN THEIR OFFER	TOTAL QNTY
			TON	(EL (+) METER)	(EL (+) METER)	(METER)	(METER)	(MM)	(NPB)	(MM)	(MM) VENDOR TO SPECIFY	(SET)
1	Crane for RC pumps & Oxidation Blower for Unit-I (G503)	UNDER SLUNG CRANE	10	EL (+) 11.1	EL (+) 0.00	33	8	1000	NPB600 X220X122.4	2500	_____ MM	As per Enquiry
2	Crane for RC pumps & Oxidation Blower for Unit-II (G504)	UNDER SLUNG CRANE	10	EL (+) 11.1	EL (+) 0.00	20	16	1000	NPB600 X220X122.4	2500	_____ MM	As per Enquiry
NOTE : 1) Depending upon actual crane head room , the actual height of list for Crane shall be arrived.												

Bidder Signed with seal

SI No	SURFACE LOCATION	PGMA	SURFACE PREPARATION	PRIMER		FINISH		TOTAL DFT IN (µm min.)
				PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	

ANNEXURE-III- PAINTING SCHEME FOR MATERIAL HANDLING EQUIPMENTS

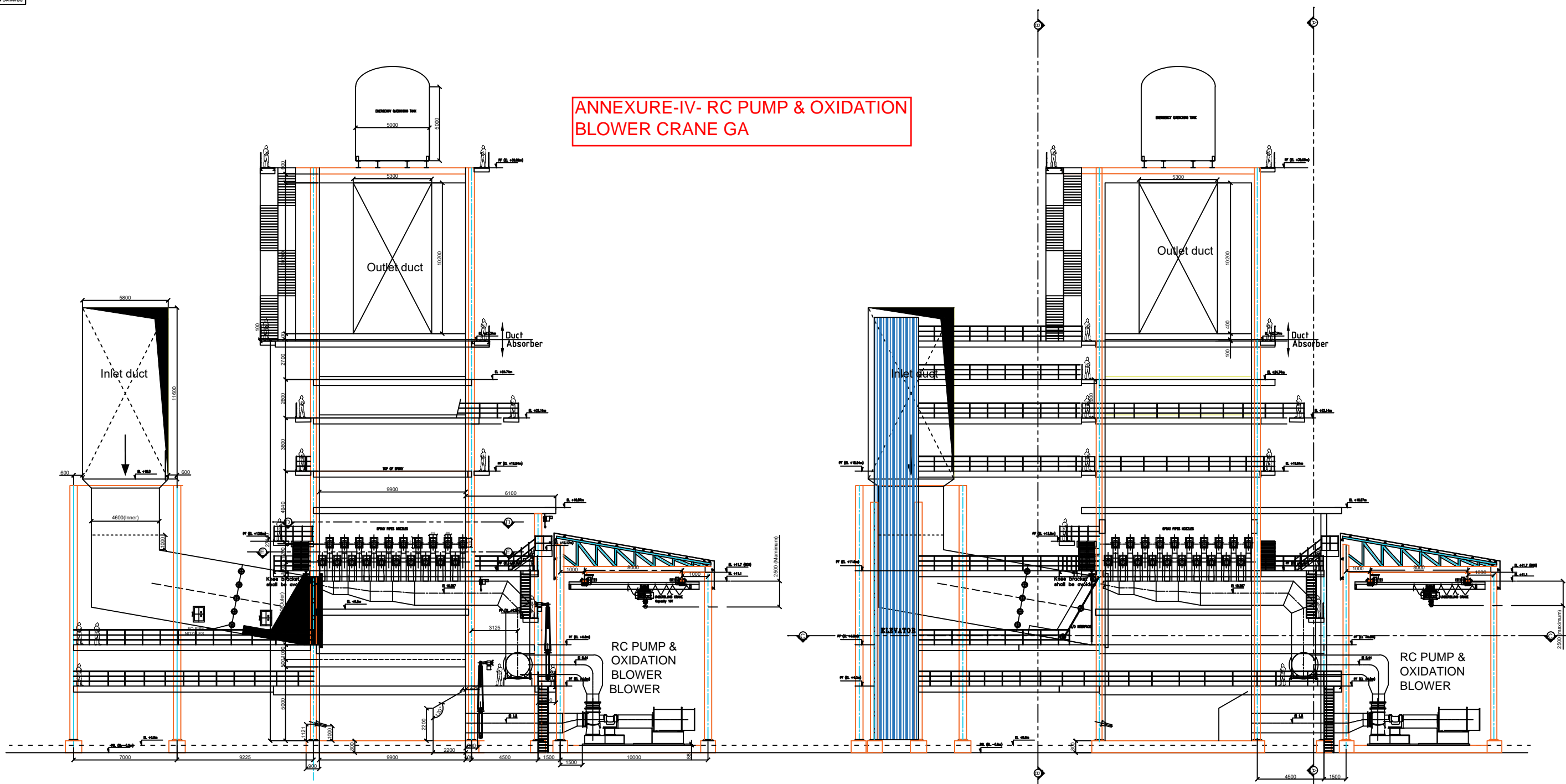
32	Handling Equipment- Hoists		Power Tool Cleaning to st3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats) Idler roller shall be applied with two coats of 70 microns at shop	70	Synthetic Enamel to IS 2932 Shade: Grey white RAL 9002 (Two coats)	60	130
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SI No	SURFACE LOCATION	PGMA	SURFACE PREPARATION	PRIMER		FINISH		TOTAL DFT IN (µm min.)
				PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	

GENERAL NOTES

1. No painting is required for Galvanized, non-ferrous & stainless steel items, except as indicated above.
2. Machined items are to be applied with coat of temporary rust preventive oil
3. PGMA's covered in sub-supplier (ie., Purchased) items viz., Agitator/ slide bearing and other sub-delivery components etc., are not indicated in the above list. However, the Painting Schedule for all items supplied by all sub-suppliers and BOI under the scope of BHEL shall be same as for main equipment covered in this document.
4. In sub-assy, wherever plates / sheets of thickness less than or equal to 5mm and rods are used - very minor items like clamps, small items etc Power Tool or Hand Tool Cleaning to SSPC - SP 3 / SP 2 shall be followed and painting under SI no:01 of Fans shall be followed.
5. Ground shade/colour of finish paints and identification tag/band for equipments, fans, piping, pipe services, supporting structures and other components is followed as per NTPC doc no: QS-01-DIV-W-4 at site.
6. All components covered under different PGMA's are to be painted. In case any component is left out, the same shall deemed to be included under the relevant section.
7. All threaded and other surfaces of foundation bolts and its materials, insulation pins, Anchor channels, Sleeves shall be coated with temporary rust preventive fluid and during execution of civil works; the dried film of coating shall be removed using organic solvents.
8. Painting requirement for all electrical equipment shall be as per the details identified in specification for the respective equipment.
9. All steel structures shall be provided with painting as given in the specification. Further, painting system shall also meet the requirements of corrosivity category C3 (durability high) as per ISO 12944.
10. Finish coat to be applied after an interval of min 10 hrs and within 6 months (after completion of intermediate coat).
11. Primer coat on steel shall be applied in shop immediately after blast cleaning by airless spray technique.
12. For the portion of steel surfaces embedded in concrete, the surface shall be prepared by Manual cleaning and provided with Primer coat of Chlorinated Rubber based Zinc Phosphate Primer of Minimum 50 Micron DFT.

ANNEXURE-IV- RC PUMP & OXIDATION BLOWER CRANE GA



ELEVATION VIEW OF CRANE ARRANGEMENT FOR UNIT#1

- Reference drawings:
 0-FW-000-01333: GA of Absorber Sheet 2
 0-FW-000-01334: GA of Absorber Sheet 3
 0-FW-000-01335: GA of Absorber Sheet 4

Note:
 Elevation 0.0 corresponds to RL 271.5
 FGL at Absorber area is at RL 271m
 All dimensions are in millimeters and levels are in Meters
 Absorber casing dimensions are outer dimensions

REV	DATE	ALTERED	CHECKED	APPROVED	REVISION REMARKS
07	18.03.22	PK	VMR	KK	Revisions added to 07.04.2022.
06	17.11.21	PK	VMR	KK	See last column.
05A	19.12.20	MNK	VMR	KK	Step 1 ME working plan for Unit#1 submitted.
04	25.11.20	MNK	VMR	KK	Revised based on internal discussion.
03	23.09.20	MNK	VMR	KK	Revised based on NTPC internal comments.
02	22.08.20	MNK	VMR	KK	Revised based on NTPC internal comments.
01	27.02.20	MNK	VMR	KK	Revised based on NTPC internal comments.
00	31.10.19	MNK	KSP	VMS	Initial Issue.

NTPC Dwg. No.: 9561-109-RP-PVC-B-367

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: **NTPC / Mauda, STAGE-1**
2x500MW

CUSTOMER/PROJECT: **SOLEX AIRLINES PLANT**
RANPET-632 406

DATE: 06-22/20
 DRAWN BY: **Bhorat Heavy Electricals Ltd**
 CHECKED BY: **VMR**
 APPROVED BY: **VMR**

