



An ISO 9001
Company

Bharat Heavy Electricals Limited

(High Pressure Boiler Plant)

Tiruchirappalli – 620014, TAMIL NADU, INDIA

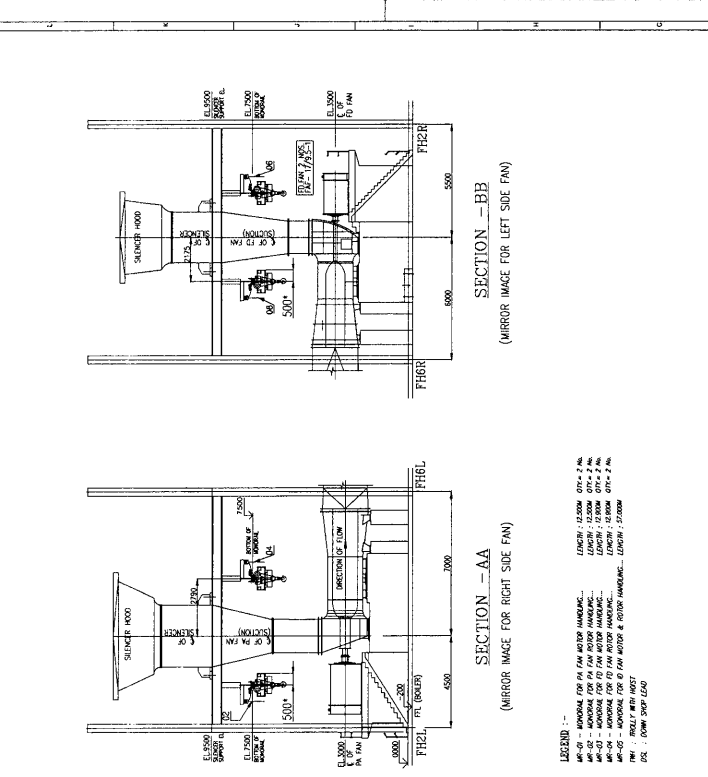
MATERIALS MANAGEMENT

TITLE ELECTRICAL HANDLING EQUIPMENTS WITH ACCESSORIES AND MANDATORY SPARES	Phone: +91 431 257 7876 Fax : +91 431 252 0719 Email : prateekkumar@bheltry.co.in
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	Reference Number: Enquiry 1801701175	Enquiry Date: 12.09.2017	Due date for submission of quotation: 03.10.2017
You are requested to quote the Enquiry number date and due date in all your correspondences. This is only a request for quotation and not an order			

BHEL/Trichy is looking for empanelment of new vendors for supply of "ELECTRICAL HANDLING EQUIPMENTS WITH ACCESSORIES AND MANDATORY SPARES"

BHEL commercial terms & conditions and all annexure can be downloaded from BHEL web site http://www.bhel.com or from the Government tender website http://tenders.gov.in (public sector units) Bharath Heavy Electricals Limited) under enquiry reference "1801701175"	
Tenders should reach us before 14:00 hours on the due date Technical bid will be opened at 14:30 hours on the due date Tenders would be opened in presence of the tenderers who have submitted their offers and who may like to be present.	Yours faithfully, For Bharath Heavy Electricals Limited Sr. Engr/ MM/BOI

[illegible]

NOTES TO CUSTOMER/CONSULTANT :

- 1.1 POWER SUPPLY POINTS (B) AT ONE METRE ABOVE GROUND LEVEL
1.2 POWER SUPPLY REQUIRED RATING / COLUMN DESIGNATIONS
a. 5.50W 415V AC, 3 PHASE; 50Hz AT SSB FOR ADH ELEMENTS HANDLING
b. 5.50W 415V AC, 3 PHASE; 50Hz AT S22 (2 POINTS) FOR SEC. SCRAM ELEMENTS HANDLING

- VENDOR ITEMS** -
- 2.1. SUPPLIER'S SCOPE STARTS AT EACH POWER SUPPLY POINT
 - 2.2. FIXED POWER CABLE AND TRAILING CABLE
 - 2.3. DSL : TAUT WIRE LOOP TYPE - COMPLETE SET
 - 2.4. DSL : CABLE TROLLEY - COMPLETE SET
 - 2.5. SWITCH FUSE UNITS AND ALL ELECTRICAL ITEMS FOR TWIN FEED

NOTE: DIMENSIONS MARKED WITH '*' SHALL BE STRICTLY MAINTAINED BY VENDOR.

LEGEND :-

- MR-01 = MONITOR FOR AIR PREHEATER ELEMENTS HANDLING... LENGTH : 44.00M QTY : 1 NOS
 MR-02 = MONITOR FOR SECONDARY SCAPH HANDLING... LENGTH : 5.66M QTY : 2 NOS
 THW : TROLLY WITH HOIST
 OS : DOWN SHOP LEAD

- GENERAL NOTES :-

- [illegible]

10. SIZE OF MONORAIL IS TO BE FURNISHED BY SUPPORTING STRUCTURES.

E. WEIGHT INDICATED IN THIS DRAWING IS APPROXIMATE FOR DESIGNING OF STRUCTURAL PARTS.
F. HANDLING SPACE IS TO BE CLEARED UP TO 0.00M LEVEL WITHOUT ANY INTERFERENCE / ENCROACHMENTS.

MAXIMUM COMPONENT LOAD TO BE HANDLED

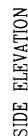
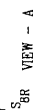
01. AIR PREHEATER ELEMENT	-----	720 Kg
02. SECONDARY AIR SCAPH	-----	1020 Kg

U.S. DEPARTMENT OF AGRICULTURE
WASHINGTON, D.C. 20250

SECONDARY AIR SCAPH - 4000 x 2000 x 250(MAX.)

ERECTION NOTES :-

- ENSURE PROVISION OF CLEAR SPACE FOR REMOVING APM ELEMENTS FROM APM ASSEMBLY AND POSITIONING THEM AT THE MOST CENTER LINE.
- ENSURE CLEAR SPACE FOR HANDLING APM ELEMENT TO THE EXTREME END OF COLUMN.
- PROVIDE CLEAR SPACE FOR LOWERING APM ELEMENTS UP TO THE GROUND LEVEL, AS PER THE SPACE EXAMINED.
- WORKING SPACE IS TO BE CIRCLED WITH A RED LINE WITHOUT ANY INTERFERENCE. PHOTOGRAPH



SECTION - BB

ITEM	DESCRIPTION	DRAWING NUMBER	QTY	SUB - DELY	NO	QTY	NO
04	PS-CABLE TROLEY TYPE TRAVEL LENGTH : 5.62M			SUB - DELY	L	40.000	
03	1MM - ELEC. FOR GRAPH CAP: 3.0T, LPT: 10.50M			SUB - DELY	L	403.000	
02	DS-CABLE TROLEY TYPE TRAVEL LENGTH : 44.00M			SUB - DELY	NQ	475.000	
01	1MM - ELEC. FOR APH CAP: 3.0T, LPT: 23.00M			SUB - DELY	NQ	600.000	
				SUB - DELY	NQ	1	
				MATERIAL CODE	457	UNIT WEIGHT	
				ITEM NO		QUANTITY	

CUSTOMER NO. 8022

[illegible]

NTPC-SAIL
POWER COMPANY (P) LIMITED

POWER COMPANY (F) LIMITED

(नेवॉन लिमिटेड)


MECON LIMITED

PROJ(1)
BOLDFACE A DED IS CRYSTALON DED FOR (V3551514)

ROCKWELL P-111 EXPANSION PROJECT (1X230 MW)
 810 TPH: 155 Kg/cm² (a): 540°C[illegible]

BHARAT HEAVY ELECTRICALS LTD.,
 BOLLER IN ANT UNIT THERMALBARATHE-620 014

NAME	% AMBLYOPHIA	TITLE	ADLs AND SCARF ELEMENTS
ST-347/A			

RECEIVED	NOV 21 1964
AFM AND SCAM ELEMENTS	

DATE	PRG No.	HANDLING ARRANGEMENT	REV.
25.04.2017			

ALL DIMENSIONS ARE IN MILLIMETERS

1-99-100-80004

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	4000	C	CMOS		
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THE IX

Memorandum Of Understanding

**M/s BHEL
Trichy – 620 014**

and

**M/s. XXXXXXXXXXXXXXXXXXXX.
XXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXX
XXXXXXXXXXXX**

(Vendor Code : XXXXX)

For supplying

Electrically Operated Handling Equipment

**MOU NO : MOU / TPBHEL / HOIST- Rev.01
Date : 30-10-2015
Valid upto : 29-10-2017**

Engineering

Quality

Purchase

Vendor

**Memorandum of Understanding (MOU) between BHEL / FB and M/s. xxxxxxxxxxxxxxxx ,
for supplying Electrically operated Handling Equipments.**

1.0 GENERAL:

- 1.1 This MOU is signed for supplying the Hoists as per the agreed standardized specification so that these details need not be discussed again and again for future supplies.
- 1.2 The various aspects covered in this MOU are as follows.
 - 1.2.1 The general points are covered in Section – 1.0 – General.
 - 1.2.2 The specification requirements are covered in Section – 2.0 – Specifications.
 - 1.2.3 The documents to be submitted along with the offer / after placement of Order / along with the hoists are covered in Section 3.0.
 - 1.2.4 The Inspection / Testing and Packing requirements are covered in Section – 4.0 Testing, Inspection and Packing.
 - 1.2.5 The project specific details / data and if any customer specific requirements shall be covered in Section 5.0 – Project related Information. **DEVIATION ON PROJECT RELATED INFORMATION WILL LEAD TO REJECTION OF OFFER.**
 - 1.2.6 **If any differences are found between the details given in Section 5.0 and other sections, Section 5.0 shall be considered as final and the vendors shall meet this requirement for that particular project.**
- 1.3 Sections 1.0, 2.0, 3.0 and 4.0 are standard and Section 5.0 alone will be furnished along with enquiry to the vendors for their acceptance.
- 1.4 **It is agreed that no deviations will be taken by the vendors while submitting their offers against future enquiries.**
- 1.5 Since the specifications are standardized and an understanding has been reached, the future enquiries will be floated on “SINGLE BID SYSTEM” only. Hence, if any offer is found with deviations, the same will be totally rejected and will not be considered for further evaluation.
- 1.6 The validity of this MOU is for TWO years from the date of signing. After the expiry of the period, the same can be extended further with or without any modifications. However, in case any changes are required, the MOU may be amended before the expiry of the validity.
- 1.7 Pre commissioning spares (if applicable) with price break up as per the list (vide Section 5.0) shall be supplied along with the hoists.
- 1.8 Two years recommended Spares list(vide Section 5.0) with price break up shall be enclosed.