SCALE: 1:100

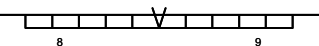
WEIGHT (kg): ********

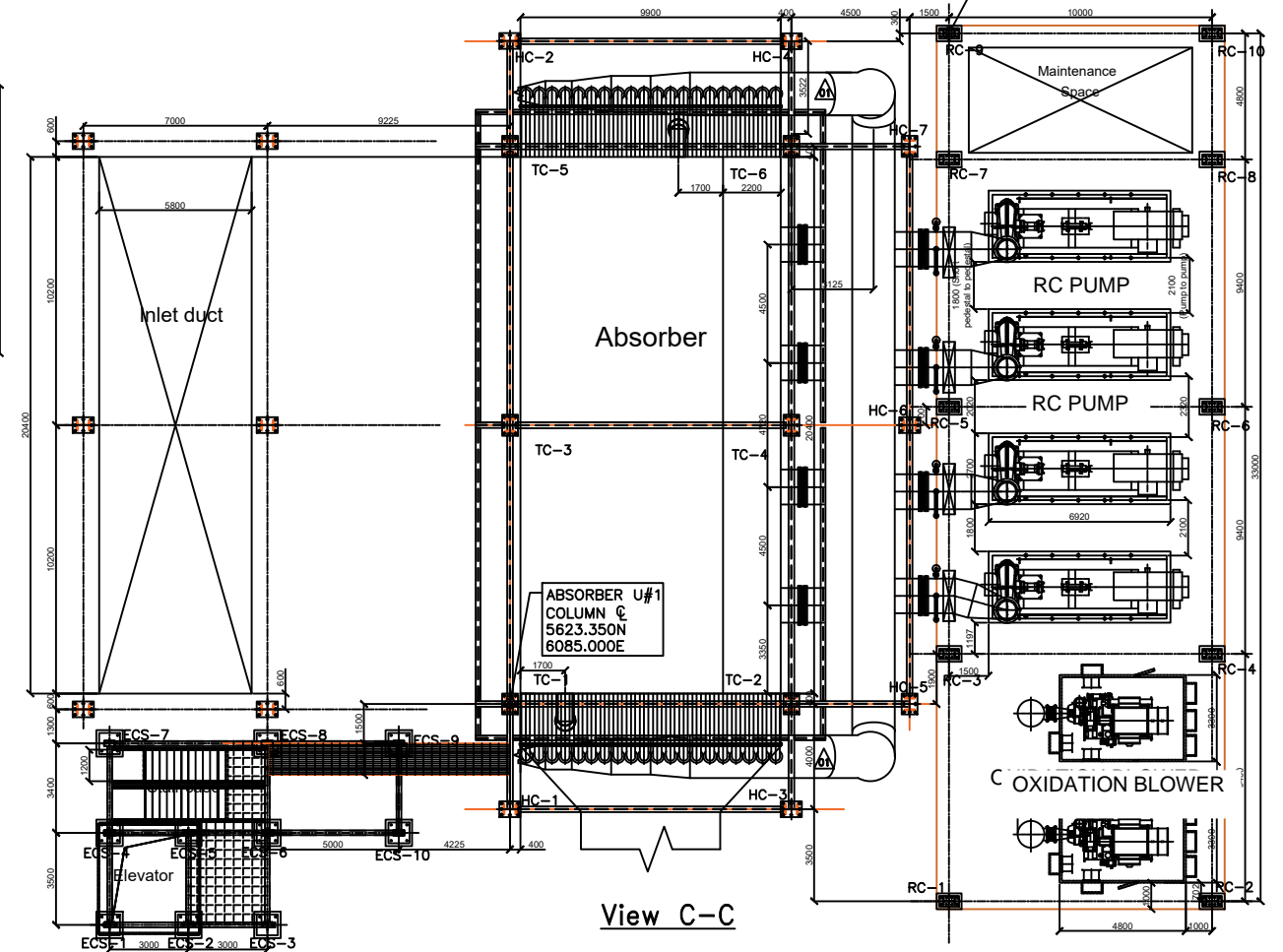
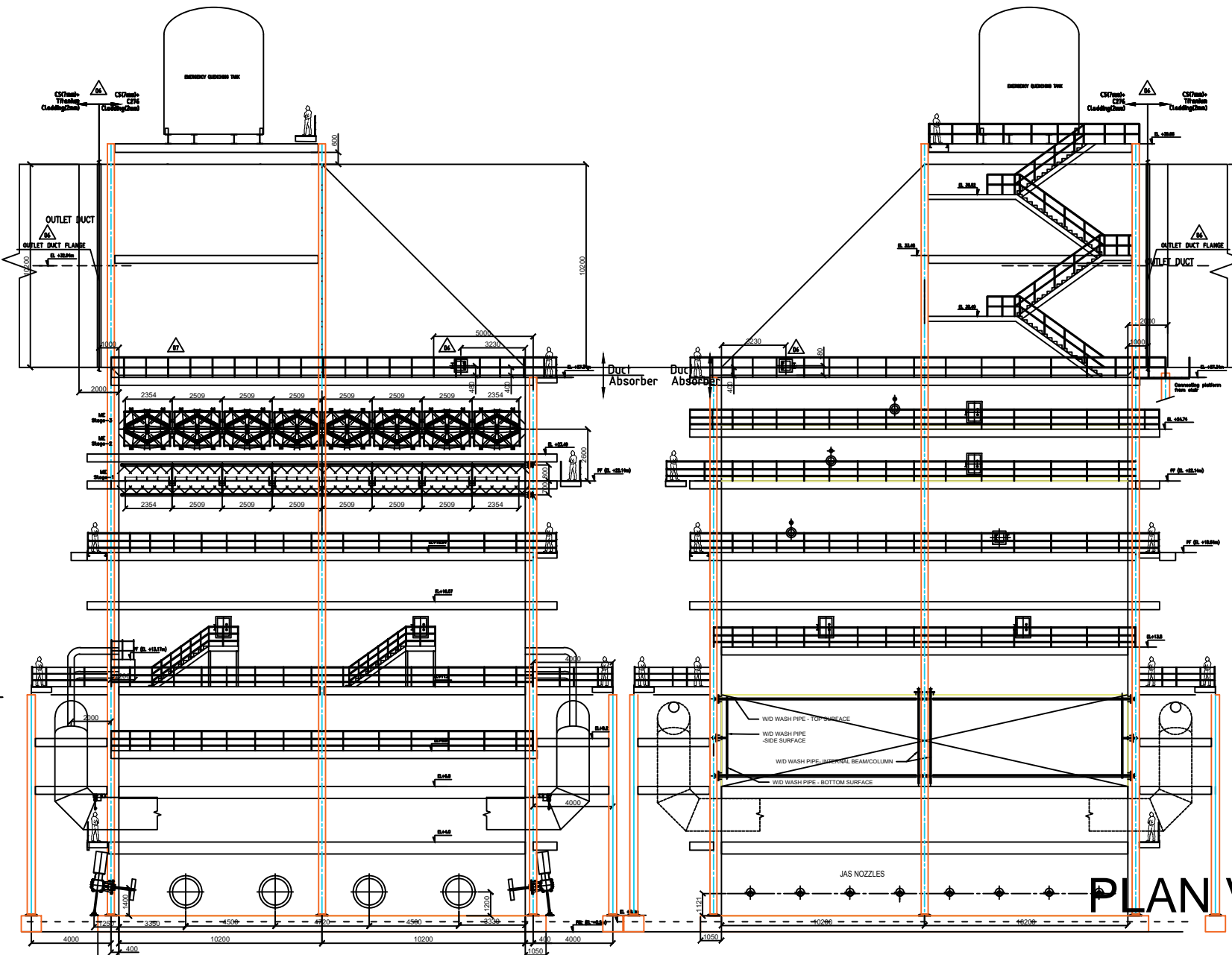
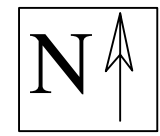
REF TO NEW / OLD DWG: **-**

TITLE: **GA of Absorber Unit#1**
 Sh 01 of 08

DRAWING NO.: **0-FW-000-01332**

REV: **07**





PLAN VIEW OF CRANE ARRANGEMENT FOR UNIT#1

View A-A

View B-B

COMPONENT	DESCRIPTION	1	2	3	4	5
OUTLET DUCT	IS 2062 E250 A/BR + 2mm C276/Titanium cladding					
AIR SUPPLY FIRE	-	-	-	-	-	CARBON STEEL
MIST ELIMINATOR	-	-	-	-	-	Poly Sulfone
JET AIR SPARGER	-	-	-	-	-	FRP(Vinylester Resin) +Alumina ceramic
EXTERNAL BOLT & NUT	A193 B7 & A194 2H	A193 B7 & A194 2H	A193 B7 & A194 2H	A193 B7 & A194 2H	A193 B7 & A194 2H	
INTERNAL BOLT & NUT	UNS S 31603 (SS 316)	UNS N 10276 (C276)	UNS N 10276 (C276)	-	UNS N 10276 (C276)	
SPRAY NOZZLE	UNS S 31603 (SS 316)	UNS N 10276 (C276)	SIC	-	-	Poly Propylene
SPRAY PIPE (Inside ABS/Duct)	UNS S 31603 (SS 316)	UNS N 10276 (C276)	FRP + SIC coating	-	-	Poly Propylene
SPRAY HEADER (Outside Absorber)	-	-	CS + Rubber lining	-	-	
FON BOLT & NUT	-	-	-	-	-	IS 2062 E250 A/BR
INTERNAL SUPPORT	UNS S 31603	UNS N 10276 (C276)	CS + 2mm C276 Cladding/Lining	CS + 2mm C276 Cladding/Lining	CS + 2mm C276 Cladding/Lining	
GASKET	PTFE	PTFE	RUBBER	RUBBER	RUBBER	
NOZZLE FLANGE	IS 2062 E250 BR	UNS N 10276 (C276)	IS 2062 E250 BR + 2mm C276 Lining	IS 2062 E250 BR + 2mm C276 Lining	IS 2062 E250 BR + 2mm C276 Lining	
NOZZLE NECK	IS 2062 E250 BR (IS 1239 / IS 3589)	UNS N 10276 (C276)	IS 2062 E250 BR + 2mm C276 Lining	IS 2062 E250 BR + 2mm C276 Lining	IS 2062 E250 BR + 2mm C276 Lining	
MANHOLE BOLT & NUT	CS + GALV.	-	CS + GALV.	CS + GALV.	CS + GALV.	
MANHOLE COVER	IS 2062 E250 A/BR	-	CS + 2mm C276 Cladding/Lining	CS + 2mm C276 Cladding/Lining	CS + 2mm C276 Cladding/Lining	
MANHOLE FLANGE	IS 2062 E250 A/BR	-	CS + 2mm C276 Cladding/Lining	CS + 2mm C276 Cladding/Lining	CS + 2mm C276 Cladding/Lining	
MANHOLE NECK	IS 2062 E250 A/BR	-	CS + 2mm C276 Cladding/Lining	CS + 2mm C276 Cladding/Lining	CS + 2mm C276 Cladding/Lining	
BOTTOM PLATE	-	-	CS (7mm min) + 2mm C276 Clad Plate	CS (7mm min) + 2mm C276 Clad Plate	CS (7mm min) + 2mm C276 Clad Plate	
SHELL/CASING	IS 2062 E250 A/BR 6mm thick	UNS N 10276 (C276)	CS (7mm min) + 2mm C276 Clad	CS (7mm min) + 2mm C276 Clad Plate	CS (7mm min) + 2mm C276 Clad Plate	
SERVICE AREA	EMERGENCY QUENCHING AREA	GAS INLET AREA (WET DRY INTERFACE)	ABSORBER SPRAY PIPE AREA	ABSORBER TANK AREA	MIST ELIMINATOR AREA	

MATERIAL SPECIFICATION

REV	DATE	ALTERED	CHECKED	APPROVED	REVISION REMARKS
07	18.03.22	PK	VMR	KK	Platform added to 37.20m elevation.
06	17.11.21	PK	VMR	KK	See task order.
05A	18.12.20	MNK	VMR	KK	Stage 1 HE working plan for Unit#1 completed.
04	25.11.20	MNK	VMR	KK	Revised based on internal comments.
03	23.08.20	MNK	VMR	KK	Revised based on NTPC & internal comments.
02	22.08.20	MNK	VMR	KK	Revised based on NTPC & internal comments.
01	27.02.20	MNK	VMR	KK	Revised based on NTPC & internal comments.
00	31.10.19	MNK	KSP	VMS	Initial Issue

NTPC Dwg. No.: 9561-109-RP-PVC-B-367

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: **NTPC / Mauda, STAGE-1 2x500MW**