- 1.9 If any special or non-standard tools are required for installation, operation or maintenance, the same shall be supplied along with the hoists.
- 1.10 Trouble-free operation of the equipment shall be guaranteed for a period of 18 months from the date of commissioning OR 24 months from the date of dispatch whichever is earlier.
- 1.11 Vendor has to provide Bank Guarantee for 10% order value (as per BHEL format) valid for a period mentioned in point No.1.10.
- 1.12 Dispatch clearance will be issued along with PGMA with DU Nos. for the ordered items to vendor after the receipt of acceptable Inspection Report . Vendor agreed to mark the PGMA with DU Nos. in the casing of the packing and in the Packing Slip.
- 1.13 Materials shall be dispatched on “Door Delivery with or without Consignee Copy attached basis to avoid demurrage at transporter’s go down”.
- 1.14 Since the vendors works alone is approved by BHEL, it is agreed the vendor will manufacture this item in their own works only and will not off-load the jobs to any other suppliers without the written approval by BHEL.
- 1.15 All components of the hoists should be packed in such a way that it should not get damaged during transport.
- 1.16 BHEL and the Vendor shall have an involvement which will commence at bid stage and follow through the completion and acceptance, thus ensuring total conformity to Purchaser’s requirements.

2.0 SPECIFICATIONS

2.1 Scope

This specification covers design, manufacture, inspection, testing and supply of electrically operated Under Hung Crane (UHC), Trolley With Hoist (TWH), and Down Shop Leads (DSL) . Technical parameters for equipment design are furnished in Section-1 to 4. For scope of supply and special requirements refer to Section-5.

This is a general specification dealing with technical requirements of various handling equipment as specified under scope. Contract requirements and special requirements (if any) for a particular project are specified in Section5.

2.2 Codes & Standards:

In addition to the following latest revisions of codes and standards, the equipment shall be designed to meet the other governing standards as applicable and also meet with the local standards where the equipment is installed.

IS 3938	...	Electric wire rope hoists.
IS 807	...	Design, Erection and testing (structural portion) of cranes and hoists code of practice.
IS 2758	...	Mild steel point hooks for use with wire rope thimbles.
IS 15560	...	Point hooks with shank upto 160 tonne -specification
IS 2266	...	Steel wire rope for general engineering purpose.
IS 2365	...	Specn for Steel Wire Suspension Ropes for Lifts, Elevators and Hoists
IS 3681	...	Gears-cylindrical gears-accuracies.
IS 325	...	Three-phase induction motors.
IS 694	...	Insulated cables for working voltage upto and including 1100V.
IS 4691	...	Degrees of protection provided by enclosures for rotating electrical machinery.
IS 2062	...	Hot rolled low, medium and high tensile structural steel.
IS 816	...	Code of practice for use of metal arc welding for general construction in mild steel.
IS 2074	...	Ready mixed paint air drying red oxide-zinc chrome, priming.
IS 2932	...	Enamel synthetic, exterior (a) under coating, (b) finishing.
IS 3177	...	Code of practice for electric over head traveling crane and gantry crane other than steel work cranes.
IS 13947 (Part I)	...	Specification for low-voltage switchgear & control gear
IS 1024	...	Code of practice for use of welding in bridges and structures subject to dynamic loading.

IS 1875	...	Carbon steel Billets, Blooms, Slabs and Bars for Forgings.
IS 1835	...	Specification for Round Steel wires for ropes..
IS 9968 (Part-1)	...	Elastomer insulated cables:part 1 for working voltages upto and including 1100V.

2.3 Design & Constructional Requirements:

Construction of TWH, UHC and DSL shall be of consistent capacity, lift, head room, span, over hang and any other parameters as specified in Annexure- I of Section-5.

2.4 Electrically operated Under Hung Crane & Trolley With Hoist:

All equipments shall be designed for OUTDOOR application and suitable for ambient temperature range of 0 to 50°C. Purchaser will provide electric power supply at one or more points near to the monorail / runways as required in the plant layout. Service class to be considered for design of trolley with hoist and under hung crane shall be as per class 2 of IS 3938 and IS 3177 / IS 807 respectively. All material used for construction of different components shall individually conform to applicable standard. All welds shall conform to IS 1024 and welders shall be qualified to AWS D1.1 / ASME Section IX. Trolley with hoists and Under Hung Cranes shall be provided with protective hood and hard rubber sweepers.

2.4.1 Hooks:

- 2.4.1.1 Hooks shall meet the dimensional, material testing & inspection requirement of IS 15560.
- 2.4.1.2 The hook shall be provided with standard depress type safety latch and swivel thrust bearings with hardened race.
- 2.4.1.3 Lugs for fixing safety latch shall be either forged along with the hook or clamp type latch with lugs shall be provided.
- 2.4.1.4 Welding of lugs not permitted.
- 2.4.1.5 Locking arrangement shall be provided to avoid unscrewing of the hook in service.
- 2.4.1.6 Material of hook shall conform to IS-1875 or equivalent (with minimum tensile strength 50-62 Kg/mm².) and made by controlled grain forging and normalised.
- 2.4.1.7 Proof load tests for all the hooks shall be tested as per IS 15560 (i.e. for lifting capacity upto 32T, proof load shall be two times the lifting capacity. For lifting capacity 40T to 50T, proof load shall be 1.7 times the lifting capacity). All hooks shall be examined by MPI / LPI & UT (UT required for hooks >5.0T capacity) for cracks after proof load test.
- 2.4.1.8 The hook shall not distort or fracture. Ball & roller bearings shall not be used in these hooks. Anti-friction thrust bearings shall be used.

2.4.2 Wire Ropes:

Wire ropes shall meet the requirement of IS 2266 / IS 2365. Shall have six strands of 37/36 wires per strand with an ultimate tensile strength of 180 Kg/mm². The wire

rope shall be galvanized, as per IS 1835 type B. All wire ropes shall be proof load tested for 2 times of SWL/Fall. Breaking load shall not be less than five times SWL/Fall. Indicating the breaking force of wire rope, test certificate provided by the wire rope manufacturer for breaking load test shall be furnished during inspection. The rope shall be of sufficient length to retain two full wraps on the drum at lowest hook position.

2.4.3 Drum & Sheave:

Drum shall be of welded steel or seamless steel and Sheave shall be of cast or welded steel. The drum shall accommodate all the length of rope required for the lift plus two dead wraps at each anchor point without overlap. Drum can be grooved right or left or both, and grooves shall suit the ropes used. Sheaves shall be equipped with sheave guards to retain the rope in groove.

2.4.4 Gears & Pinions:

Material of construction shall be conforming to relevant Indian Standard (IS:3681) / (BS 970) or equivalent and shall be hardened if required to achieve the specified hardness. Hardness for Cross Travel & Long Travel (CT & LT) shall be in the range of 250 to 290 BHN for pinions and 215 to 255 BHN for gears. Hardness for hoisting shall be in the range of 285 to 300 BHN for pinions & 250 to 265 BHN for gears. In case of case hardened gears and pinions, a max.hardness of 350 BHN for gears and 390 BHN for pinions is acceptable. However vendor shall maintain and ensure that gear hardness is always less than pinion hardness by at least 35 BHN. Helical/Spur gears shall be used for hoists, CT & LT. All gears and pinions shall be examined by LPI/MPI for surface cracks after hardening. In case of enclosed gearing, means shall be provided for ample lubrication. Such lubrication points are to be indicated in the drawing. The vendor shall specify the specification of lubricant, market trade names, quantity of lubricant requirement and frequency of lubrication.

2.4.5 Wheels:

Shall be made out of forged or low carbon steel/cast steel with heat treated to 175 to 200 BHN hardness. The drive gears, if any, integral with the wheel shall be of the same material and hardness. Trolley wheels for hoists shall be spur geared type, cast / forged 4 wheeled out of which 2 wheels shall be driven by motor.

2.4.6 Rotating & Stationary shafts:

The material for shafts shall be as per relevant Indian standard or its equivalent and shall be hardened and tempered with a minimum tensile strength of 60 Kg/mm² and hardness shall be maximum 175 to 250 BHN. UT test shall be done for all Shafts of diameter more than 50mm. UT acceptance norms shall be as per ASME section VIII; Division 2.

2.4.7 Bearings:

Shall be reputed make (FAG/SKF/TATA/NBC) and shall meet relevant IS standards. All bearings shall be designed to give a minimum service life of 20 years.

2.4.8 Brakes:

Hoisting, cross travel and long travel shall be provided with electro- mechanical friction shoe type brake or Disc type brakes or Electromagnetic disc type brake or Electro hydraulic thruster brake. The brakes shall be released with electric power and fail-safe in case of power failure. All brakes shall, irrespective of controller portion, be applied immediately on operating an emergency push button or switch. It shall be possible to arrest the load at any desired location with minimum slip. Slip with reference to speed shall be specified along with the offer.

2.4.9 Trolley:

Shall be of minimum 4 wheeled out of which 2 wheels should be spur geared type and fabricated construction. Trolley shall be designed to suit the monorail size (straight or curved monorail, Which Purchaser will furnish during drawing approval). The travel path of the trolley on monorail (straight / curved) shall be read from BHEL drawing furnished along with the enquiry.

2.4.9.1 For ID Fan and Economiser handling hoists, suitable integral platform shall be provided at hoist to access control panel / motor / trolley / brake etc.,

2.4.10 Frame:

The frame shall be designed to proper strength, built from steel plates with bolted/welded construction.

2.4.11 End Carriages: (For Cranes)

Shall be of minimum 4 wheeled out of which 2 wheels should be spur geared type and fabricated construction. Suitable wheelbase shall be provided. End carriages shall be designed to suit the runway beam size. (Which Purchaser will furnish during drawing approval.) End carriages shall be connected with crane girder by welding or by fasteners (For ease of transportation, if site welding is required, the same shall be done at site by Purchaser).

2.4.12 Crane Girders:

Crane girders shall be of rolled section. Fabricated beam and welded beam shall not be used for this purpose unless otherwise accepted/approved by the Purchaser for special cases. For such cases, refer annexure-I of Section-5 to this specification for details. Camber / deflection under load shall be within SPAN / 1000 mm. In case vendor desires to provide higher camber, the same shall be clearly specified in the drawing. In any case camber provided shall not exceed –

- In case of double girder crane:
(Span ÷ 1000mm) + (Deflection under self-load of trolley with hoist ÷ 2)
- In case of single girder crane:
(Span ÷ 1000mm) + Deflection under self-load of trolley with hoist
Allowable bend shall be 1mm/metre and maximum bend shall not exceed 6mm for total span.

2.4.12.1 Buffers shall be provided for stopping the crane.

2.4.12.2 Design of crane should ensure anti tilting and anti toppling while the hoist is at overhang side.

2.5 Down Shop Leads (DSL):

DSL system shall be designed to transfer the power supply from End user supply point to the equipment, which is moving on runway beams / monorails. The DSL system shall be of Cable trolley type or Taut wire loop type as per contract requirement specified in Section 5.

2.5.1 Cable Trolley Type:

Cable trolleys shall run on "Tee" track / I-Beam. The system shall consist of:

- ❖ "Tee" track
- ❖ Cable Trolleys
- ❖ Flexible power cable (Fixed & Trailing)
- ❖ Switch fuse units / Isolators
- ❖ Supports for Auxiliary girder or "Tee" track / I-Beam
- ❖ Link chain
- ❖ Fasteners

2.5.1.1 Construction:

2.5.1.1a "Tee:" Track / I-Beam:

The system shall be provided with rolled sections suitable for cable trolley wheels as per the relevant Indian Standard. The "Tee" track / I-Beam shall be designed with minimum deflection for smooth travel of cable trolleys.

2.5.1.1b Cable Trolleys:

4-wheeled cable trolleys shall be of sturdy design constructed with suitable material. Diameter of trolley wheels shall be minimum 40mm. and with double seal roller or ball bearing. The cable trolleys shall be designed to take the load of cable and moving with the cable load smoothly on auxiliary girder or "Tee" track. Suitable arrangement shall be provided to tie the power cable and link chain with cable

trolley. Vendor shall specify the construction of material selected in the offer. Arrangement drawing shall be submitted along with the offer for review. After placement of purchase order, the same shall be submitted for approval. Vendor shall indicate the weight of total cable trolleys in the drawing.

2.5.1.1c Flexible Power Cable: (Fixed & Trailing)
(For Cable trolley & Taut Wire Loop type)

The trailing cable shall be suitable for 415V AC; 3 phase with neutral; 50Hz.; copper PVC flexible cable, PVC 650/1100V grade, suitable size/rating (for all motors running simultaneously) for the equipment under supply. The power supply flexible trailing cable shall comply with latest revision of IS 694 and other relevant Indian standard for the equipment under supply. If any special requirement, respective IS Standard as mentioned in Section –5 of this specification shall be followed. For sub-vendor list refer clause no 2.12.5. Vendor shall indicate the weight of total system in the drawing.

2.5.1.1d Switch Fuse Units or Isolators: (For Cable trolley type & TW Loop type)

The system shall be supplied along with suitable switch fuse units / isolators to take the full load current, when the equipment trolley with hoist and under hung

crane) is working with maximum safe working load. For sub-vendor list refer clause no 2.12.6.

2.5.1.1e Supports:

The system shall be provided with suitable supports to take the load of “Tee” track / I-Beam, cable trolleys, power flexible trailing and other materials.

2.5.1.1f Link Chain:

The system shall be provided with suitable link chain to pull the trolleys, which is with the load of cable. During pulling of cable trolleys due to impact load, the chain shall not fail at any point. The chain shall be made out of minimum 3mm diameter carbon steel wire.

2.5.1.1g Fasteners:

Suitable fasteners shall be provided. Fasteners shall be electro -galvanised / Hot dipped.

2.5.2 Taut wire loop:

Ceramic reel insulator shall drag on stretched steel wire with trailing cable. The system shall consist of:

- ❖ Bracket
- ❖ End hook
- ❖ Flexible power cable (Fixed & Trailing)

- ❖ Switch fuse units/Isolators
- ❖ Reel insulator
- ❖ Steel wire rope
- ❖ Rope clamp & thimble
- ❖ Leather belt or nylon wire rope
- ❖ Fasteners.

2.5.2.1 Construction:

2.5.2.1a Bracket:

Suitable size and material shall be provided to take the load of cable and axial force by the end hook.

2.5.2.1b End hook:

Suitable end hook shall be provided for the size of steel wire rope.

2.5.2.1c Reel insulator:

Cable reel insulators shall be of ceramic, with suitable size of the stretch wire. Suitable arrangement shall be provided in the reel insulator to tie the trailing cable with nylon rope or leather belt.

2.5.2.1d Steel wire rope:

Steel wire rope shall be of minimum 6mm diameter as per latest revision of IS 2365. Steel wire rope shall be suitably sized for load of cable without sagging for the total travel length.

2.5.2.1e Rope clamp & thimble:

Suitable rope clamps and thimbles shall be provided to tie the rope with bracket through end hook.

2.5.2.1f Leather belt or nylon tie:

Leather belt or nylon tie shall be supplied to tie the trailing power cable with reel insulator.

2.5.2.1g Fasteners:

Suitable fasteners shall be provided wherever required. Fasteners shall be Electro-galvanised / hot dipped.

2.6 Electricals & controls:

2.6.1 CT, LT & Hoisting Motors (AC; Non-Flame Proof)

2.6.1.1 Site condition

2.6.1.1a Altitude above sea level : Less than 500m.

- | | | |
|---------------|---|---|
| 2.6.1.1b | Ambient temp. Condition | : 0 - 50°C |
| 2.6.1.1c | Relative Humidity | :100% |
| 2.6.1.1d | Atmosphere | : Dusty, salty, corrosive and highly polluted. |
| 2.6.2 | Standard (Latest revision) | : IS 325 |
| 2.6.3 | Application | : Trolley with hoist and Under Hung Crane |
| 2.6.4 | Duty cycle | : Continuous S3/S4; Duty factor: 40% CDF. |
| 2.6.5 | Rated voltage, frequency | : 415V, ±10%; 50 Hz±5% and combined 10% absolute |
| 2.6.6 | Minimum starting voltage | : 80% of the rated voltage (Cl. 2.6.5) |
| 2.6.7 | Capacity to restart (at Voltage Specified in cl.no 2.6.5) | <div style="display: inline-block; vertical-align: middle;"> <div style="font-size: 3em; vertical-align: middle; margin-right: 5px;">}</div> <div> No limitation on no. of starts.
 Calls for many starts at frequent intervals.
 Vendor to specify on any limitation </div> </div> |
| 2.6.8 | Direction of rotation | : Bi-directional |
| 2.6.9 | Class of insulation | : Class `F' temp. rise limited to class `B' |
| 2.6.10 | Winding treatment: | |
| | The insulation shall be given tropical and fungicidal treatment for successful operation of the motor in hot humid and tropical climate | |
| 2.6.11 | Temperature rise | : With in specified limits. Vendor to specify. |
| 2.6.12 | Starting current | : Vendor to specify. |
| 2.6.13 | Method of motor starting | : DOL |
| 2.6.14 | Type of enclosure: | |
| | IP 55 as per IS 4691. | |
| 2.6.15 | Terminal Box: | |
| 2.6.15.1 | Type | : Weather proof IP 55 |
| 2.6.15.2 | Cable gland | : Double compression type. |
| 2.6.15.3 | Cable entry | : Suitable for both, top and bottom entry. |
| 2.6.16 | Type of terminals | : Stud type with plain washers, spring/ washers check nuts & Lugs. |
| 2.6.17 | Fault level | : 50 KA at 415V. |
| 2.6.18 | Terminals: | |
| | Separately terminated with clear identification in main terminal box with double compression type glands. | |

2.6.19 Lifting device : Eye bolt or lugs to facilitate safe lifting.

2.7 Controls & Interlocks:

The control system shall envisage a control cabinet and a push button operating station. The push button control shall have control for power switching to the motors and forward/reverse motion. The control voltage of both cabinet and push button station shall be 110V AC 50 HZ. single phase. The control stations shall have enclosure protection of IP 55 (IS:13947). Necessary electrical interlocks shall be included in control cabinet for fail-safe operation. Vendor shall clearly bring out all the interlocks in the control wiring drawing and submit the same for approval. Limit switches shall be provided for long and cross travel hoists. These switches shall be interlocked to cut off power to the motor and restrict further movement when the limits are crossed. Crimping tool shall be used for fitting lugs.

2.8 Control Cabinet:

2.8.1 Application:

To house all the power contactors, control transformers, control relays, fuses, indicating lamps, switches and protection circuits of all motors of hoist.

2.8.2 Type:

Wall mounting type. Normally mounted on a framework of the hoist. The cabinet shall be made of minimum 1.6mm thick cold rolled sheet.

2.8.3 Motor Protection:

All motor shall be protected against under voltage, over load and short circuit condition.

2.8.4 Isolator :

Input power to the cabinet through switch fuse unit is required.

2.8.5 Thermal over load relays : Shall be provided suitably for all motions.

2.8.6 Indicating Lamps : Shall be provided wherever required.

2.8.7 Terminal Blocks :

Shall be of Clip on type. Shall be suitable for 1.5mm² copper conductor. 20% of additional terminal blocks shall be supplied as spares along with the supply.

2.8.8 Customer Supply voltage : 415V 50 Hz. 3 phase

2.8.9 Control voltage : 110V 50 Hz.

2.8.10 Enclosure Protection: (For Control Cabinet & Pendant Station)

IP 55 as per IS 13947(part I).

2.8.11 Glands:

Shall be double compression type. To be included in vendor scope as per requirement.

2.8.12 Internal Wiring:

1. PVC 650/1100V Grade 1.5 mm² multi-strand /copper conductor.
2. All power wiring with red and black.
3. All control wiring is to be with grey wire & shall be marked with ferules as per wiring diagram.

2.9 Control Box:

2.9.1 Type:

Pendant station to house all start/stop/forward/reverse/up & down push button for all motors.

- 2.9.2 Location : Hanging from equipment. Push button pendant station shall be provided at above one meter from operating floor.