CUSTOMER/PROJECT: **Bharat Heavy Electricals Ltd**

PLANT: **BOILER ALUMINUMS PLANT**

UNIT: **RANIPET-632 406**

DATE: **27.02.20**

SCALE: **1:1**

WEIGHT (kg): ********

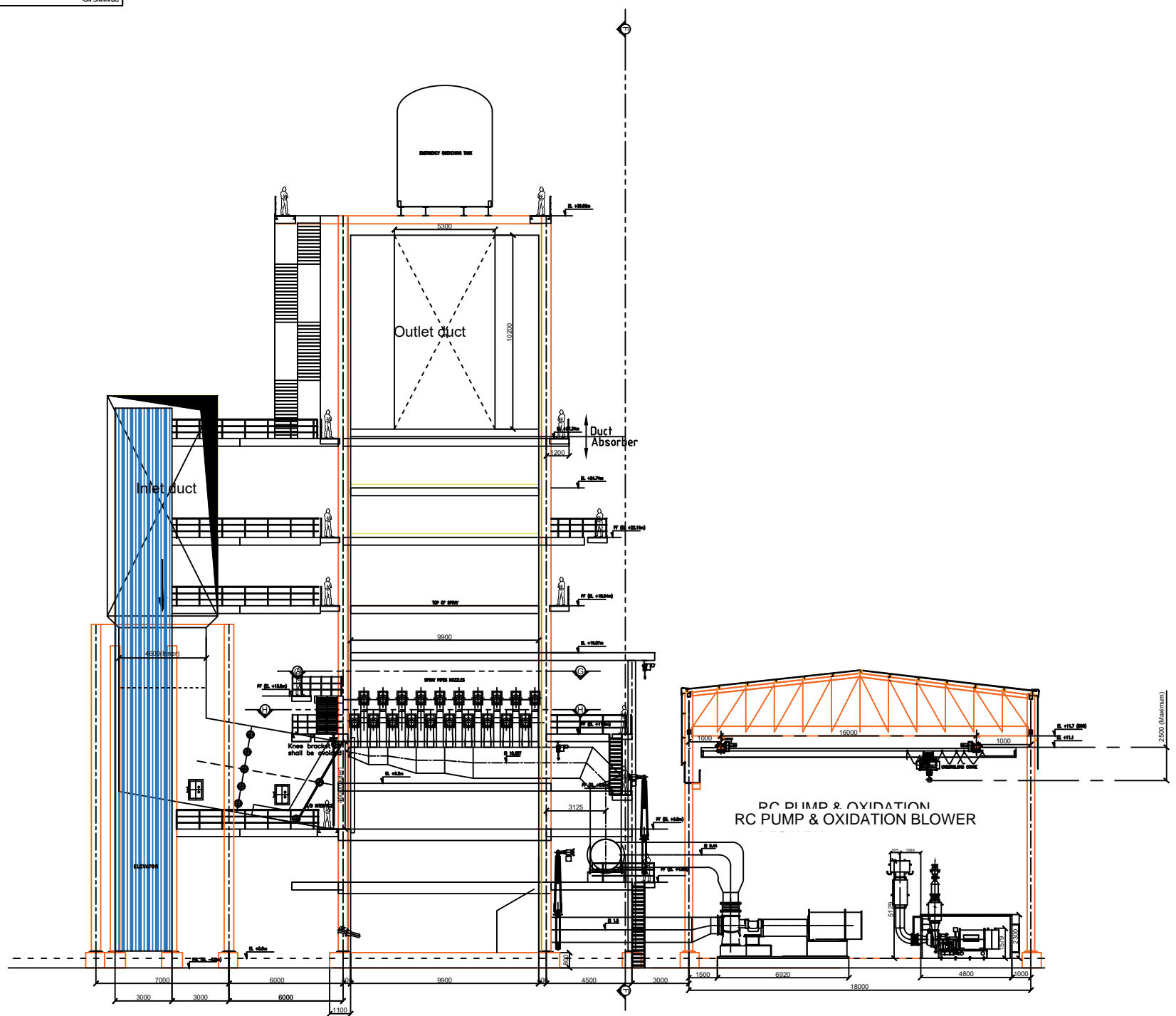
REV: **07**

TITLE: **GA of Absorber Unit#1**

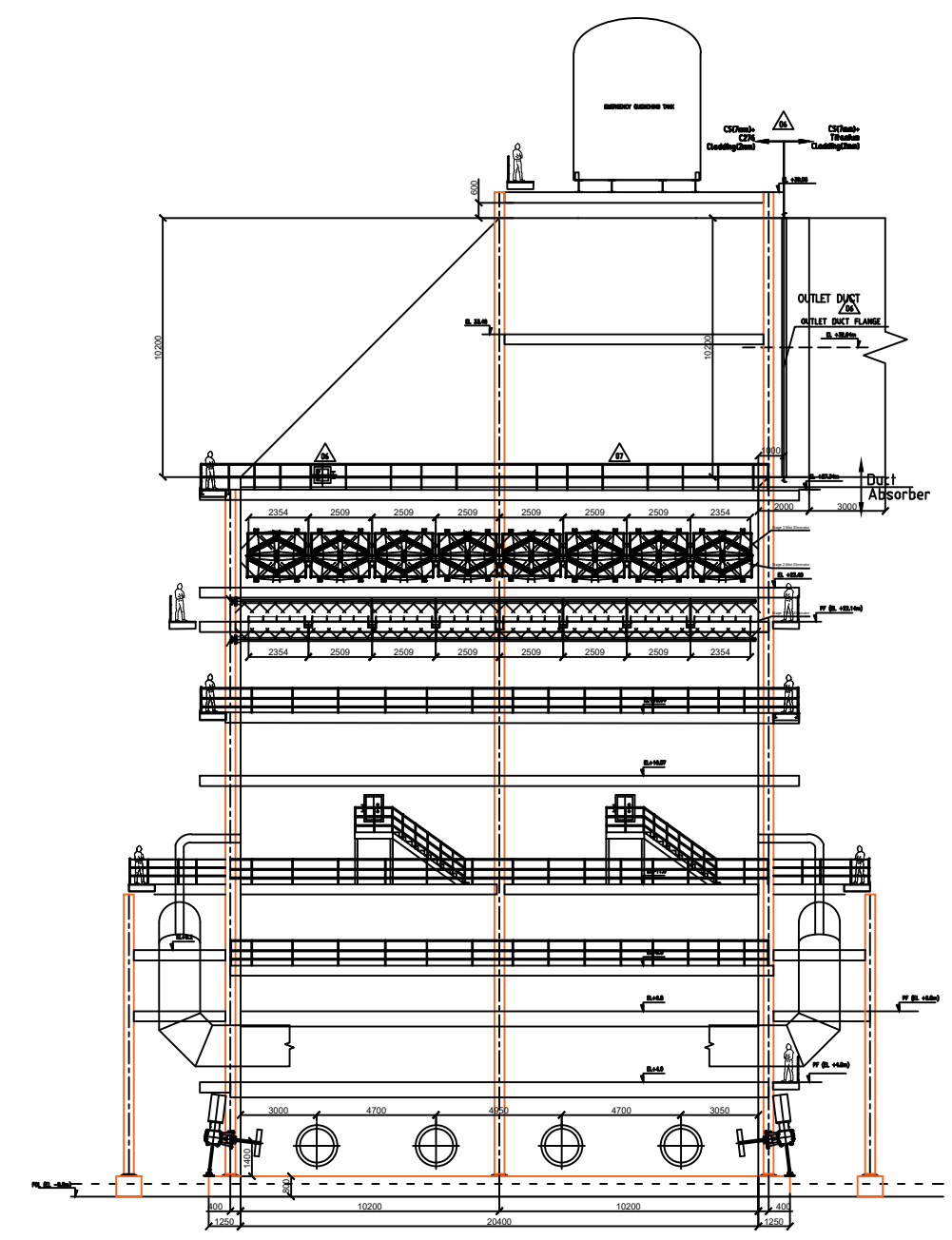
Sh. 02 of 08

DRAWING NO: **0-FW-000-01333**

REV: **07**



Unit#2 Elevation



View F-F

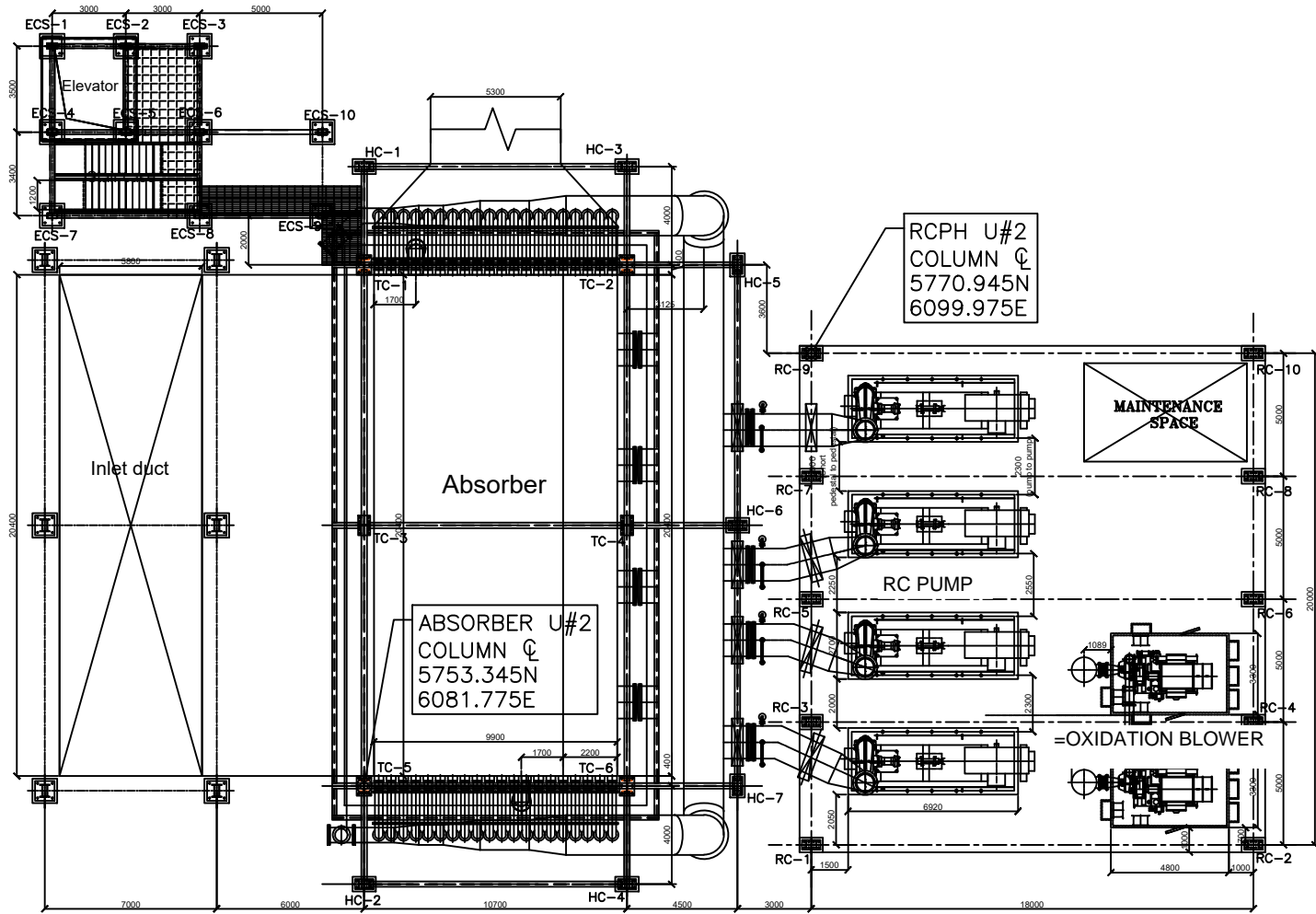
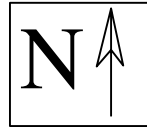
ELEVATION VIEW OF CRANE ARRANGEMENT FOR UNIT#2

- Reference drawings:**
 0-FW-000-01709: GA of Absorber Sheet 6
 0-FW-000-01710: GA of Absorber Sheet 7
 0-FW-000-01711: GA of Absorber Sheet 8

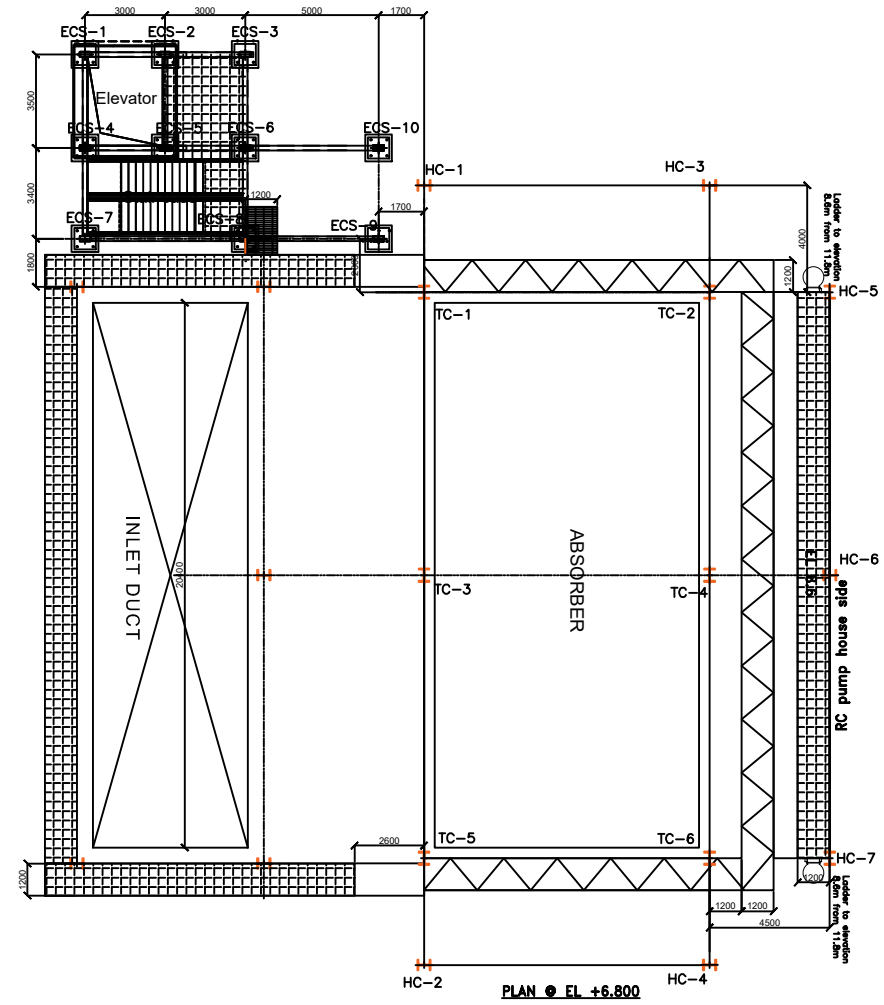
REV	DATE	ALTERED	CHECKED	APPROVED	REVISION REMARKS
07	18.03.22	PK	VMR	KK	Revisions added to 07.04a.01a.01a.
06	17.11.21	PK	VMR	KK	See last column.
05A	18.12.20	MNK	VMR	KK	Stage 1 ME working plan for Unit#2 completed.
04	25.11.20	MNK	VMR	KK	Revised based on internal discussion.
03	23.09.20	MNK	VMR	KK	Revised based on NTPC & internal comments.
02	22.08.20	MNK	VMR	KK	Revised based on NTPC & internal comments.
01	27.02.20	MNK	VMR	KK	Revised based on NTPC & internal comments.
00	31.10.19	MNK	KSP	VMS	Initial issue.

NTPC Dwg. No.: 9561-109-RP-PVC-B-367

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		NTPC / Mauda, STAGE-1	
CUSTOMER/PROJECT		2x500MW	
CUST.NO-G503 & G504		06-227/D	
Bharat Heavy Electricals Ltd		DATE	27.02.20
SOLEX AIRLINES PLANT		CHKD	KEBP
RANIPET-632 406		DATE	27.02.20
SHEET NO.		07	OF 08
SCALE		NTS	
WEIGHT (kg)		****	
REF TO NEW / OLD DWG			
TITLE		GA of Absorber Unit#2	
DRAWING NO.:		0-FW-000-01336	
REV		07	



Unit#2 plan



PLAN @ EL. +6.800

PLAN VIEW OF CRANE ARRANGEMENT FOR UNIT#2

REV	DATE	ALTERED	CHECKED	APPROVED	REVISION REMARKS
07	18.03.22	PK	VMR	KK	Revised to 27.05.2020.
06	17.11.21	PK	VMR	KK	See last issue.
05A	18.12.20	MNK	VMR	KK	Step 1 ME working plan for Unit#2 absorber
04	25.11.20	MNK	VMR	KK	Revised based on internal discussion
03	03.09.20	MNK	VMR	KK	Revised based on NTPC internal comments
02	22.08.20	MNK	VMR	KK	Revised based on NTPC internal comments
01	27.02.20	MNK	VMR	KK	Revised based on NTPC internal comments
00	31.10.19	MNK	KSP	VMS	Initial issue.