2.9.3 Push Button:

For all start green push button and for stop red push button shall be used. Make shall be of Siemens / L&T / GE / Telemechanic / BCH/Technic/ Control & Switchgear (C&S) . Push button shall return to "off" position when released. One stop push button shall be lockable to enable switch off power supply when equipment in not in use.

- 2.9.4 Control Voltage: 110 V AC 50 Hz. Single phase.

2.9.5 Enclosure Protection:

IP 55 as per IS 13947 Part I.

Box material:

Cold rolled sheet steel with 1.6mm thickness minimum.

2.10 Cabling:

Vendor shall include all the power and control cables necessary for the system. The cable shall comply with IS 694. The power cable shall be of copper PVC flexible and vendor shall indicate the conductor size and over all size in the offer for all the motors. The control cable shall be armoured of 1.5 mm² copper conductor only. The no. of cores, cable size etc shall be indicated in the offer. There shall be 20% spare cores available for all control cables offered. If any special requirement, respective IS Standard as mentioned in Section –5 of this specification shall be followed.

2.11 Earthing:

All electrical equipments (motor, control cabinet etc.,) shall be provided with required elements (like bolt, washer, nut etc.,) for proper earthing at site.

- 2.12** Electrical & Control Items shall be as per the approved Sub-Vendor/Make List given below.

- 2.12.1 Control&Thermal Over Load Relays: Siemens/BCH/L&T/GE/ Telemechanic/ C&S

- 2.12.2 Transformers :SE / Kappa / Ind Coil /JE/ Vikas/ Logicstat

- | | | |
|--------|------------------------------|---|
| 2.12.3 | Motors | :NGEF/Kirloskar/Siemens/Crompton-Greaves /
Bharat Bijlee/Autolec/GEC/Alstom |
| 2.12.4 | Limit Switches | :BCH / Omron / Nucon / Festo / Siemens / Kaycee /
EMM / SOC |
| 2.12.5 | Power & Control Cable | :CMI Ltd. / Delton Cables / Fixwell /
Pushincords /Asian cables/Cable corporation
of India / Finolex /Incab/Universal/Polycab/KEI |
| 2.12.6 | Isolator / Switch Fuse Units | : Siemens / L&T / GE / C&S |
| 2.12.7 | Power Switches | : Siemens / L&T / GE / C&S |

2.13 Name Plates:

- 2.13.1 Nameplates shall be provided with non-corrosive material
- 2.13.2 Name plates shall have details of the equipment, model no., type, capacity, lift, span, and motor & brake details.
- 2.13.3 All lubrication points shall be provided with nameplates.

3.0 DOCUMENTS TO BE SUBMITTED

3.1 Along with Offer.

- 3.1.1 Quality plan, General arrangement & DSL arrangement / Schematic drawing showing the critical dimensions with complete bill of materials. All dispatchable components / assemblies shall be indicated in detail. Sub-vendor items' make also shall be indicated in the drawing.
- 3.1.2 Wiring circuit diagram with details of make, type and rating of all components.
- 3.1.3 Spares list if required for 3 years of trouble free operation along with price. Commissioning / Initial spares shall form part of the base offer.
- 3.1.4 Duly filled-in and signed General Data Sheet (Section 5) for trolley with hoist, under hung crane and down shop lead system with all required details.
- 3.1.5 Write up on special features if any.
- 3.1.6 Technical specification for equipment.
- 3.1.7 Catalogues and other details of the product shall be submitted along with the offer.

3.1.8 Exclusion:

Any exclusion from scope of supply shall be clearly spelt out in the offer itself. Exclusion of major / critical items shall make the offer liable for rejection.

3.2. After Placement of Order.

- 3.2.1 Quality plan shall be submitted by vendor for Purchaser's approval.
- 3.2.2 Dimensional drawings of Under Hung Crane, Trolley With Hoist, Down Shop Leads, cable trolley, control panel and wiring diagram with B O M for approval.
- 3.2.3 Data sheet (Section -5) for hoists and cranes for Purchaser / End user's approval.
- 3.2.4 The following calculations/details shall be furnished.
 - 3.2.4.1 Hoist motor and Travel motor power calculations.
 - 3.2.4.2 Brake Torque calculations and Brake selection for each hoist.
 - 3.2.4.3 Main Hoist rope and wire rope selection.
 - 3.2.4.4 Cross travel and Long travel wheel load and wheel diameter calculations/details.
- 3.2.5 Priced List of Recommended Spares for 2 years trouble free operation and maintenance.(if applicable)
- 3.2.6 After final approval 3 copies of above drawings shall be submitted.

3.3 Along with the Hoists:

- 3.3.1 Physical, Chemical, NDE and hardness test certificates shall be provided wherever applicable for trolley / crane wheels, wire ropes, pulleys, hook, gears, pinions, and shafts.
- 3.3.2 Test certificates for having carried out the tests as per Section-4 of this specification under Purchaser and End user's presence.

- 3.3.3 Test reports for wire rope and hooks.
- 3.3.4 Test reports for NDT examination of gears, wheels, pinions and hooks.
- 3.3.5 Type test and routine test certificates for motors and as per IS 325.
- 3.3.6 Performance test certificates for UHC, TWH, safety devices and other electrical items.
- 3.3.7 TC for control panel, pendent stations and motors shall be provided.
- 3.3.8 The vendor check list shall be filled up at the manufacturer's work and shall be duly signed by inspection engineer and manufacturer's representative.

- 3.3.9 Drawing & O&M Manuals:**
 - 3.3.9.1 The bill of material shown in the drawing shall match with that of the dispatchable unit as indicated in the packing slip.
 - 3.3.9.2 The drawing shall be prepared in AUTOCAD and vendor shall forward both hard copies (6 copies each) and CD (Copied with drawing files) to the Purchaser.

- 3.3.9.3 O & M Manuals:**
 - 3.3.9.4 3 sets of operation and maintenance manuals shall be provided with details for storage, installation, erection procedures, drawings, motor data sheet, relay characteristics, operating and troubleshooting, lubrication schedule, spares data, spares identification drawings, spares replacement procedure and special requirements if any. All copies are to be sent to BHEL / Tiruchirappalli.
 - 3.3.9.5 3 sets of CDs for the above manual.
 - 3.3.9.6 The hard copies of the Manuals should be in printed form only.
 - 3.3.9.7 The size of manuals should be in correct A4 size with drawings in A3 size. Large size drawings (greater than A3 size) should be reduced in A3 size and inserted.
 - 3.3.9.8 Drawings shall be of printed or laser printed form only.
 - 3.3.9.9 O & M manuals, (hard copies and CD) shall be submitted to BHEL / Tiruchirappalli prior to dispatch of the equipment.
 - 3.3.9.10 Manual, generally should contain the following:
 - 3.3.9.10a Data sheet with makes of components supplied.
 - 3.3.9.10b Maintenance (including, storage, installation, Erection and lubrication wherever necessary) and service
 - 3.3.9.10c Recommended spares for 2 years trouble free service.
 - 3.3.9.10d Trouble shooting
 - 3.3.9.10e Assembly drawings with part list, dimensional drawings & other applicable drawings.

- 3.3.9.10f Manuals should pertain only to the types or model supplied for the particular contract. Copies are to be sent to BHEL / Tiruchirappalli only.

4.0 TESTING, INSPECTION AND PACKING

- 4.1 Purchaser's and End user's representative shall have access to the works of vendor at all reasonable times for the purpose of witnessing the purchased equipment being tested.
- 4.2 All electrical and mechanical equipment like motor, ropes, cables, electrical control panel etc. shall be tested as per the relevant IS standard at the vendor's / Sub-vendor's works.
- 4.3 The Trolley with hoist shall be run 5 times at manufactures works. First and 5th runs shall be tested with 125% safe working load. Second, third and fourth run with safe working load shall be conducted without any pause. The motor currents shall be checked and shall be with in the rated full load current of each motor at safe working load. The hoist shall be capable of lifting load from mid-air and moving the load without any problem. Normal speed shall be achieved during full load tests. Headroom variation shall be checked & allowable variation is 50mm only. Hook approach shall be checked as per approved drawing. (Ref.Standard : cl.20.2 of IS 3938)
- 4.4 The brakes for hoisting, long travel and cross travel shall be tested with 125% safe working load. The brakes shall be capable of holding this load, when the load is suspended by the hoist hook. As per IS 3177, the long travel motion should be tested at manufacturer's works on no load keeping the crane on sleepers or test bench. Maximum slip (braking path) shall be as per approved data sheet / drawing for hoisting and cross travel motions.
- 4.5 Test shall be conducted for effectiveness of automatic devices for hoist to limit the upward/downward & travel of hoist and to limit the forward & reverse travel of crane. The limit switch shall be checked at vendor's works. Others shall be checked at site by Purchaser / End user and if found defective, the same shall be replaced at free of cost by vendor.
- 4.6 Before the hoist is put into operation, over load relays (electrical) shall be tested for lift & cross travel and sustain 125% safe working load. Long travel with 125% SWL shall be tested at site by Purchaser / End user and if found defective, the same shall be replaced at free of cost by vendor.
- 4.7 Trolley with hoist and under hung crane gears shall be tested with & without load for alignments, smooth and trouble-free operation.
- 4.8 Equipment shall be tested for hoisting and cross travel with 125% SWL.

- 4.9 Hoisting, and cross travel speed shall be tested and shall ensure the tolerance with in 10%. Hoisting and CT shall be tested for minimum 1.0 to 2.0m. (for hoisting-height & for cross travel-length). Long travel speed shall be tested at site. Vendor shall be responsible for meeting for full lift and lower limit switch operation at site. Any failure at site to meet the above requirement shall be resolved by the vendor at site at his cost.
- 4.10 Long travel shall be tested at site with and without safe working load by Purchaser / End User and if found defective, the same shall be replaced at free of cost by vendor.
- 4.11 Load test for TWH and UHC shall be carried out after installation at site under the supervision of the vendor's representative, to the satisfaction of the Purchaser / End user. Vendor should depute their Engineer for a period of 10 days free of cost.
- 4.12 All welding shall be tested with LPI / MPI. All butt welds shall be tested with radiography. Acceptance norms for radiography shall be as per AWS D1.1. /ASME Sec IX.
- 4.13 Hooks:**
- 4.13.1 Raw material test certificate shall be submitted by manufacturer for scrutiny.
- 4.13.2 Proof load test should be done as per IS 15560 on each hook irrespective of capacity.
- 4.13.3 After proof load test, hook shall be examined for cracks, deformation, flaws and other defects with LPI / MPI & UT. No linear indications or cracks are acceptable while carrying-out LPI / MPI. Acceptance norm for UT shall be as per A388/ ASME - Section VIII - Division 2- AM203.2 / ASTM E446.
- 4.14 Under Hung Crane:**
- 4.14.1 Check the dimensions of the under hung crane as per relevant standard.
- 4.14.2 Deflection Test: Under hung crane shall be tested for deflection with safe working load at the middle point of the span. Datum line for deflection is obtained by placing hoist at one extreme of the span with hook approach. The deflection with Safe Working Load at centre of span compared with this datum should be less than $= \frac{SPAN}{1000} mm$.
- 4.15 Down Shop Lead System (DSL):**
- 4.15.1 Cable trolley shall be tested for smooth running on "Tee" track with cable load.
- 4.15.2 Cable reel insulator shall be tested for smooth running on steel wire rope with cable load.
- 4.15.3 Any discrepancy found in the design and/or supply shall be resolved by Vendor at the installation (site) at Vendor's Cost.