NTPC Dwg. No.: 9561-109-RP-PVC-B-367

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: **NTPC / Mauda, STAGE-1**
2x500MW

CUSTOMER/PROJECT: **SOLEX AIRLINES PLANT**
RANIPET-632 406

DATE: 27.02.20
 DRAWN BY: KSP
 CHECKED BY: VMR
 APPROVED BY: KK

SCALE: **NTS**

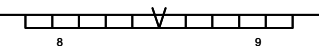
WEIGHT (kg): ********

REV TO NEW / OLD Dwg: **-**

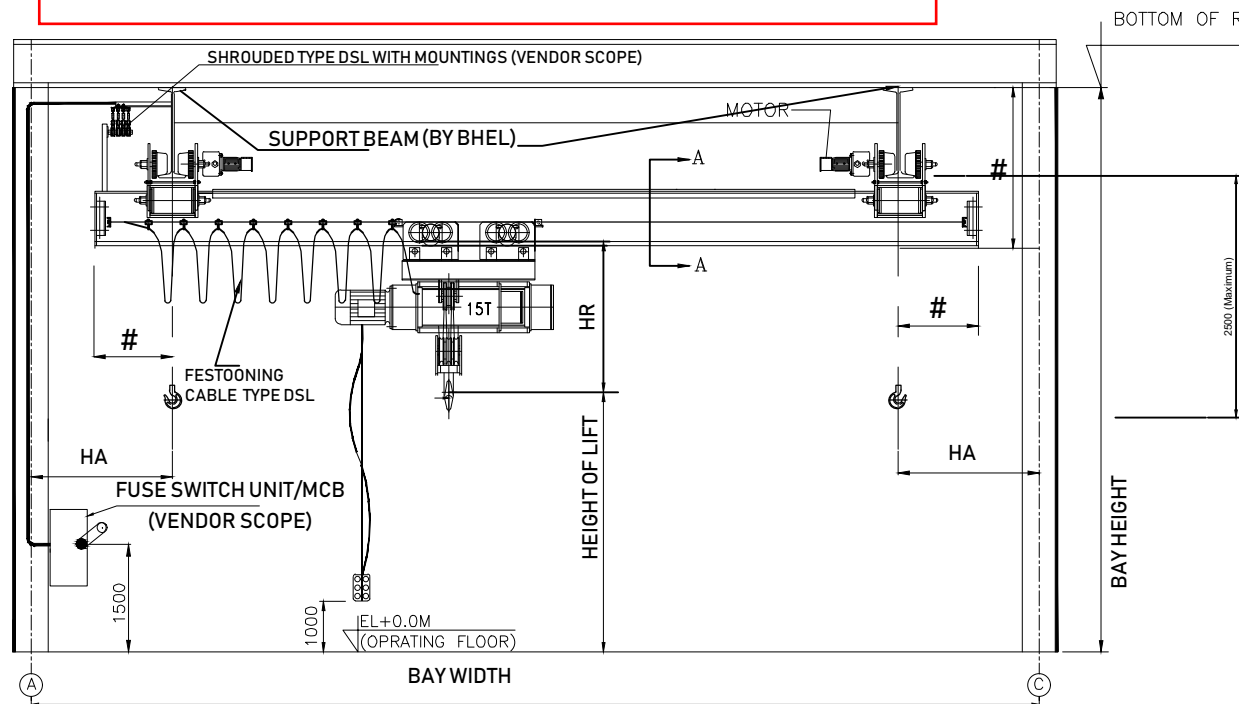
TITLE: **GA of Absorber Unit#2**
 Sh 06 of 08

DRAWING NO.: **0-FW-000-01709**

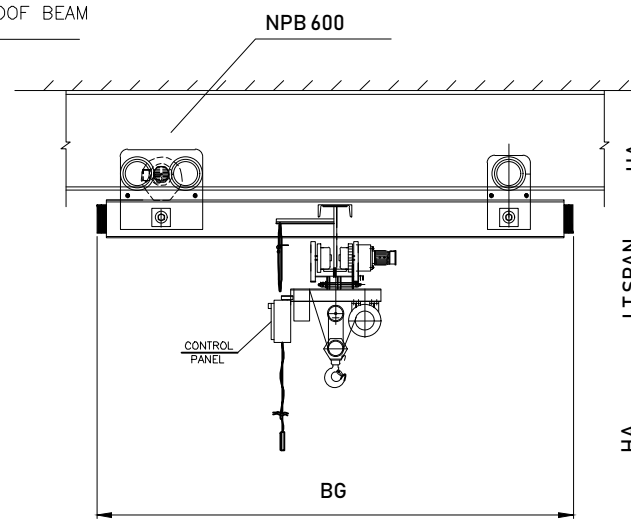
REV: **07**



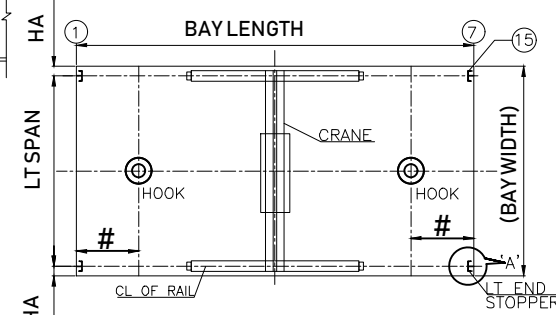
ANNEXURE-V- TYPICAL GA OF UNDER SLUNG CRANES



ELEVATION

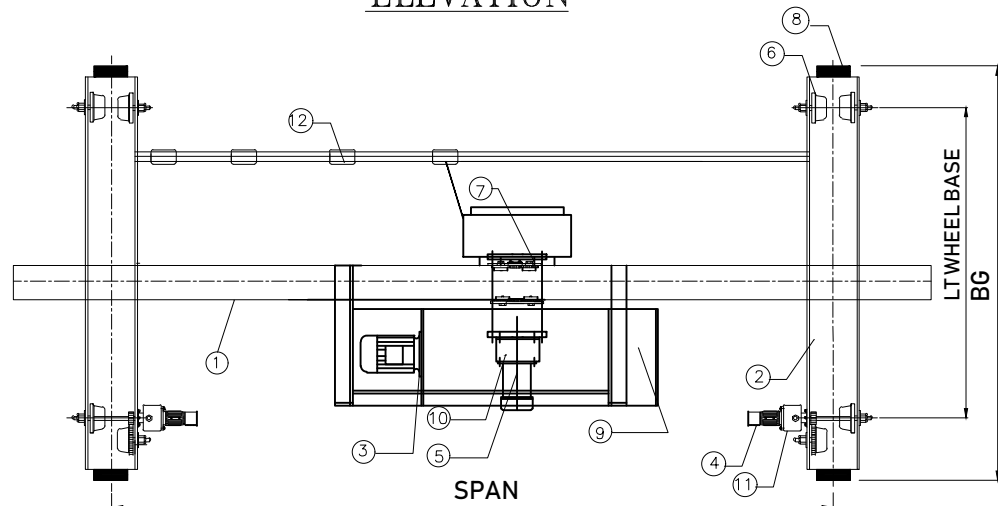


SIDE VIEW



KEY PLAN

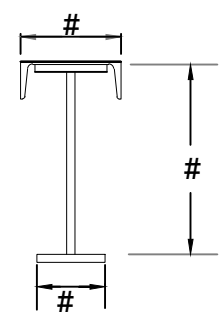
19	CT/LT GEAR BOX HOUSING	VENDOR TO SPECIFY
18	HOIST GEAR BOX HOUSING	VENDOR TO SPECIFY
17	PULLEY	VENDOR TO SPECIFY
16	ROPE DRUM	VENDOR TO SPECIFY
15	LT END STOPER	VENDOR TO SPECIFY
14	CT END STOPER	VENDOR TO SPECIFY
13	HOOK	VENDOR TO SPECIFY
12	CT DSL	VENDOR TO SPECIFY
11	LT GEAR	VENDOR TO SPECIFY
10	CTGEAR	VENDOR TO SPECIFY
9	MH GEAR	VENDOR TO SPECIFY
8	BUFFER	VENDOR TO SPECIFY
7	CT WHEEL	VENDOR TO SPECIFY
6	LT WHEEL	VENDOR TO SPECIFY
5	CT MOTOR	VENDOR TO SPECIFY
4	LT MOTOR	VENDOR TO SPECIFY
3	MH MOTOR	VENDOR TO SPECIFY
2	LT END CARRAIGE/BEAM	VENDOR TO SPECIFY
1	GIRDER/TROLLEY PLATE	VENDOR TO SPECIFY
DENOT.	ITEMS DISCRPTION.	VENDOR TO SPECIFY
BOM		



PLAN

**CRANE GIRDER
DETAIL AT SECTION AA**

(GIRDER SIZE + CAPPING SIZE : AS PER VENDOR DESIGN)



- NOTES:-**
1. ALL DIMENSIONS ARE IN MM. UNLESS OTHERWISE SPECIFIED.
 2. # - VENDOR TO SPECIFY

PAINING OF CONTROL PANELS:
 (A) SURFACE TREATMENT WITH MINIMUM SEVEN TANK PROCESS.
 (B) PANEL 2 COATS OF SYNTHETIC ENAMEL PAINT.
 (C) SHADE-SIEMENS GREY
 (D) THE MINIMUM COATING THICKNESS OF POWDER COATED SURFACES SHALL BE MIN OF 80 MICRONS.

Painting:
Primers:
 Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats) of Min DFT 70 microns.
Final:
 Synthetic Enamel to IS 2932 Shade: Grey white RAL 9002 (Two coats) of Min. DFT 60 microns.
 Total DFT: 130 microns.

		VENDORS TO INFORM
HR	HEAD ROOM	
HA	HOOK APPROACH	
BG	BOGIE LENGTH	
HL	HEIGHT OF LIFT	
WB	LT WHEEL BASE	

CRANE CAPACITY/LIFT		CRANE CAPACITY/LIFT : AS PER SPEC.					
LOCATION		OXIDATION BLOWER AND RC PUMP					
WEIGHT OF CRANE		VENDOR TO SPECIFY					
MAX. LT WHEEL LOAD		VENDOR TO SPECIFY					
CONTROL SUPPLY		110 V					
POWER SUPPLY		415 V±10%, 3 PH., 50HZ.					
BEARING		VENDOR TO SPECIFY					
CONTROL		PENDANT PUSH BUTTON FROM FLOOR LEVEL.					
GEAR BOX	MOTION	REDUCTION	MATL. OF GEAR & PINION	HARDNESS	LUBRICATION		
	HOIST	VENDOR TO SPECIFY	VENDOR TO SPECIFY	VENDOR TO SPECIFY	VENDOR TO SPECIFY		
	CT	VENDOR TO SPECIFY	VENDOR TO SPECIFY	VENDOR TO SPECIFY			
SPEED	HOIST	AS PER SPEC.					
	CT	AS PER SPEC.					
	LT	AS PER SPEC.					
MOTORS	HOIST	VENDOR TO SPECIFY					
	CT	VENDOR TO SPECIFY					
	LT	VENDOR TO SPECIFY					
BRAKE	MOTION	SIZE	RATING	TYPE	LIMIT SWITCH	TYPE	QTY.
	HOIST	#	VENDOR TO SPECIFY	VENDOR TO SPECIFY	HOIST	VENDOR TO SPECIFY	#
	CT	#	VENDOR TO SPECIFY	VENDOR TO SPECIFY	TROLLEY	VENDOR TO SPECIFY	#
	LT	#	VENDOR TO SPECIFY	VENDOR TO SPECIFY	CRANE	VENDOR TO SPECIFY	#
WIRE ROPE/FALLS/SPEC.		VENDOR TO SPECIFY					
CLASS OF DUTY		VENDOR TO SPECIFY					
BAY LENGTH	AS PER SPEC.	LT WH. DIA./QTY.		VENDOR TO SPECIFY			
HEIGHT OF LIFT	AS PER SPEC.	CT WH. DIA./QTY.		VENDOR TO SPECIFY			
SPAN	AS PER SPEC.	SHEAVE DIA		VENDOR TO SPECIFY			
CAPACITY	AS PER SPEC.	DRUM DIA/LENGHT		VENDOR TO SPECIFY			
TECHNICAL SPECIFICATION							

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		NTPC PROJECT					
BHARAT HEAVY ELECTRICALS LTD. UNIT: BOILER AUXILIARIES PLANT. RANIPET-632 406		DRN	NAME	SIGN	DATE	NO. OF VAR.	
		CHD					
DEPT AQCS	GRADE OF UNTOL.DIM	SCALE	WEIGHT (KG)	REF. TO ASSY/OLD DRG.	ITEM NO.	NO. OF ITEMS	
CODE 882		N.T.S					
TITLE			CODE	CARD	DRAWING NO.		REV
TYPICAL GA OF UNDER SLUNG CRANE				U 01	3-FW-0-00001		00

934955/2022/BAP-QA_MECH

PROJECT: NTPC Mouda 2 X 500MW (BHEL WO no: G503 & G504) CONTRACT NO: CS-9561-109(1B)-9-FC- NOA-6722 for NTPC Mouda 2 X 500MW PACKAGE: FGD PACKAGE MAIN CONTRACTOR: BHEL - RANIPET SUB CONTRACTOR & ADDRESS: (To be filled by VENDOR)		CONTRACT QUALITY REQUIREMENTS (CQR) for UNDERSLUNG CRANES used in FGD APPLICATION NTPC Mouda 2 X 500MW (BHEL WO no: G503 & G504)		DOC.NO: BAP/QR/ G503, G504 / Mouda/ Underslung Cranes: 001 Rev NO.: 00 PAGE : Page 1 of 1 DATE: 09.07.2022		##Enquiry No: ## Supplier Name & Address: ##Offer reference: ##Date: Contact Official Name: Mobile no: Email id:	
Sl. NO.	DESCRIPTION	BHEL/NTPC Requirements				##Specific confirmations by the vendor	

ITEM: UNDERSLUNG CRANES

01	Quality plan Requirement	<ol style="list-style-type: none"> MQP (Manufacturing Quality Plan) is applicable for these Underslung Cranes and accordingly Underslung Crane Manufacturer shall submit the MQP in ultimate customer – NTPC (copy attached). If any of the Underslung Cranes manufacturer is having, ultimate customer NTPC approved MQP (Manufacturing Quality Plan) / RQP (Reference Quality Plan) and having validity, the same is applicable for these Underslung Crane for inspection subject to obtaining ultimate customer NTPC approval in the event of an order through endorsement sheet approval route as in sl no: 3 below Accordingly, Underslung Cranes Manufacturer shall submit the filled up Endorsement sheet (copy attached) with ultimate customer approved MQP/RQP with signature & seal in the event of a Purchase Order from BHEL. If Underslung Cranes Manufacturer does not have MQP/RQP, they should submit a fresh MQP to BHEL/NTPC, (in NTPC format) for review & approval. (copy attached). 	
02	Inspection Methodology	BHEL/BHEL AIA and Ultimate customer NTPC Inspection as per approved MQP /RQP with endorsement sheet / approved data sheet / drg / spec is must before dispatch. No material shall be dispatched without BHEL/Ultimate Customer NTPC, inspection with required CHP/MDCC clearances.	
05	For inspection call	To raise inspection call by BHEL/BHEL AIA inspection including for type test witnessing, vendor is requested to contact Mr R Kesavan, DGM (QC-Proc)., Mobile no: +91 9443006303., Email id: Kesavan@bhel.in and Mr Zeeshan Ali, DM (QC-Proc)., Mobile no: +91 9443149691., Email id: zeeshan@bhel.in for inspection related activities for immediate response/ resolution.	
06	Packing	Required Packing & preservation shall also to be ensured as per requirements stipulated in Engg spec / drg / data sheet/PO condition to avoid any damage during transit., handling damages & storage at site.	
07	Painting	Paint color and coating thickness to be ensured as per requirements stipulated in Engg spec / drg / data sheet.	
08	Document package	Specific confirmation for Document Package in the event of an order (2 hard copies + 2 CDs in PDF file) is to be given containing the following with proper linkages (.) <ol style="list-style-type: none"> Index Sheet MQP/RQP/Endorsement sheet TCs identified by BHEL/NTPC for record for “CHP” and Verification portion as given in. Final Inspection Report + all applicable Test Certificates BHEL/BHEL authorized Inspection Agency report + TC Type test reports conducted/submitted with approval NTPC CHP/MDCC 	

##Supplier signature with seal

Necessarily to be filled up by the vendor at the time of offer itself otherwise their offer may not be considered w.r.t Quality Requirements being customer specific requirements.

934955/2022/BAP-QA-MECH

UNDERSLUNG CRANES SUPPLIER WITH MFR.'s LOGO (TO BE FILLED BY UNDERSLUNG CRANES SUPPLIER)	UNDERSLUNG CRANES MANUFACTURER'S NAME AND ADDRESS (TO BE FILLED BY UNDERSLUNG CRANES MANUFACTURER)	MANUFACTURING QUALITY PLAN				PROJECT: NTPC Mouda 2 x 500MW (BHEL Wo No: G503, G504) PACKAGE: FGD PACKAGE			
		ITEM: UNDERSLUNG CRANES FOR FGD APPLICATION SUB-SYSTEM: FGD		QP NO.: FGD: UNDERSLUNG CRANES:001 REV.NO.: 00 DATE: PAGE: OF....		NTPC CONTRACT NO: CS-9561-109(1B)-9-FC-NOA-6722 for Mouda (2 X 500MW) MAIN CONTRACTOR: BHEL - RANIPET SUB CONTRACTOR (OEM) & ADDRESS: (TO BE FILLED BY OEM SUPPLIER)			

SL. NO	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
					M	C/N				D*	M	C	N	
1.	2.	3.	4.	5.	6.		7.	8.	9.	D*	** 10.			11.


		LEGEND: * RECORDS, IDENTIFIED WITH "TICK" (✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. ** M: UNDERSLUNG CRANE MANUFACTURER C: MAIN SUPPLIER – BHEL/BHEL AIA, N: NTPC P: PERFORM W: WITNESS AND V: VERIFICATION. AS APPROPRIATE, CHP: NTPC SHALL IDENTIFIED IN COLUMN "N" AS 'W'		DOC. NO.: _____ REV..... CAT.....	
UNDERSLUNG CRANE MANUFACTURER/ SIGNATURE	MAIN (BHEL) SUPPLIER		FOR NTPC USE	REVIEWED BY _____	APPROVED BY _____

FORMAT NO.: QS-01-QAI-P-09/F1-R1

1/1

ENGG. DIV./QA&I




	MANUFACTURER NAME & ADDRESS		MANUFACTURING QUALITY PLAN				PROJECT		NTPC-Mauda				
			ITEM: UNDERSLUNG CRANE FOR FGD APPLICATION SUB SYSTEM: FGD				QP NO.: FGD:USC REV: 00 DATE: Page: 01 of 09		PO NO.				
									PACKAGE		FGD		
									MAIN SUPPLIER		BHEL - Ranipet		
BHEL PO NO													

SL	COMPONENT & OPERATION	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTAM OF CHECK		REFERENCE DOCUMENTS	ACCEPTANCE NORMS	FORMAT OF RECORDS		AGENCY			REMARKS
					M	C/N				D*	M	C	N	
(1)	(2)	(3)	(4)	(5)	(6)		(7)	(8)	(9)	D*	(10)			(11)

1.0 RAW MATERIAL

1.1	M.S Plates for Trolley, End Carriage, Fabricated Rope drum or fabricated I-Beam (IF APPLICABLE)	Visual & Dimensional	Major	Visual & Measurement	100%	100%	Relevant Material Specification As per BHEL Approved Data Sheet / drawing and see Note-8		IR	--	P	-	-	In the absence of correlated TC check testing Shall be done and see Note - 6
		Chemical Composition	Major	Chemical Analysis	1 Sample/Heat				MTCs/Check test Report	√	P	V	-	
		Mechanical Properties	Major	Mechanical Test	1 Sample/Heat				UT Report	√	P	V	-	
		Ultra Sonic test of plates (THK≥25 MM)	Major	NDT	100%	100%	ASTM A-435	MTCs/Check test Report	√	P	V	-	UT on above 25 mm Thick Plate	
1.2	Rope Drum (If Seamless Pipe Used)	Chemical composition	Major	Chemical Analysis	1 Sample /Heat/size		Relevant Material Specification As per BHEL Approved Data Sheet / drawing and see Note-8Should not be welded pipe			√	P	V	-	
		Mechanical properties	Major	Tensile strength, % elongation, yield strength, flattening test & Macro Etching test	1 Sample /Heat/size				MTCs/Check test Report	√	P	V	-	
		Ultrasonic test for seamless pipe	Major	UT	100%	100%	ASTM E-213	UT Report	√	P	V	-		


BIDDER	BHEL	LEGEND	REVIEWED BY	
MANUFACTURER/SUB-CONTRACTOR	CONTRACTOR	D' : RECORDS IDENTIFIED WITH (√) SHALL BE ESSENTIALLY INCLUDED BY CONTRACTOR IN A QA DOCUMENTATION 'M' : MANUFACTURER/SUBCONTRACTOR/ 'C' : BHEL-QS/THIRD PARTY INDICATE 'P' PERFORM 'W' WITNESS AND 'V' DOCUMENT REVIEW , 'N' : NTPC		
SIGNATURE				
			NAME & SIGN OF APPROVING AUTHORITY & SEAL	


		MANUFACTURER NAME & ADDRESS		MANUFACTURING QUALITY PLAN				PROJECT		NTPC-Mauda				
								ITEM: UNDERSLUNG CRANE FOR FGD APPLICATION SUB SYSTEM: FGD		QP NO.: FGD:USC REV: 00 DATE: Page: 02 of 09		PO NO.		
				PACKAGE		FGD			MAIN SUPPLIER		BHEL - Ranipet			
				BHEL PO NO										
SL	COMPONENT & OPERATION	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTAM OF CHECK		REFERENCE DOCUMENTS	ACCEPTENCE NORMS	FORMAT OF RECORDS	AGENCY			REMARKS	
					M	C/N				M	C	N		
(1)	(2)	(3)	(4)	(5)	(6)		(7)	(8)	(9)	D*	(10)			(11)
1.3	Forging Rolled bars	Chemical composition	Major	Chemical Analysis	1 Sample /Heat/size		Relevant Material Specification As per BHEL Approved Data Sheet / drawing and see Note-8 Should not be welded pipe		IR MTCs/Check test Report	√	P	V	-	In the absence of correlated TC check testing Shall be done (For dia/thickness>40 mm)
		Mechanical properties	Major	Mechanical Test	1 Sample /Heat/size					√	P	V	-	
		Ultrasonic test for seamless pipe	Major	NDT	100%	100%	ASTM-A388	UT report	√	P	V	-		
1.4	Steel Casting for pulley	Chemical composition	Major	Chemical Analysis	1 Sample /Heat		Relevant Material Specification As per BHEL Approved Data Sheet / drawing		MTCs/Check test Report	√	P	V	-	On Accessible area
		Mechanical properties	Major	Mechanical Test	1 Sample /Heat/HT Batch					√	P	V	-	
		Ultrasonic test for seamless pipe	Major	NDT	100%	100%	ASTM A-609	UT report	√	P	V	-		
1.5	Steel Casting / CI Gear Box Housing	Mechanical properties	Major	Mechanical Test	1 Sample /Heat/HT Batch		Material Specification As per BHEL Approved Data Sheet / drawing		MTC/IR	√	P	V	-	
Bought Out Item														
1.6	Wire ropes	Make Identification, Dimensional Conformity & Breaking strength	Major	Visual & Review	100%	100%	Material Specification As per BHEL Approved Data Sheet / drawing		MTC	√	P	V	-	See Note-6

BIDDER	BHEL	LEGEND	REVIEWED BY	NAME & SIGN OF APPROVING AUTHORITY & SEAL
MANUFACTURER/SUB-CONTRACTOR	CONTRACTOR	D' : RECORDS IDENTIFIED WITH (√) SHALL BE ESSENTIALLY INCLUDED BY CONTRACTOR IN A QA DOCUMENTATION 'M' : MANUFACTURER/SUBCONTRACTOR/ 'C' : BHEL-QS/THIRD PARTY INDICATE 'P' PERFORM 'W' WITNESS AND 'V' DOCUMENT REVIEW , 'N' : NTPC		
SIGNATURE				

		MANUFACTURER NAME & ADDRESS		MANUFACTURING QUALITY PLAN				PROJECT		NTPC-Mauda				
				ITEM: UNDERSLUNG CRANE FOR FGD APPLICATION SUB SYSTEM: FGD		QP NO.: FGD:USC REV: 00 DATE: Page: 03 of 09		PO NO.		PACKAGE				
MAIN SUPPLIER		BHEL - Ranipet			BHEL PO NO									
SL	COMPONENT & OPERATION	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTAM OF CHECK		REFERENCE DOCUMENTS	ACCEPTENCE NORMS	FORMAT OF RECORDS	AGENCY			REMARKS	
(1)	(2)	(3)	(4)	(5)	M	C/N	(7)	(8)	(9)	D*	M	C	N	(11)
1.7	Hooks	Chemical & Mechanical properties	Major	Chemical analysis, Tensile strength, %ge elongation	1 Sample /Heat/HT Batch		Relevant Material Specification As per BHEL Approved Data Sheet / drawing and see Note-8		MTC	√	P	V	-	
		UT before & after proof load test	Critical	NDT	100%	100%	ASTM A-388		UT Report	√	P	V	-	On shank portion only
		Proof load test	Major	Mechanical	100%	100%	BS 2903		Test report	√	P	V	-	
		DPT test before & after proof load test	Critical	NDT	100%	100%	ASTM E-165		PT report	√	P	V	-	
		Dimensions, Make & Identification mark	Major	Visual & review	100%	100%	BHEL approved makes/BS 2903/ TC from competent authority and see Note-8		IR	√	P	V	-	See Note-6
1.8	Bearings	Make & type	Major	Verification	100%	100%	BHEL approved Data sheet/Bearing Catalogue & see Note-8		IR	-	P	V	-	See Note-6
1.9	Motor	make, type & rating	Major	Visual	100%	100%	BHEL approved Data sheet/BHEL Specification/ IEC 60034 & See Note-8		IR	-	P	V	-	See Note 1 & 6
		Routine test	Major	Review	100%	100%			MTC/CoC	√	V	V	-	
1.10	DSL System Cable Trolley tape/Taut wire loop & current collector	make/ type/ rating HV & IR test	Major	Visual	100%	100%	BHEL approved Drawing/BHEL Specification/ CMAA-70 & see Note-8		IR/MTC	-	P	V	-	See Note - 6