4.16 Electrical components:

- 4.16.1 The insulation values of all electrical equipments should be checked. Reading shall be not less than 1.0 MΩ with an unregulated type tester with DC voltage not less than twice the rated voltage.
- 4.16.2 Control panel shall be verified for make, model no. and location of all relays & components as per the approved drawing.
- 4.16.3 Functional test shall be conducted for power and control circuits.
- 4.16.4 Test for high voltage and measurement of insulation resistance shall be conducted.
- 4.16.5 Degree of protection test report shall be submitted. (Type test report)
- 4.16.6 The satisfactory operation of each controller, switch, contactor relay, other control devices, the connectors of all circuits and protective devices shall be tested under the most unfavourable conditions.
- 4.16.7 TC for control panel, pendant stations and motors shall be provided.

4.18 Painting, Protection, Packing, Supply and Identification:

4.18.1 Surface Preparation:

Weld slag & spatter shall be removed and the surfaces to be coated shall be free from contamination. Surface defects shall be removed by suitable methods. Sharp edges shall be smoothened by grinding. Prior to surface preparation oil, grease, drilling emulsions, cutting emulsions and preservative agents shall be carefully removed by suitable solvents. The surface shall be carefully dried with clean cloths to prevent the dissolved impurities from spreading over the entire surface. The surface shall be cleaned by wire brush and shot blasting if required. Proper adhesiveness of paint to the surface shall be ensured.

4.18.2 Painting:

Normal painting schedule is as detailed below. For special requirement if any, refer Annexure-IV of Section-5 to this specification.

4.18.3 Control cabinet:

Exterior: Grey; Interior: Brilliant white - glossy finish with enamel paint. For special painting if any, refer Section 5 to this specification. Paint thickness: Exterior - 120 microns; Interior - 80 microns minimum
Alternatively, control panel shall be of powder coated but both outside and inside will be of grey in colour.

- 4.18.4 Two coat of red oxide with minimum 40 microns DFT as per IS 2074 and two coats of synthetic enamel paint with minimum 40 microns DFT as per IS 2932.

Colour Scheme:

Under hung crane : Golden Yellow

Trolley with hoist : Golden Yellow

Interlock mechanism	: Ash Grey
DSL Components	: Ash Grey
Hook	: Black

4.18.5 All the despatchable units shall be packed in a wooden case with waterproof material.

4.18.6 The material shall be dispatched with clear bill of material for each system.

4.18.7 Each and every despatchable item shall be identified with item number , Purchase Order reference number and tagged properly for easy identification.

4.18.8 Two sets of as-built arrangement drawings and electrical circuit drawings shall be sent along with the consignment.

5.0 PROJECT RELATED INFORMATION

Project Name :

Enquiry No. / P.O.No. :

Sl.No.	Description	Specification	Vendor Confirmation Yes / No
5.1	Hoist, Crane & DSL Parameter	Refer Annexure-I	
5.2	Painting schedule & Special requirements	Refer Annexure-II	
5.3	Power & Control cable code		
5.3.1	Power supply		
5.3.2	Control supply		
5.4	Commissioning Spares	Vendor to specify	
5.5	2 Years recommended spares	Vendor to specify	
5.6	Data Sheet	(Annexure-III) Vendor to submit	
5.7	G.A.Drawings (for hoists, cranes, DSL, Wiring diagram, pendant etc.)	Vendor to submit	

Note: 1. Deviation in the above requirements shall reject the offer.
2. If required, please add more sheets.

Engineering

Quality

Purchase

Vendor

Trolley with Hoist - Electrically Operated										
Sl No	Application	Ref Drawing No	Drg Item No	Capacity in Tonnes	Lift in M	HD Room in mm	Monorail			Qty/Boiler in NO's
							Type	Size	Bottom Elevation in M	
1	PA Fan Motor	0-99-100-80375 Rev 01	1	12.0 T	6.0 M	V E N D O R T O S U B M I T	ISMB	600	7500	2
2	PA Fan Rotor	0-99-100-80375 Rev 01	3	5.0 T	6.0 M		ISMB	450	7500	2
3	FD Fan Motor	0-99-100-80375 Rev 01	5	10.0 T	6.0 M		ISMB	600	7500	2
4	FD Fan Rotor	0-99-100-80375 Rev 01	7	2.5 t	6.0 M		ISMB	450	7500	2
5	ID Fan Motor & Rotor	0-99-100-80375 Rev 01	9	25.0 T	19.7 M		ISMB	750X250-36X20	21500	1
6	APH Elements	1-99-400-80004 Rev 00	1	2.0 T	23.0 M		ISMB	500	25268	1
7	SCAPH Handling	1-99-400-80004 Rev 00	3	5.0 T	10.5 M		ISMB	500	11168	2
8	Pressure Parts Handling	1-99-502-80008 Rev 01	2	5.0 T	52.5 M		ISMB	500	52368	1

Note:

The Lift shown in the table is approximate only. Depending upon head room of the hoist it may be altered.
Power supply provided for the panels shall be 415V, 3 PH, 3 wire only. Vendor to make suitable transformer arrangement inside the panel for single phase control supply
Hoists shall have an integral approach platform for control panel, motors & break

DSL Trailing Cable System							
Sl No	Application	Ref Drawing No	Drg Item No	Type	DSL Travel Length in M	Fixed Cable length in M	Qty/Boiler in NO's
1	PA Fan Motor	0-99-100-80375 Rev 01	2	CT\$\$	V E N D O R T O S U B M I T	12.5 M	2
2	PA Fan Rotor	0-99-100-80375 Rev 01	4			12.5 M	2
3	FD Fan Motor	0-99-100-80375 Rev 01	6			12.9 M	2
4	FD Fan Rotor	0-99-100-80375 Rev 01	8			12.9 M	2
5	ID Fan Motor & Rotor	0-99-100-80375 Rev 01	10			58.0 M	1
6	APH Elements	1-99-400-80004 Rev 00	2			44.0 M	1
7	SCAPH Handling	1-99-400-80004 Rev 00	4			5.662 M	2
8	Pressure Parts Handling	1-99-502-80008 Rev 01	3			67.0 M	1

CT\$\$ - Cable Trolley Type

Annexure-III to MOU / TPBHEL / HOIST

Project :

Enquiry No.:

P.O.No. Date:

Description of the item:

The following data sheet/check list is to be filled by the vendor and submitted . This data sheet shall form part of ordering specification and shall be approved by Purchaser on acceptance of the offer. All columns are to be filled up. "Non-applicability" shall be specified. Separate *Data sheet/check list for each type of crane and TWH offered shall be submitted*

Technical Data Sheet / Check list for Electrically Operated Under Hung Crane (UHC) & Trolley With Hoist (TWH)

Ref no	Description	Spec clause no	As per spec	As quoted
Gen.1.0	Codes & Standards	2.2		
Gen.1.1	Electric wire rope hoists....	2.1	IS 3938	
Gen.1.2	Code of practice.cranes and hoists	2.2	IS 807	
Gen.1.3	Mild steel point hooks...	2.3	IS 2758	
Gen.1.4	Point hooks with shanks upto 160t	2.4	IS 15560	
Gen.1.5	Steel wire rope...	2.5	IS 2266	
Gen.1.6	General plan-spur & helical gears	2.6	IS 3681	
Gen.1.7	Three phase induction motor	2.7	IS 325	
Gen.1.8	PVC insulator cables...	2.8	IS 694	
Gen.1.9	Degrees of protection-elec. M/c..	2.9	IS 4691	
Gen.1.10	Weldable structural steel	2.10	IS 2062	
Gen.1.11	Code of practice.metal arc welding..	2.11	IS 816	
Gen.1.12	Ready mixed paint...	2.12	IS 2074	
Gen.1.13	Enamel synthetic ..coat/finish...	2.13	IS 2932	
Gen.1.14	Code of practice .. Electrical..crane	2.14	IS 3177	
Gen.1.15	Spec for..switch gear & control gear	2.15	IS 13947-Part1	
Gen.1.16	Code of practice .. For welding...	2.16	IS 1024	
Gen.1.17	Carbon steel forging	2.17	IS 2004	
Gen.1.18	Round steel wire for ropes	2.18	IS 1835	
Gen.1.19	Elastomer insulated cables....	2.19	IS 9968-Part-1	
CR1.0	Under hung crane-UHC			
CR1.1	Capacity - in tons	Annexure-I		
CR1.2	Span - in m.	Annexure-I		
CR1.3	Overhang on either side - in mm.	Annexure-I		
CR1.4	Operating floor - in m.	Annexure-I		
CR1.5	Service class of crane/hoist	2.4	Class 2	
CR1.6	All welding	2.4	IS 1024	
CR1.7	Welder qualification	2.4	AWS D1.1/ASME section IX	
CR2.0	Wheels-UHC	2.4.5		
CR2.1	Wheel shape to match with runway beam	2.4.5	Vendor to confirm	
CR2.2	Wheel material	2.4.5	Forged/cast steel	
CR2.3	Wheel diameter - in mm.	2.4.5	Vendor to specify	
CR2.4	Wheel base - in mm.	2.4.5	Vendor to specify	
CR2.5	BHN	2.4.5	200 BHN Max.	
CR3.0	Crane girder-UHC	2.4.12		
CR3.1	Section	2.4.12	Rolled section	