BIDDER	BHEL	LEGEND	REVIEWED BY	NAME & SIGN OF APPROVING AUTHORITY & SEAL
MANUFACTURER/SUB-CONTRACTOR	CONTRACTOR	D' : RECORDS IDENTIFIED WITH (v) SHALL BE ESSENTIALLY INCLUDED BY CONTRACTOR IN A QA DOCUMENTATION 'M' : MANUFACTURER/SUBCONTRACTOR/ 'C' : BHEL-QS/THIRD PARTY INDICATE 'P' PERFORM 'W' WITNESS AND 'V' DOCUMENT REVIEW , 'N' : NTPC		
SIGNATURE				

		MANUFACTURER NAME & ADDRESS		MANUFACTURING QUALITY PLAN				PROJECT		NTPC-Mauda				
				ITEM: UNDERSLUNG CRANE FOR FGD APPLICATION SUB SYSTEM: FGD		QP NO.: FGD:USC REV: 00 DATE: Page: 04 of 09		PO NO.	PACKAGE	MAIN SUPPLIER		BHEL - Ranipet		
SL	COMPONENT & OPERATION	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTAM OF CHECK		REFERENCE DOCUMENTS	ACCEPTENCE NORMS	FORMAT OF RECORDS		AGENCY		REMARKS	
(1)	(2)	(3)	(4)	(5)	M	C/N	(7)	(8)	(9)	D*	(10)		(11)	
1.11	Brakes - EM/EHT	Make/Type/rating	Major	Verification	100%	100%	BHEL approved Drawing / BHEL Specification / CMAA - 70 and see Note-8		IR	√	P	V	-	See Note - 6
		Functional Check including IR-HV	Major	Review	100%	100%			MTC	√	P	V	-	
1.12	Limit switch	Make/Type/rating	Major	Visual	100%	100%	BHEL approved Drawing / BHEL Specification/relevant standard		IR/MTC	√	P	V	-	See Note - 6
1.13	Cable-LT power/Control/ EPR Flexible/ Trailing	Make/Type/rating	Major	Visual	100%	100%	BHEL approved Drawing / BHEL Specification/IEC 60245/IEC 60502		IR	-	P	V	-	See Note - 6
		routine and Acceptance test	Major	Visual	100%	100%			MTC	√	V	V	-	
1.14	MCCB/ MCB/ MBCB/ OLR/ SFU/ Contactor/ Time delay relay/ Aux (Ctrl)relay/ Indicating meter	Make/Type/rating	Major	Verification	100%	100%	BHEL approved Drawing / BHEL Specification		IR	-	P	V	-	See Note - 6
1.15	Control Transformer/ Current Transformer	Make/Type/rating, Routine test	Major	Verification	100%	100%	BHEL approved Drawing / BHEL Specification		IR	-	P	V	-	See Note - 6
1.16	Push button/ Indicating Lamp/ Selector switch	Make/Type/rating	Major	Verification	100%	100%	BHEL approved Drawing / BHEL Specification		IR	-	P	V	-	See Note - 6
1.17	Panel & pendent station housing / Box	Make/Type/rating, Sheet/ Gland plate, thickness & material, Paint shade/ Thickness (min 70μ) adhesion	Major	Visual & review	100%	100%	BHEL approved Drawing / BHEL Specification		IR	-	P	V	-	See Note - 6
BIDDER		BHEL		LEGEND				REVIEWED BY						
				D' : RECORDS IDENTIFIED WITH (V) SHALL BE ESSENTIALLY INCLUDED BY CONTRACTOR IN A QA DOCUMENTATION										
MANUFACTURER/SUB-CONTRACTOR		CONTRACTOR		'M' : MANUFACTURER/SUBCONTRACTOR/ 'C' : BHEL-QS/THIRD PARTY INDICATE 'P' PERFORM 'W' WITNESS AND 'V' DOCUMENT REVIEW , 'N' : NTPC										
SIGNATURE										NAME & SIGN OF APPROVING AUTHORITY & SEAL				

		MANUFACTURER NAME & ADDRESS		MANUFACTURING QUALITY PLAN			PROJECT		NTPC-Mauda						
							ITEM: UNDERSLUNG CRANE FOR FGD APPLICATION		QP NO.: FGD:USC		PO NO.				
							SUB SYSTEM: FGD		REV: 00		PACKAGE		FGD		
									DATE:		MAIN SUPPLIER		BHEL - Ranipet		
						Page: 05 of 09		BHEL PO NO							
SL	COMPONENT & OPERATION	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTAM OF CHECK		REFERENCE DOCUMENTS	ACCEPTENCE NORMS	FORMAT OF RECORDS		AGENCY			REMARKS	
					M	C/N			M	C	N	M	C		N
(1)	(2)	(3)	(4)	(5)	(6)		(7)	(8)	(9)	D*	(10)			(11)	


1.18	Assembled Panel & pendent station (Excluding VVF drive)	make, type & rating of Bol, Accessible mounting & labelling of compo- nents, wire dressing & ferruling, Crimping check by gentle pull, Earthing of door and panel	Major	Visual & Measure	100%	100%	BHEL approved Drawing / BHEL Specification/ list of makes for Bol	IR	-	P	V	-	
2	IN-Process Inspection												
2.1	Gear, Pinions & Wheels	DP test on tooth area of gear and pinion & tread OD of wheel	Major	NDT-DP test	100%	100%	ASTM E-165	IR	√	P	V	-	
		Hardness test	Major	Hardness test	100%	100%	CMAA-70/BHEL approved data sheet and see note-8	IR	√	P	V	-	
		Visual & Dimensional	Major	Visual & Measure	100%	100%	manufacturing drawings	IR	--	P	V	-	
2.2	Pulley, axle & rope drum after machining	Visual & Dimensional	Major	Visual & Measure	100%	100%	manufacturing drawings	IR	√	P	V	-	Applicable for pulley casting also
		DP test on machined area	Major	NDT	100%	100%	ASTM E-165	DPT report	√	P	V	-	


BIDDER	BHEL	LEGEND	REVIEWED BY	NAME & SIGN OF APPROVING AUTHORITY & SEAL
MANUFACTURER/SUB-CONTRACTOR	CONTRACTOR	D' : RECORDS IDENTIFIED WITH (v) SHALL BE ESSENTIALLY INCLUDED BY CONTRACTOR IN A QA DOCUMENTATION 'M' : MANUFACTURER/SUBCONTRACTOR/ 'C' : BHEL-QS/THIRD PARTY INDICATE 'P' PERFORM 'W' WITNESS AND 'V' DOCUMENT REVIEW , 'N' : NTPC		
SIGNATURE				

	MANUFACTURER NAME & ADDRESS		MANUFACTURING QUALITY PLAN				PROJECT		NTPC-Mauda					
			ITEM: UNDERSLUNG CRANE FOR FGD APPLICATION		SUB SYSTEM: FGD		QP NO.: FGD:USC		REV: 00		DATE:		Page: 06 of 09	
			PO NO.		PACKAGE		MAIN SUPPLIER		BHEL - Ranipet					
			BHEL PO NO											
SL	COMPONENT & OPERATION	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTAM OF CHECK		REFERENCE DOCUMENTS	ACCEPTENCE NORMS	FORMAT OF RECORDS		AGENCY			REMARKS
					M	C/N				D*	M	C	N	
(1)	(2)	(3)	(4)	(5)	(6)		(7)	(8)	(9)	D*	(10)			(11)

2.3	Welding of end carriages, Rope drum (If fabricated)	WPS, PQR & WPQ	Major	Visual & Mech Test/NDt	100%	100%	Approved WPS, ASME Sec-IX		QW-481-484	√	P	V	-	See Note-2
		Marking & Cutting of MS plates	Major	Visual & Measure	100%	100%	manufacturing drawings		IR	--	P	V	-	See Note-3
		Edge preparation	Major	Visual & Measure	100%	100%	manufacturing drawings/ Approved WPS		IR	--	P	V	-	
		Weld Joint size/ Location/ Welder No. Correlation	Major	verification & Marking	100%	100%	manufacturing drawings		IR	--	P	V	-	See Note-4
		DP test on weld	Major	NDT	100% for BW & critical FW	100% for BW joints & 10% for FW	ASTM E-165		DPT report	√	P	V	-	W' on final pass (BW-Butt weld)(FW-Fillet weld)
		Radiography of butt weld joints (For fabricated rope drum, RT after PWHT)	Critical	NDT Test	100% in tension zone & 25% in comp. zone, 100% for fabric. Rope drum joint		ASME Sec-V	ASME Sec-VIII Div-I, UW-51 & UW-52	RT films & report	√	P	V	-	Evaluation of RT films
		Heat Treatment (SR) of fabric. Rope drum & Gear box casing	Major	Review of SR chart/ Test rep.	100%	100%	ASME Sec-VIII DIV I (UCS-56)		SR Chart	√	P	V	-	Review of SR chart/ TC by BHEL during final inspection
		Dimensional check after final fabrication/ machining	Major	Measure	100%	100%	Manufacturing drawing		IR	-	P	-	-	

BIDDER	BHEL	LEGEND	REVIEWED BY	NAME & SIGN OF APPROVING AUTHORITY & SEAL
MANUFACTURER/SUB-CONTRACTOR	CONTRACTOR	D' : RECORDS IDENTIFIED WITH (√) SHALL BE ESSENTIALLY INCLUDED BY CONTRACTOR IN A QA DOCUMENTATION 'M' : MANUFACTURER/SUBCONTRACTOR/ 'C' : BHEL-QS/THIRD PARTY INDICATE 'P' PERFORM 'W' WITNESS AND 'V' DOCUMENT REVIEW , 'N' : NTPC		
SIGNATURE				

		MANUFACTURER NAME & ADDRESS		MANUFACTURING QUALITY PLAN				PROJECT		NTPC-Mauda				
				ITEM: UNDERSLUNG CRANE FOR FGD APPLICATION SUB SYSTEM: FGD		QP NO.: FGD:USC REV: 00 DATE: Page: 07 of 09		PO NO.		PACKAGE		MAIN SUPPLIER		BHEL PO NO
SL	COMPONENT & OPERATION	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTAM OF CHECK		REFERENCE DOCUMENTS	ACCEPTENCE NORMS	FORMAT OF RECORDS		AGENCY			REMARKS
(1)	(2)	(3)	(4)	(5)	M	C/N	(7)	(8)	(9)	D*	M	C	N	(11)
2.4	Gear Box	backlash, contact Pattern, MOT, reduction ratio	Major	measurement	100%	100%	BHEL Approved drawings/ data sheet and see Note-8	IR	√	P	V	-	See Note 8	
		No load run of Gear Boxes	Major	Noise, vibration, temp Rise & Oil Leakage	100%	100%	BHEL Approved drawings/ data sheet and see Note-8	IR	√	P	V	-	For 4 hrs in each direction	
3	Final Inspection													
3.1	Complete Assembled crane at shop floor, Along with Job panel & VVF drive (As Applicable)	Overall dimension, Speed, Current , during no load test & full load. Deflection, brakes operation on full load test. Limit switch operation of all motion with pendent as well as RRC. Checking of safety interlocks, Functional test, Degree of protection by paper insertion	Major	Visual & Measure, (See Note-6)	100%	100%	CMAA-70/BHEL approved drawing/ data sheet/ sizing calculation and see note-8	IR	√	P	W	-	See Note - 4 & 5	
3.2	Surface preparation & Painting	Adhesion, Visual & DFT measurement	Major	Visual & Measure	100%	100%	As per BHEL Specification	IR	√	P	V	-	No peel off for adhesion, paint thickness min 50μ (Powder coating for control panel)	
BIDDER		BHEL		LEGEND				REVIEWED BY						
				D' : RECORDS IDENTIFIED WITH (√) SHALL BE ESSENTIALLY INCLUDED BY CONTRACTOR IN A QA DOCUMENTATION										
MANUFACTURER/SUB-CONTRACTOR		CONTRACTOR		'M' : MANUFACTURER/SUBCONTRACTOR/ 'C' : BHEL-QS/THIRD PARTY INDICATE 'P' PERFORM 'W' WITNESS AND 'V' DOCUMENT REVIEW , 'N' : NTPC										
SIGNATURE								NAME & SIGN OF APPROVING AUTHORITY & SEAL						


	MANUFACTURER NAME & ADDRESS	MANUFACTURING QUALITY PLAN		PROJECT NTPC-Mauda
		ITEM: UNDERSLUNG CRANE FOR FGD APPLICATION SUB SYSTEM: FGD	QP NO.: FGD:USC REV: 00 DATE: Page: 08 of 09	PO NO.
				PACKAGE FGD
				MAIN SUPPLIER BHEL - Ranipet
				BHEL PO NO

List of Major Bought-Out Items and Their sources

SI	Items Name/Description	Make/Manufacturer
1	Steel	SAIL, TISCO, RINL, JSW, JISL, ESSAR, IISCO, WELSPUN
2	Wire Rope	USHA MARTIN, BHARAT WIRE ROPE, BOMBAY WIRE ROPE
3	Hook	HERMAN MOHATA, SMRITI FORGING, KARACHIWALA (UPTO 15.0T)
4	Gear Box	ELECON, SHANTI GEAR, NEW ALLENBERRY WORKS, PETL, BONFIGLIOLI-ITALY
5	Motor	LHP, ABB, SIEMENS, MARATHON ELECTRIC, KEC, BBL, CGL, NGEF (UP TO 15 KW)
6	Limit Switch	JAI BALA JI, BCH, SPEED-O-CONTROL, SIEMENS
7	Contactors/OLR/Relay	SIEMENS, L&T, TELE MECHANIC, C&S
8	Fuses, SFU, MCB, MCCB	SIEMENS, L&T, GEII, C&S, GAB
9	Flexible cable, Power & Control cable	UNIVERSAL, POLYCAB, KEI, NICCO, TORRENT, RAVIN CABLE, DELTON* PARAMOUNT*, CORDS*, GEMS*, HAVELLS* (* ONLY FLEXIBLE CABLES)
10	Bearings	SKF, FAG, NRB, NTN, NBC, TIMKEN
11	Push Button	VAISHNO, SIEMENS, L&T, TELE MECHANIC
12	Push button station (Pendent)	VAISHNO, SIEMENS, L&T
13	Indicating Light	VAISHNO, SIEMENS, CANDS, L&T, TECKNIK
14	Transformers (Control)	INDCOIL, LOGICSTAT, AE, PRAGATI, PRAYOG, PRECISE, SOUTHERN ELECTRIC, GUJARAT PLUG-IN, KAPPA
15	Current Transformer	INDCOIL, AE, PRAGATI, PRECISE, KAPPA
16	Control Panel	RITTAL, PYROTECH, POSITRONICS, MPP, (RITTAL & MPP FOR ENCLOSURE ONLY)
17	Brakes-DC/AC EM	EMCO, PETHE, WMI, BCH, STROMCRAFT, SOC
18	Brakes-EHT	WMI, ELECTROMAG
19	Terminal blocks	ELMEX, CONNECT WELL, WAGO (FOR CONTROL ONLY), ESSEN, PHOENIX
20	Indicating meter	MECO, RISHABH, IMP
21	DSL & Current controlling system	SUSHEEL, STOMAG
22	Selector Switch	L&T, KAYCEE, SIEMENS

Other makes shall be proposed separately through Quality endorsement sheet

BIDDER	BHEL	LEGEND	REVIEWED BY	NAME & SIGN OF APPROVING AUTHORITY & SEAL
MANUFACTURER/SUB-CONTRACTOR	CONTRACTOR	D' : RECORDS IDENTIFIED WITH (v) SHALL BE ESSENTIALLY INCLUDED BY CONTRACTOR IN A QA DOCUMENTATION 'M' : MANUFACTURER/SUBCONTRACTOR/ 'C' : BHEL-QS/THIRD PARTY INDICATE 'P' PERFORM 'W' WITNESS AND 'V' DOCUMENT REVIEW , 'N' : NTPC		
SIGNATURE				

	MANUFACTURER NAME & ADDRESS	MANUFACTURING QUALITY PLAN		PROJECT NTPC-Mauda	
		ITEM: UNDERSLUNG CRANE FOR FGD APPLICATION SUB SYSTEM: FGD	QP NO.: FGD:USC REV: 00 DATE: Page: 09 of 09	PO NO.	
				PACKAGE	FGD
				MAIN SUPPLIER	BHEL - Ranipet
				BHEL PO NO	

NOTES

1	<p>Motor Power rating less than 30 kW: Acceptance of motor less than 30 kW is based on CoC of manufacturer & the contractor confirming as follow. "It is hereby confirmed that the above mentioned motor(s) was/were manufactured taking care of NTPC specific requirements regarding ambient temp., Voltage & Frequency variation, Hot Starts, Pull out Torque, starting kVA/kW, Temp rise, distance between centre of stud and gland plate, space heater and tested in accordance with approved drawing(s)/data sheet".</p> <p>Motor Power rating \geq 30 kW but < 50kW: Acceptance of motor rating between 30 kW & 50 kW is based on customer review of Routine Test inspection report as per IS 325 witnessed by mail contractor along with CoC of manufacturer & the contractor confirming as follow. "It is hereby confirmed that the above mentioned motor(s) was/were manufactured taking care of NTPC specific requirements regarding ambient temp., Voltage & Frequency variation, Hot Starts, Pull out Torque, starting kVA/kW, Temp rise, distance between centre of stud and gland plate, space heater and tested in accordance with approved drawing(s)/data sheet".</p> <p>Motor Power rating \geq 50: Separate RQP/MQP shall be submitted Motor \geq 50 kW where Customer/NTPC shall witness the test</p>
2	Only NTPC/BHEL/LLOYD/BVQI/DNV/TUV approved WPS/Welders shall be engaged for welding. No welding is allowed on CI Castings.
3	HV tests on control panels will be done. HV test at 2 kV for power & 1.5 kV for control circuit.
4	All critical dimensions shall be measured. Deflection shall be measured at safe working load (SWL). The current and speed for hoisting motion and CT motion shall be measured during NO LOAD Test and SWL Test. The speed and current for LT motion shall be measured during free running test. All interlocks, brakes, control panel/push button pendent, radio remote control and safety measures shall be checked during final inspection.
5	SWL test & 125% Over LOAD test shall be conducted at shop with actual VVFD panel & RRC, Shop wire ropes & Temporary cables. Load test at site shall be offered with all actual components test and covered in Field Quality Assurance Plan (QAP).
6	List of all major bought out items and their make is attached as illustration.
7	Backlash to be measured only on parallel shaft horizontal gear reducers
8	For all the cases, wherever approved drawing and data sheet is not available, Approval shall be taken separately from BHEL.
9	This QP shall be along with the PO, Approved drawing and Data sheet
10	Relevant standard shall be applicable as per specification

BIDDER	BHEL	LEGEND	REVIEWED BY	NAME & SIGN OF APPROVING AUTHORITY & SEAL
MANUFACTURER/SUB-CONTRACTOR	CONTRACTOR	D' : RECORDS IDENTIFIED WITH (v) SHALL BE ESSENTIALLY INCLUDED BY CONTRACTOR IN A QA DOCUMENTATION 'M' : MANUFACTURER/SUBCONTRACTOR/ 'C' : BHEL-QS/THIRD PARTY INDICATE 'P' PERFORM 'W' WITNESS AND 'V' DOCUMENT REVIEW , 'N' : NTPC		
SIGNATURE				

934955/2022/BAP-QA MECH

ENDORSEMENT SHEET FOR QP
REFERENCE / STANDARD / FIELD QUALITY PLAN (RQP / SQP/RFQP/SFQP)

TO BE FILLED IN BY SUPPLIER AT TIME OF SUBMISSION**To be filled in by NTPC**

PROJECT NAME	NTPC Mouda 2 x 500MW (BHEL W.O no: G503 & G504)	<u>2REVIEW & ENDORSEMENT BY NTPC</u> PROJECT SPECIFIC QP NUMBER ALLOTTED QP NO: REV. NO.: 00 DT :
CONTRACT NO.:	CS-9561-109(1B)-9-FC-NOA-6722 for Mouda (2 X 500MW)	
MAIN SUPPLIER	M/S.BHEL, RANIPET , TAMIL NADU., INDIA	
MANUFACTURER WORKS & ADDRESS	(TO BE FILLED BY UNDERSLUNG CRANES MANUFACTURER)	
ITEM /EQUIPMENT / SYSTEM/ SUB-SYSTEM DETAILS i.e. MODEL TYPE/SIZE/RATING etc.	UNDERSLUNG CRANES FOR FGD APPLICATION	
APPROVED QP NO.: RQP/SQP/RFQP/SFQP		
Confirmation by Main Supplier (TICK WHICHEVER APPLICABLE)		<i>(TICK APPLICABLE)</i>
I. That the item/ component is identical to that considered for SQP approval. <input checked="" type="checkbox"/>		The MQP/RQP/SQP is endorsed for this project without any change
II. That there are minor changes in the item/ component with respect to that considered for MQP/RQP/SQP approval, however the same do not affect the contents of MQP/RQP/SQP		
III. That there are minor changes in the item/ component with respect to that considered for MQP/RQP/SQP approval, however the same affect the MQP/RQP/SQP slightly, as indicated below / in attached sheet.		
		The SQP is endorsed for this project with changes as indicated. <u>DISTRIBUTION OF ENDORSEMENT OF</u> A) MQP/RQP/SQP: 1. MAIN SUPPLIER (WITH A COPY OF MQP/RQP/SQP) 2. MANUFACTURER 3. RIO 4. CQA-SPL 5. CQA-O/C B) RFQP/SFQP: 1. MAIN SUPPLIER (with a copy of MQP/RQP/SQP) 2. MANUFACTURER 3. NTPC FQA (with a copy of MQP/RQP/SQP) 4. NTPC Erection (with a copy of MQP/RQP/SQP) 5. CQA-SPL 6. CQA-O/C
SIGN.: (Main Supplier) DATE:		SIGN.: (Manufacturer) DATE:
(TO BE FILLED BY UNDERSLUNG CRANES MANUFACTURER)		NTPC (Reviewed /Approved by/ Date & Seal)

Annexure to Enquiry no:		Date	##Specific confirmations by the manufacture
Sl.No	BHEL / Customer Requirement		
1	Quality Plan Requirement:		
1a	MQP (Manuafcutering Quality Plan) shall be submitted in attached format for BHEL/Customer review & approval. Typical MQP is attached for indicative purposes for guidance & use.		
1b	MQP shall invariably cover w.r.t Inward inspection including on Raw materail Procurement, In process and Final inspection in elaborated way/details.		
1c	Bidder shall also to give specific confirmation that on need basis, their competent officials shall visit to BHEL/customer for finalization of Quality plan including test procedure/methodology during preaward / post award approval / detailed engineering in the event of an order.		
1d	No deviation on BHEL/Customer approved MQP is acceptable.		
1e	Bidder shall agree to submit all cross referred documents other than codes/standrads to BHEL/Customer/Consultant.		
2	Important Notes shall be included in MQP : (a) Latest revision of Standard s & Specification shall apply. Only International Standards are applicable. Indian & Chinese Standards are not applicable. (b) Materials shall be procured in compliance to Functional Technical Specification. (c) Inspection shall be in compliance with Approved Quality Control Procedure for the Product. (d) NDT shall be carried out by Qualified Personnel with compliance to Approved NDT Procedures and Acceptance Norms, as per ASME Section V. (e) Gauges and measuring Instruments, with valid calibration only shall be used. (f) Cleaning and Painting of products shall be carried out as per Approved Painting Schedule. (g) Finished Products shall be packed to comply with Approved Packing Schedule. (h) Welding shall be carried out by Qualified Personnel with compliance to Approved NDT Procedures and Acceptance Norms, as per ASME Section V.		
3	Domestic / Inland Inspection will be carried out by BHEL/BHEL apointed Third Party Inspection Agency (TPIA) / Customer/Customer Apointed Inspection Agency/Consulatnat. This is applicable for all Stage inspection and Final Inspection identified as "W" - Witness or "CHP" - Customer Hold Point as per customer approved Quality Plan/ Technical specification / Approved Drawing/ Approved Data sheet / Scheme / PID / PFD / SLD (Process Instrumentaion Diagram / Process Flow Diagram / Single Line Diagram) etc (As applicable). "The inspection charges at actuals incurred by BHEL will be loaded to compare with foreign suppliers".		
4	Inspection Agency for Foreign Bidders and also for Indian Bidder but importing from Forgign Sources: (1) Any one of the flollowing Third Party Inspection Agency (TPIA) shall be appointed by the bidder and same shall be furnished by the bidder in techno commercial bid itself. (2) The details of TPIA with contact details like Name of the official, Phone no, Email id shall also to be submitted during pre/post award. However cost for such inspection agency shall be borne by the bidder only. Inspection charges for such inspection agency shall be indicated separately so that if BHEL/Customer is undertaking the inspection by on their own , then these charges non claimable by the bidder. List of TPIA (1). M/s Bureau Veritas, (2). M/s TUV-Nord, (3). M/s TUV-SUD, (4). M/s TUV Rheinland, (5). M/s Lloyds Register, (6). M/s SGS, (7). M/s Germanischer Lloyds, (8). M/s QUEST, (9). M/s Certification Engineers International, (10). M/s Intertek, (11). M/s IR Class Systems and Solutions, (12). M/s DNV, (13). M/s Fichtner, (14). M/s ABS Inspection Services.		
5	Stage Inspection during manufacturing Process : Stage Inspection during manufacturing shall be carried out as per approved quality plan and all necessary documents shall be provided for review,verification and clearanace for further processing. This inspection call shall be given well in advance (atleast 2 weeks before) to TPI/Bidder's own inspection agency to avoid delay in the manufacturing processes.		
6	Inspection before despatch for domestic supplier : Inspection before despatch at supplier's works shall be carried out by BHEL/BHEL appointed Inspection agency. Inspection shall be done as per approved Quality plan/ Technical specification/ Approved Drawing/ Approved Data sheet .		