Vendor Name :

Signature :

Date :

Annexure-III to MOU / TPBHEL / HOIST

Project :

Enquiry No.:

P.O.No. Date:

Description of the item:

Ref no	Description	Spec clause no	As per spec	As quoted
CR3.2	Size	2.4.12	Vendor to specify	
CR3.3	Material	2.4.12	Vendor to specify	
CR3.4	Camber / Deflection	2.4.12	Span/1000mm	
CR3.5	Allowable bend	2.4.12	1mm/m	
CR3.6	Maximum bend	2.4.12	6mm	
CR3.7	Provision of buffers	2.4.12.1	Vendor to specify	
CR3.8	Provision of anti tilt / topple arrangement	2.4.12.2	Vendor to specify	
CR4.0	Wheel bearing-UHC	2.4.7		
CR4.1	Type	2.4.7	Vendor to specify	
CR4.2	Size	2.4.7	Vendor to specify	
CR4.3	Make	2.4.7	FAG/SKF/Tata/NBC	
CR5.0	Crane speed-UHC			
CR5.1	Maximum speed in m/min.		Vendor to specify	
CR5.2	Minimum speed in m/min		Vendor to specify	
CR6.0	Weight of the crane - in Kgs.		Vendor to specify	
CR7.0	Dimensions of crane	Vendor drawing	Vendor to specify	
CR8.0	Limit switch-UHC-LT&CT	2.12.4		
CR8.1	Type	2.12.4	Heavy duty	
CR8.2	Make		BCH/Omron/Nucon/ Festo/ Siemens/ Kaycee/ EMM/ SOC	
CR8.3	Rating	2.12.4	Vendor to specify	
CR9.0	Crane Motors-UHC-LT	2.6.0	Conform to IS 325	
CR9.1	Motor Rating		Vendor to specify	
CR9.2	Motor Type		Vendor to specify	
CR9.3	Motor Make		Vendor to specify	
CR9.4	Duty factor	2.6.4	40% CDF	
CR9.5	Duty cycle	2.6.4	Continuous/S3/S4	
CR9.6	Enclosure	2.6.14	IP 55	
CR9.7	Power supply (equipment)		415 VAC; 50Hz	
CR9.8	Quantity		Vendor to specify	
	Crane Motors-UHC-CT	2.6.0	Conform to IS 325	
CR9.9	Motor Rating		Vendor to specify	
CR9.10	Motor Type		Vendor to specify	
CR9.11	Motor Make		Vendor to specify	
CR9.12	Duty factor	2.6.4	40% CDF	
CR9.13	Duty cycle	2.6.4	Continuous/S3/S4	
CR9.14	Enclosure	2.6.14	IP 55	
CR9.15	Power supply (equipment)		415 VAC; 50Hz	
CR9.16	Quantity		Vendor to specify	

Vendor Name :

Signature :

Date :

Annexure-III to MOU / TPBHEL / HOIST

Project :

Enquiry No.:

P.O.No. Date:

Description of the item:

Ref no	Description	Spec clause no	As per spec	As quoted
CR10.0	End stopper-UHC			
CR10.1	Provided		Vendor to specify	
CR10.2	Type		Vendor to specify	
CR11.0	Clearance between Runway beam bottom & Crane girder top - in mm.		Vendor to specify	
HO1.0	Trolley With Hoist(TWH)			
HO1.1	Capacity - in tons	Annexure-I		
HO1.2	Lift - in m.	Annexure-I		
HO1.3	Headroom - in mm.	Annexure-I		
HO1.4	Approximate Hoist dimension	Vendor drawing	Vendor to specify	
HO1.5	Operating floor - in m.	BHEL drawing	Vendor to confirm	
HO1.6	Approximate weight - in Kgs.		Vendor to specify	
HO1.7	Service class of crane/hoist	2.4	Class 2	
HO1.8	All welding	2.4	IS 1024	
HO1.9	Welder qualification	2.4	AWS D1.1/ASME section IX	
HO2.0	Hoist speed-TWH			
HO2.1	Maximum speed - in m/min		Vendor to specify	
HO2.2	Minimum speed - in m/min		Vendor to specify	
HO3.0	Cross travel speed-TWH			
HO3.1	Maximum speed - in m/min		Vendor to specify	
HO3.2	Minimum speed - in m/min		Vendor to specify	
HO4.0	Trolley -TWH	2.4.9		
HO4.1	Type	4 - wheeled-Min	Vendor to specify	
HO4.2	Design to suit monorail size		Vendor to confirm	
HO5.0	Trolley wheels-TWH	2.4.5		
HO5.1	Type	3.1.5	Spur geared	
HO5.2	Wheel diameter - in mm.	3.1.5	Vendor to specify	
HO5.3	Material of construction	3.1.5	Cast / forged steel	
HO5.4	Hardness	3.1.5	200 BHN Max.	
HO5.5	Quantity	3.1.5	Vendor to specify	
HO6.0	Wire rope-TWH	2.4.2		
HO6.1	Code	2.4.2	IS 2266 / IS 2365	
HO6.2	Rope construction	2.4.2	6 strands of 37/36	
HO6.3	Rope diameter - in mm.	2.4.2	Vendor to specify	
HO6.4	Number of falls	2.4.2	Vendor to specify	
HO6.5	Ultimate tensile strength	2.4.2	Vendor to specify	
HO6.6	Whether wire rope has sufficient extra length to retain two full wraps on the drum	Yes / No	Vendor to confirm	
HO6.7	Rope material	2.4.2	Galvanised	
HO6.8	Core material	2.4.2	Vendor to specify	

Vendor Name :

Signature :

Date :

Annexure-III to MOU / TPBHEL / HOIST

Project :

Enquiry No.:

P.O.No. Date:

Description of the item:

Ref no	Description	Spec clause no	As per spec	As quoted
HO6.9	Breaking load	2.4.2	5 times SWL	
HO7.0	Rope drum-TWH	2.4.3		
HO7.1	Diameter - in mm.	2.4.3	Vendor to specify	
HO7.2	Material of construction	2.4.3	Cast / weld steel	
HO7.3	Construction	2.4.3	Seamless/fabricated	
HO8.0	Hook-TWH	2.4.1		
HO8.1	Code	2.4.1.1	IS 15560	
HO8.2	Material (Forged)	2.4.1.6	IS 2004-35C8	
HO8.3	Minimum tensile strength	2.4.1.6	50-62 kg/mm ²	
HO8.4	Capacity - in tons	2.4.1	Vendor to specify	
HO8.5	Safety latch provided in the hook	2.4.1.2	Vendor to confirm	
HO8.6	Bearing in the swivel hook	2.4.1.2	Thrust bearing	
HO8.7	Locking arrangement of hook	2.4.1.5	Forged lug/clamp latch	
HO8.8	Examination	2.4.1.7	MPI / LPI	
HO8.9	Hooks > 5 ton capacity	2.4.1.7	UT	
HO8.10	Proof load test as per	2.4.1.7	IS 15560	
HO9.0	Bearing for Cross Travel-TWH	2.4.7		
HO9.1	Type	2.4.7	Vendor to specify	
HO9.2	Size	2.4.7	Vendor to specify	
HO9.3	Make	2.4.7	FAG/SKF/Tata/NBC	
HO10.0	Bearing for Hoist-TWH	3.1.7		
HO10.1	Type	3.1.7	Vendor to specify	
HO10.2	Size	3.1.7	Vendor to specify	
HO10.3	Make	3.1.7	FAG/SKF/Tata/NBC	
HO11.0	Hoist Motors - TWH	2.6.0	Conform to IS 325	
HO11.1	Motor Rating		Vendor to specify	
HO11.2	motor Type		Vendor to specify	
HO11.3	Motor Make		Vendor to specify	
HO11.4	Duty factor	2.6.4	40% CDF	
HO11.5	Duty cycle	2.6.4	Continuous/S3/S4	
HO11.6	Enclosure	2.6.14	IP 55	
HO11.7	Power supply (equipment)		415 VAC; 50Hz	
HO11.8	Quantity			
HO12.0	Cross travel motor-TWH	2.6.0	Conform to IS 325	
HO12.1	Motor Rating		Vendor to specify	
HO12.2	motor Type		Vendor to specify	
HO12.3	Motor Make		Vendor to specify	
HO12.4	Duty factor	2.6.4	40% CDF	
HO12.5	Duty cycle	2.6.4	Continuous/S3/S4	
HO12.6	Enclosure	2.6.14	IP 55	
HO12.7	Power supply (equipment)		415 VAC; 50Hz	
HO12.8	Quantity			

Vendor Name :

Signature :

Date :

Annexure-III to MOU / TPBHEL / HOIST

Project :

Enquiry No.:

P.O.No. Date:

Description of the item:

Ref no	Description	Spec clause no	As per spec	As quoted
HO13.0	Limit switch-Hoist	2.12.4		
HO13.1	Type	2.12.4	Heavy duty	
HO13.2	Make	2.12.4	BCH/Omron/Nucon/ Festo/ Siemens/ Kaycee/ EMM/ SOC	
HO13.3	Rating	2.12.4	Vendor to specify	
HO14.0	Limit switch for CT-TWH	2.12.4		
HO14.1	Type	2.12.4	Heavy duty	
HO14.2	Make	2.12.4	BCH/Omron/Nucon/ Festo/ Siemens/ Kaycee/ EMM/ SOC	
HO14.3	Rating	2.12.4	Vendor to specify	
HO15	Approach platform at hoist for panel, motor & brake		Vendor to confirm	
DSL.1.0	DSL system for Long Travel	2.5		
DSL.1.1	Travel length - Wire / Cable trolley	Annexure-I		
DSL.1.2	Type	Cable trolley/Taut wire loop		
DSL.1.3	Cable length - Fixed cable		Vendor to specify	
DSL.1.4	Cable length - Tailing cable		Vendor to specify	
DSL.1.5	Cable size & rating		Vendor to specify	
DSL.1.6	Cable trolley type	2.5.1		
DSL.1.6.1	Type of trolley	2.5.1.1.b	4 - wheeled type	
DSL.1.6.2	Material of construction	2.5.1.1.b	Vendor to specify	
DSL.1.6.3	Diameter of trolley wheel	2.5.1.1.b	Min. dia 40 mm	
DSL.1.6.4	Type of Bearing used		Double seal roller/ball	
DSL.1.6.5	Make of bearing used		FAG/SKF/Tata/NBC	
DSL.1.6.6	Trolley track	2.5.1.1.a	Tee track/I-Beam	
DSL.1.6.7	Loop size	2.5.1.1.b	Vendor to specify	
DSL.1.6.8	Link chain size / diameter	2.5.1.1.b	Vendor to specify	
DSL.1.6.9	Pitch between two cable trolleys	2.5.1.1.b	Vendor to specify	
DSL.1.6.10	Supply of Earthing conductor	2.5.1.1.b	Vendor to confirm	
DSL.1.6.11	Provision of suitable supports	2.5.1.1.b	Vendor to confirm	
DSL.1.6.12	Arrangement drawing with the offer	2.5.1.1.b	Vendor to confirm	
DSL.1.7	Taut wire loop type	2.5.2		
DSL.1.7.1	Bracket size	2.5.2.1a	Vendor to specify	
DSL.1.7.2	Bracket material	2.5.2.1a	Vendor to specify	
DSL.1.7.3	Provision of end hook	2.5.2.1b	Vendor to confirm	
DSL.1.7.4	Reel insulator	2.5.2.1c	Ceramic	
DSL.1.7.5	Tieing arrangement	2.5.2.1c	Nylon rope/leather belt	
DSL.1.7.6	Steel wire rope	2.5.2.1d	IS 2266/Mini 6mm dia	
DSL.2.0	DSL system for Cross Travel	2.5		
DSL.2.1	Travel length - Wire / Cable trolley	Annexure-I		