Sl.No	BHEL / Customer Requirement	##Specific confirmations by the manufacture
7	<p>Inspection at Foreign Source/Supplier: (a) As in sl no: 3. shall be ensured without fail, (b) No materail / items shall be despatched without getting the written communication from BHEL / Customer inspection carried out by BHEL/BHEL apointed Third Party Inspection Agency (TPIA) / Customer/Customer Apointed Inspection Agency/Consulatnat. This is applicable for all Stage inspection and Final Inspection identified as "W" - Witness or "CHP" - Customer Hold Point as per customer approved Quality Plan/ Technical specification / Approved Drawing/ Approved Data sheet / Scheme / PID / PFD / SLD (Process Instrumentaion Diagram / Process Flow Diagram / Single Line Diagram) etc (As applicable). (c) Inspection before despatch at supplier's works shall be carried out by bidder appointed inspection agencies having international presence at vendors and or vendor's sub vendor works. Inspection shall be done as per approved Quality plan/ Technical specification/ Approved Drawing/ Approved Data sheet by TPIA mentioned in Sl no: 03 at supplier's cost.</p>	
8	<p>Painting shall be done strictly as per BHEL/Customer approved painting schedule / scheme only. Paint Thickness / Paint shade shall be ensured as per BHEL / Customer approved painting schedule / specification / data sheet etc. No deviation is acceptable unless otherwise accepted by BHEL/Customer in writing. Any conflict if any among BHEL / Customer approved painting schedule / Spec / data sheet etc shall be brought to the notice to BHEL well in advance before proceding including the BOI being procured for assy / skid like motors etc</p>	
9	<p>Specific conformation for document package in the event of an order (2 Hard copies & soft copy in PDF file) is to be given containing the following with proper linkages (i) Index Sheet, (ii) MQP/RQP/Endorsement Sheet (As applicable), (iii) TCs identified by BHEL/ Customer for record for "CHP" / "W" and Verification portion ("V") as given in approved QP, (iv) Final inspection report + TC including Chemical + Mechnaical + HT + NDT etc, (v) Third party Inspection report + TC, (vi) Customer CHP/ MDCC, (vii) Type test / Performance Test reports conducted, (viii) Type test / Performance Test approval/ clearance obtained from BHEL/Customer, (ix) BOM with As Build Drgs with actual make / rating used with BHEL/customer approved drawings.</p>	
10	<p>Packing / Seaworthy Packing shall be as per BHEL Packing schedule / approved drg / sketch. This shall be ensured to take care tarnsit / handling / transhipment in Road / Sea / Air. Photographs are to be submitted for BHEL review before despatching the material as per contract conditions.</p>	
10	<p>Packing shall be as per BHEL Packing schedule / approved drg / sketch. This shall be ensured to take care tarnsit / handling / transhipment in Road / Sea / Air. Photographs are to be submitted for BHEL review before despatching the material as per contract conditions.</p>	
11	<p>Outsourcing of test facilities: Bidder shall ensure all the testing facilities in house. However If any of the test facilities are not available with successful bidder, then bidder shall ensure the same at NABL accreadted third party lab / Govt / Govt Lab for major testing such as NDT, Electrical & Mechanical testing.</p>	
12	<p>Important Note: No deviation on the above requirement 01 to 11 is acceptable w.r.t Quality Requirement and those offers not meeting these specific customer requirement is liable for rejection and hence the bidder shall submit all the required documentary evidances in the offer itself.</p>	
13	<p>## Necessorily to be filled up by the bidder at the time of offer itself otherwise the offer may not be considered w.r.t Quality Requirement being customer specific requirement.</p>	

*(To be submitted In the company letter head by supplier)

Form - 1

Subject: Public Procurement (Preference to Make In india)

References:

- 1.P-45021/2/2017-B.E-II dated. 15th June-2017,
- 2.P-45021/2/2017-PP(BE-II) dated. 28th May-2018 ,
- 3.P-45021/2/2017-PP(BE-II) dated. 29th May-2019.
- 4.P-45021/2/2017-PP(BE-II) dated. 4th June-2020

We hereby declare with reference to above subject and references that M/s -----(Tick whichever is applicable as below)

"Class-I local supplier" meeting the requirement of minimum local content equal to 50%(fifty percent) or more defined in the above government notification for the goods and services (or)

"Class-II local Supplier" meeting the requirement of local content 20% to less than 50%(fifty percent) defined in the above government notification for the goods and services

Please mention the details against the following:

Enquiry no:----- dated. -----

Type of Supplier (Class-I/Class-II)

Product:-----

Project:.....

Details of location at which local value addition will be made is as follows:

We also understand that the false declarations will be in breach of the code of Integrity under rule 175(1)(i)(h) of the General financial rules for which a bidder or its successors can be debarred for up to two years as per Rule 151(iii) of the General Financial Rules along with such other actions as may be permissible under law.

Authorized Signature M/s _____

(Signature and seal)

Place:.....

Date:.....

From.

M/s _____

Address: _____

Note: For offer value INR 10 crores or more, shall be vetted/endorsed by statutory auditor or cost auditor, for the declared local content.

***(To be submitted In the company letter head by supplier)**

Form – 2

I/we are bidder from _____ (Address with country). We do not belong to any of the below category mentioned.

1. Any of entity/office/workshop of your organisation/incorporation, established in a country sharing land border with India, If yes, provide the full address of all such locations.
2. Any of subsidiary of your organisation/incorporation, established in a country sharing land border with India, If yes, provide the full address of all such locations.
3. Any of entity/office/workshop of your organisation/incorporation, controlled in a country sharing land border with India, If yes, provide the full address of all such locations.
4. Any of entity whose beneficial owner is situated in a country sharing land border with India, If yes, provide the full name, address of all such locations.
5. Any Indian Agent available, If so, Provide details of address and contacts.
6. Any employee/directors who is/are citizen of country sharing land border with India, If yes, provide the full name, employee code and address of all such locations.
7. Any of consortium/joint venture of your organisation/incorporation, established in a country sharing land border with India, If yes, provide the full address of all such locations.

Meaning of beneficial owner

- 1) In case of a company or limited liability partnership, beneficial owner is the natural person, who, whether acting alone or together, or through one or more judicial person, has a controlling ownership interest or who exercises control through other means.

Explanation

- a) Controlling ownership interest means ownership of or entitlement to more than twenty-five percent of shares or capital or profits of the company.
 - b) “control” shall include the right to appoint majority of the directors or to control the management rights or shareholder’s agreement or voting agreement.
- 2) In case or a partnership firm the beneficial owner is the natural person (s) who whether acting alone or together or through one or more judicial person, has ownership of the entitlement to more than fifteen percent of capital or profits of the partnership.
 - 3) In case of an unincorporated association or body of individuals, the beneficial owner is the natural person(s), who, whether acting alone or together or through one or more judicial person, has ownership of the entitlement to more than fifteen percent of the property or capital or [profits of such association or body of individual.
 - 4) Where no natural person is identified under (1) or (2) or (3) above, the beneficial owner is the relevant natural person who holds the position of senior managing official.
 - 5) In case of a trust, the identification of beneficial owner (s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust and any other

***(To be submitted In the company letter head by supplier)**

natural person exercising the ultimate effective control over the trust through a chain of control of ownership.

- 6) An agent is a person employed to do any act for another, or to represent another in dealing with third person.

We have read the clause regarding restriction on procurement from a bidder of a country which shares a land border with India, we hereby declare that we do not belongs to any such country and are eligible to be considered.

In case, any of information is found to be false, even after bid acceptance, immediate termination may happen and action will be taken as per law.

Format is being filled without altering any of the clause mentioned in the given format**

Dated: _____

Authorised Sign and stamp_____

BANK GUARANTEE FOR PERFORMANCE SECURITY

Bank Guarantee No:

Date:

To

Bharat Heavy Electricals Limited,
Boiler Auxiliaries Plant,
RANIPET -632 406,
Tamil Nadu,
INDIA

Dear Sirs,

In consideration of the **Bharat Heavy Electricals Limited** 1 (hereinafter referred to as the 'Employer' which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns) incorporated under the Companies Act, 1956 and having its registered office at "BHEL House", SRI Fort, New Delhi- 110049 through its Unit at **Boiler Auxiliaries Plant located at Ranipet-632406, Tamil Nadu, INDIA** having awarded to 2 having its registered office at _____ herein after referred to as the 'Contractor/Supplier', which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns), a contract Ref No. / **PO No** _____ dated 3. Valued at Rs _____ 4 (Rupees (In words) _____) for _____ 5 (hereinafter called the 'Contract') and the Contractor having agreed to provide a Contract Performance Guarantee equivalent to 10% (Ten Percent) of the said value of the Contract to the Employer for the faithful performance of the Contract.

We _____ (hereinafter referred to as the Bank), having registered/Head Office at _____ and inter alia a branch at _____ being the Guarantor under this Guarantee, hereby, irrevocably and unconditionally undertake to forthwith and immediately pay to the Employer a maximum amount Rs _____ (**Rupees** _____) without any demur, immediately on a demand from the Employer. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding **Rs. _____ (Rupees _____)**.

We undertake to pay to the Employer any money so demanded notwithstanding any dispute or disputes raised by the Contractor/Supplier in any suit or proceeding pending before any Court or Tribunal relating thereto our liability under this present being absolute and unequivocal.

The payment so made by us under this Guarantee shall be a valid discharge of our liability for payment thereunder and the contractors/supplier shall have no claim against us for making such payment.

We the _____ bank further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Contract and that it shall continue to be enforceable till all the dues of the Employer under or by virtue of the said Contract have been fully paid and its claims satisfied or discharged.

We _____ BANK further agree with the Employer that the Employer shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Contract or to extend time of performance by the said Contractor/Supplier from time to time or to postpone for any time or from time to time any of the powers exercisable by the Employer against the said Contractor/Supplier and to forbear or enforce any of the terms and conditions relating to the said Agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Contractor/Supplier or for any forbearance, act or omission on the part of the Employer or any indulgence by the Employer to the said Contractor/Supplier or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

The Bank also agrees that the Employer at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Contractor and notwithstanding any security or other guarantee that the Employer may have in relation to the Contractor's liabilities.

This Guarantee shall remain in force up to _____ 6 with a validity period of ___ months & claim period of 3 months and shall be extended from time to time for such period as may be desired by Employer.

This Guarantee shall not be determined or affected by liquidation or winding up, dissolution or change of constitution or insolvency of the Contractor/Supplier but shall in all respects and for all purposes be binding and operative until payment of all money payable to the Employer in terms thereof.

Unless a demand or claim under this guarantee is made on us in writing on or before the _____ 7 we shall be discharged from all liabilities under this guarantee thereafter.

We _____ BANK, lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Employer in writing.

Notwithstanding anything to the contrary contained hereinabove:

- a) The liability of the Bank under this Guarantee shall not exceed Rs _____ (Rupees _____ Only) 8
- b) This Guarantee shall be valid up to _____ 9
- c) Unless the Bank is served a written claim or demand on or before _____ 10 all rights under this guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities under this guarantee irrespective of whether or not the original bank guarantee is returned to the Bank.

We _____ Bank, have power to issue this Guarantee under law and the undersigned as a duly authorized person has full powers to sign this Guarantee on behalf of the Bank.

For and on behalf of
(Name of the Bank)

Dtd :

Place of Issue:

1. NAME AND ADDRESS OF EMPLOYER i.e., Bharat Heavy Electricals Limited.
2. NAME AND ADDRESS OF VENDOR/CONTRACTOR/SUPPLIER
3. DETAILS ABOUT THE NOTICE OF AWARD/CONTRACT REFERENCE
4. BG AMOUNT IN FIGURES AND WORDS
5. PROJECT/SUPPLY DETAILS
6. VALIDITY DATE with a validity of 3 months claim period.
7. DATE OF EXPIRY OF CLAIM PERIOD
8. BG AMOUNT IN FIGURES AND WORDS
9. VALIDITY DATE
10. DATE OF EXPIRY OF CLAIM PERIOD

Ple note: The Validity period wrt our conditions applicable for the Supply / Erection & condition.