Vendor Name :

Signature :

Date :

Annexure-III to MOU / TPBHEL / HOIST

Project :

Enquiry No.:

P.O.No. Date:

Description of the item:

Ref no	Description	Spec clause no	As per spec	As quoted
DSL.2.2	Type	e trolley/Taut wire loop		
DSL.2.3	Cable length - Fixed cable			
DSL.2.4	Cable length - Tailing cable			
DSL.2.5	Cable size & rating			
DSL.2.6	Cable trolley type	2.5.1		
DSL.2.6.1	Type of trolley	2.5.1.1.b	4 - wheeled type	
DSL.2.6.2	Material of construction	2.5.1.1.b	Vendor to specify	
DSL.2.6.3	Diameter of trolley wheel	2.5.1.1.b	Mini dia 40 mm	
DSL.2.6.4	Type of Bearing used		Double seal roller/ball	
DSL.2.6.5	Make of bearing used		FAG/SKF/Tata/NBC	
DSL.2.6.6	Trolley track	2.5.1.1.a	Tee track/Auxiliary girder	
DSL.2.6.7	Loop size	2.5.1.1.b	Vendor to specify	
DSL.2.6.8	Link chain size / diameter	2.5.1.1.b	Vendor to specify	
DSL.2.6.9	Pitch between two cable trolleys	2.5.1.1.b	Vendor to specify	
DSL.2.6.10	Supply of Earthing conductor	2.5.1.1.b	Vendor to confirm	
DSL.2.6.11	Provision of suitable supports	2.5.1.1.b	Vendor to confirm	
DSL.2.6.12	Arrangement drawing with the offer	2.5.1.1.b	Vendor to confirm	
DSL.2.7	Taut wire loop type	2.5.2		
DSL.2.7.1	Bracket size	2.5.2.1a	Vendor to specify	
DSL.2.7.2	Bracket material	2.5.2.1a	Vendor to specify	
DSL.2.7.3	Provision of end hook	2.5.2.1b	Vendor to confirm	
DSL.2.7.4	Reel insulator	2.5.2.1c	Ceramic	
DSL.2.7.5	Tieing arrangement	2.5.2.1c	Nylon rope/leather belt	
DSL.2.7.6	Steel wire rope	2.5.2.1d	IS 2266/Mini 6mm dia	
COM.0.0	Common to UHC & TWH			
COM.I.1	Brakes	2.4.8		
COM.I.2	Type	2.4.8	ElectroMech friction shoe type/ Disc type/ Electromagnetic disc type/ Electro hydraulic thruster brake	
COM.I.3	Shoe Material	2.4.8	Vendor to specify	
COM.I.4	Make	2.4.8	Vendor to specify	
COM.I.5	Slip to speed	2.4.8	Vendor to specify	
COM.2.0	Shaft	2.4.6		
COM.2.1	Material	2.4.6	Vendor to specify	
COM.2.2	Hardness	2.4.6	175-250 BHN	
COM.2.3	Tensile strength		60 kg/mm ²	
COM.2.4	UT test	Dia>50 mm	ASMEVIII/Div 2	
COM.3.0	Gears / Pinions	2.4.4		
COM.3.1	Material	2.4.4	IS 3681/ BS 970	
COM.3.2	Hardness-Pinion (LT&CT)	2.4.4	250 BHN min.	
COM.3.3	Hardness-gears (LT&CT)	2.4.4	215 BHN min.	
COM.3.4	Hardness-Pinion (hoist)	2.4.4	285-300 BHN	

Vendor Name :

Signature :

Date :

Annexure-III to MOU / TPBHEL / HOIST

Project :

Enquiry No.:

P.O.No. Date:

Description of the item:

Ref no	Description	Spec clause no	As per spec	As quoted
COM.3.5	Hardness-gears (hoist)	2.4.4	250 -265BHN	
COM.3.6	BHN difference - gear < pinion	2.4.4	35 BHN Min.	
COM.3.7	Type (for LT & CT)	2.4.4	Spur/Helical	
COM.3.8	Type (for hoist)	2.4.4	Spur/Helical	
COM.3.9	Lubricant details	2.4.4	Vendor to specify	
COM.3.10	Trade name	2.4.4	Vendor to specify	
COM.3.11	Quantity/Periodicity	2.4.4	Vendor to specify	
COM.3.12	LPI/MPT tests	2.4.4	Vendor to specify	
COM.4.0	Fasteners	2.5.2.1g		
COM.4.1	Grade	2.5.2.1g	Precision/high tensile	
COM.4.2	Galvanising	2.5.2.1g	As per IS	
COM.4.3	Special bolts/fasteners	2.5.2.1g	Details in drawing	
COM.5.0	Controls/Interlocks-UHC&TWH	2.7.0		
COM.5.1	Type of control cabinet	2.7.0	Wall mounting	
COM.5.2	Location of control cabinet	2.7.0	Vendor to specify	
COM.5.3	Control power supply	2.7.0	110VAC/50Hz	
COM.5.4	Control cabinet & Pendent enclosure	2.7.0	IP 55 as per IS13947	
	Push Button		Siemens/ L&T/ GE/ Telemechanic/ BCH/ Technic	
		2.9.3		
COM.5.5	Control wiring diagram	2.7.0	To be enclosed	
COM.5.6	Relays	2.12.1	Siemens/BCH/L&T/ GE/Telemechanic	
COM.5.7	Transformers	2.12.2	SE/Kappa/Ind coil/ JE/ Vikas/ Logicstat	
COM.5.8	Motors	2.12.3	NGEF/Kirloskar / Siemens/Crompton greaves/ Bharat Bijlee/ Autolec/ GEC/ Alstom	
COM.5.9	Limit switches	2.12.4	BCH/Omron/Nucon/ Festo/ Siemens/ Kaycee/ EMM/ SOC	
COM.5.10	Power & control cable	2.12.5	CMI Ltd/Delton cables/ Fixwell/ Pushincords/ Asian cablews/ Cable corporation of India/ Finolex/ Incab/Universal/ PolycabCCI	
COM.5.11	Cabling	2.10		
COM.5.12	Code	2.10	IS 694 / IS 9968	
COM.5.13	Power cable	2.10	Copper PVC flexible / Elastomer insulated flexible	
COM.5.14	Power cable - conductor size	2.10	Vendor to specify	
COM.5.15	Control cable	2.10	Armoured	

Vendor Name :

Signature :

Date :

Annexure-III to MOU / TPBHEL / HOIST

Project :

Enquiry No.:

P.O.No. Date:

Description of the item:

Ref no	Description	Spec clause no	As per spec	As quoted
COM.5.16	Control cable - conductor size	2.10	Vendor to specify	
COM.5.17	Provision of spare cores	2.10	20 % spare cores	
COM.5.18	Internal wiring	2.10	Vendor to confirm	
COM.5.19	Painting	2.10	Vendor to confirm	
COM.6.0	Painting	4.18	Annexure II	
COM.6.1	Vendor's Compliance of painting		Vendor to confirm	
COM.6.2	Colour scheme		Vendor to confirm	
COM.6.3	Vendor's Compliance of colour scheme		Vendor to confirm	
COM.7.0	Packing	4.0		
COM.7.1	Vendor's Compliance of packing		Vendor to confirm	
COM.8.0	Inspection & Testing	4.0		
COM.8.1	Vendor's Compliance of above		Vendor to confirm	
COM.9.0	Load test at site /vendor supervision	5.9.2	Vendor to confirm	
COM.10.0	Drawings	3.3.9		
COM.10.1	Drawings shall be made in AUTOCAD	3.3.9	Vendor to confirm	
COM.10.2	Drg BOM to match with packing slip	3.3.9	Vendor to confirm	
COM.10.3	Drawing CD to be submitted	3.3.9	Vendor to confirm	
COM.11.0	Guarantee	9.0	18 / 24 months	
DATA SHEET - AC MOTORS (Non-Flame proof)				
Attach separate data sheet for each motor under supply				
MO.1	Application			
MO.2	Manufacturer			
MO.3	Type, frame size & degree of protection			
MO.4	Rated output in Kw & rated speed			
MO.5	Full load current			
MO.6	Full load efficiency & power factor			
MO.6.1	Duty cycle			
MO.7	Rated torque			
MO.7.1	Starting current			
MO.8	Starting torque in % of full load torque			
MO.9	Pull up torque in % of full load torque			
MO.10	Pull out torque in % of full load torque			
MO.11	No load starting time			
MO.12	Stator winding connection			
MO.13	Type & no. of terminals brought out			
MO.14	Resistance / phase			
MO.15	Qty. & power consumption of space heaters			

Vendor Name :

Signature :

Date :

Annexure-III to MOU / TPBHEL / HOIST

Project :

Enquiry No.:

P.O.No. Date:

Description of the item:

Ref no	Description	Spec clause no	As per spec	As quoted
MO.16	Gland size for space heaters			
MO.17	Cable entry			
MO.18	Cable gland - Double compression			
MO.19	GD ² of motor			
MO.20	Total weight of motor			
MO.21	Anticipated bearing life			
MO.22	Method of connection to driven equipment			
Drawings/Documents to be furnished along with the offer				
D.1.0	Drawings/documents	6.1.0	3 sets of each items	
D.1.1	GA / Assy. of Cranes	3.1.1	Vendor drawing number	
D.1.2	GA / Assy of Hoists	3.1.1	Vendor drawing number	
D.1.3	GA / Assy for DSL system	3.1.1	Vendor drawing number	
D.1.4	Electrical Wiring / Circuit diagram	3.1.2	Vendor drawing number	
D.1.5	Technical specification of system	3.1.6	Vendor to specify	
D.1.6	Exclusion list	3.1.8	Vendor to specify	
Drawings/Documents to be furnished after award of contract (Vendor to confirm the submission of the following documents)				
D.2.0	Drawings/documents	3.2		
D.2.1	Quality plan for Purchaser's approval	3.2.1		
D.2.2.0	Dimensional drawing with BOM for:	3.2.2	Purchaser's approval	
D.2.2.1	Under hung crane		Purchaser's approval	
D.2.2.2	Trolley with Hoist		Purchaser's approval	
D.2.2.3	Down shop leads		Purchaser's approval	
D.2.2.4	Cable trolley		Purchaser's approval	
D.2.2.5	Control panel		Purchaser's approval	
D.2.2.6	Wiring diagram		Purchaser's approval	
D.2.3	Data sheet for cranes & hoists		Purchaser's approval	
D.2.4	Calculation for the following:	3.2.4		
D.2.4.1	Hoist & Travel motor power	3.2.4.1	Purchaser's review	
D.2.4.2	Brake torque for each drive	3.2.4.2	Purchaser's review	
D.2.4.3	Brake selection for each drive	3.2.4.2	Purchaser's review	
D.2.4.4	Main hoist rope selection	3.2.4.3	Purchaser's review	
D.2.4.5	CT/LT wheel load details	3.2.4.4	Purchaser's review	
D.2.4.6	CT/LT wheel load dia selection	3.2.4.4	Purchaser's review	
D.2.5	Details of gear box		Purchaser's review	
D.2.6	Details of Hooks		Purchaser's review	
D.2.7	Details of couplings		Purchaser's review	
D.2.8	Performance certificate		Purchaser's record	
D.2.9	O&M manual to contain the following:	3.3.9.3		
D.2.9.1	Storage details	3.3.9.4	Vendor to confirm	
	Installation procedure	3.3.9.4	Vendor to confirm	
	Erection procedure	3.3.9.4	Vendor to confirm	

Vendor Name :

Signature :

Date :

Annexure-III to MOU / TPBHEL / HOIST

Project :

Enquiry No.:

P.O.No. Date:

Description of the item:

Ref no	Description	Spec clause no	As per spec	As quoted
	Drawings	3.3.9.4	Vendor to confirm	
	Lubrication schedule	3.3.9.4	Vendor to confirm	
	Spares list	3.3.9.4	Vendor to confirm	
	Motor data sheet	3.3.9.4	Vendor to confirm	
	Operation & trouble shooting	3.3.9.4	Vendor to confirm	
	No of copies	3.3.9.4	26 copies	
	CDs copied with drawings	3.3.9.5	Vendor to confirm	
Test certificates to furnished along with the supply				
(Vendor to confirm the submission of the following documents)				
TC.1.0	Test certificates	3.3		
TC.1.1	Physical/Chemical,NDE,Hardness	3.3.1	Vendor to confirm	
TC.1.1.1	Trolley wheel	3.3.1	Vendor to confirm	
TC.1.1.2	Crane wheel	3.3.1	Vendor to confirm	
TC.1.1.3	Wire rope	3.3.1	Vendor to confirm	
TC.1.1.4	Pulley	3.3.1	Vendor to confirm	
TC.1.1.5	Hooks	3.3.1	Vendor to confirm	
TC.1.1.6	Gears & Pinions	3.3.1	Vendor to confirm	
TC.1.1.7	Shafts	3.3.1	Vendor to confirm	
TC.1.2	TW Hoist load test	4.3	Vendor to confirm	
TC.1.3	Brake test for LT/CT/Hoist	4.4	Vendor to confirm	
TC.1.4	Testing of torque/limit switch	4.5	Vendor to confirm	
TC.1.5	Over load relay test	4.6	Vendor to confirm	
TC.1.6	Alignment test	4.7	Vendor to confirm	
TC.1.7	Crane load test	4.11	Vendor to confirm	
TC.1.8	Hook type & load test	4.13.2	Vendor to confirm	
TC.1.9	Deflection test for crane	4.14.2	Vendor to confirm	
TC.1.10	Cross travel movement test	4.9	Vendor to confirm	
TC.1.11	Dimensional checks		As per approved QP	
TC.1.12	Wire rope load test	4.2	Vendor to confirm	
TC.1.13	NDT as per Quality plan & Specification		Vendor to confirm	
TC.1.14	Material test certificates		Vendor to confirm	
TC.1.15	Insulator test on electrical circuit	4.16.1	Vendor to confirm	
TC.1.16	Functional test/power&control circuit	4.16.3	Vendor to confirm	
TC.1.17	High volt test on electrical circuit	4.16.4	Vendor to confirm	
TC.1.18	Motor routine, type & weather protection TCs.	4.16.5	Vendor to confirm	
TC.1.19	Control panel & Pendant I R, HV & physical inspection record and weather protection TC.	4.16.7	Vendor to confirm	

Vendor Name :

Signature :

Date :

5.0 PROJECT RELATED INFORMATION

Project Name : NSPCL Rourkela (6022)

Enquiry No. / P.O.No. :

Sl.No.	Description	Specification	Vendor Confirmation Yes / No
5.1	Hoist, Crane & DSL Parameter	Refer Annexure-I	
5.2	Painting schedule & Special requirements	Painting as per Painting Scheme for NSPCL Rourkela TPS - 1X250MW Cust. No. I5/6022, Rev. 03	
5.3	Power & Control cable code	IS 694	
5.3.1	Power supply	415V, AC, 3PH, 50HZ	
5.3.2	Control supply (shall be derived by vendor internally)	110V, AC , 50 HZ	
5.4	Commissioning Spares	Vendor to specify	
5.5	2 Years recommended spares	Vendor to specify	
5.6	Data Sheet	Vendor to submit	
5.7	G.A.Drawings (for hoists, cranes, DSL, Wiring diagram, pendant etc.)	Vendor to submit	

Note: 1. Deviation in the above requirements shall reject the offer.
2. If required, please add more sheets.

ITEM (MATERIAL, CLASS, GRADE, RATING, RANGE, SIZE ETC)		STANDARD QUALITY PLAN		QP NO.	0000-999-QOM-S-053	REVIEWED BY:	APPROVED BY:							
ELECTRIC OPERATED HOIST UPTO SWL 15 T		CONFORMING TO CODE: IS: 3938		REV. NO.	00	H S MAURYA	S S SINGH							
				DATE	05.04.2013	M K ASTHANA	RAJEEV GARG							
				PAGE	Page 1 of 4	VALID UPTO 04.04.2016								
SN	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORM	Format of RECORD	AGENCY	REMARKS				
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.				
A. RAW MATERIAL INSPECTION:														
A.1	MS PLATES FOR STRUCTURAL MEMBERS & FABRICATED ROPE DRUM	CHEMICAL & MECHANICAL PROPERTIES	MAJOR	CHEM & MECH	1 SAMPLE/ HEAT	MATERIAL SPECIFICATION AS PER APPROVED DATA SHEETS/ DRAWINGS	MTC	✓	P	V	V	IN THE ABSENCE OF CORRELATED TC CHECK TESTING SHALL BE DONE		
		ULTRASONIC TEST OF PLATES	MAJOR	NDT	100%	100%	ASTM A-435	ASTM A-435	IR	✓	P	V	V	ONLY FOR THICKNESS ≥ 25 MM.
A.2	PIPE FOR ROPE DRUM (IF SEAM LESS PIPE IS USED)	CHEMICAL, MECHANICAL PROPERTIES & ACID ETCHING	MAJOR	CHEM & MECH	1 SAMPLE / HEAT/ SIZE	MATERIAL SPECIFICATION AS PER APPROVED DATA SHEETS/ DRAWINGS.	MTC	✓	P	V	V			
		ULTRASONIC TEST FOR SEAMLESS PIPE	MAJOR	UT	100%	100%	ASTM E-213	ASTM E-213	IR	✓	P	V	V	
A.3	FORGINGS/ ROLLED BARS FOR GEARS, PINIONS, WHEELS, AND BRAKE DRUM	CHEMICAL & MECHANICAL PROPERTIES	MAJOR	CHEM & MECH	1 SAMPLE/ HEAT/ SIZE/ HT BATCH	MATERIAL SPECIFICATION AS PER APPROVED DATA SHEETS /DRAWINGS	MTC	✓	P	V	V	IN THE ABSENCE OF CORRELATED TC CHECK TESTING SHALL BE DONE		
		ULTRASONIC TEST	MAJOR	NDT	100%	100%	ASTM A-388	REFER NOTE - 1	IR	✓	P	V	V	ONLY FOR DIA. ≥ 40 MM
B. BOUGHT OUT ITEMS :														
B.1	HOOKS	MAKE & IDENTIFICATION	MAJOR	VISUAL	100%	100%	HOOK TC FROM COMPETANT AUTHORITY/ APPROVED MAKES	TC	✓	P	V	V	REFER ANNEX-I FOR MAKE	
		CHEMICAL & MECHANICAL PROPERTIES	MAJOR	CHEM & MECH	1 SAMPLE/ HEAT/ HT BATCH	MATERIAL SPECIFICATION AS PER APPROVED DATA SHEETS /DRAWINGS	MTC	✓	P	V	V			
		PROOF LOAD TEST	MAJOR	MECHANICAL	100%	100%	IS:15560/ IS: 5749	IS:15560/ IS: 5749	IR	✓	P	V	V	
		INTERNAL DEFECTS BEFORE & AFTER PROOF LOAD TEST	CRITICAL	NDT	100%	100%	ASTM - A 388	REFER NOTE - 1	IR	✓	P	V	V	ON SHANK PORTION ONLY.
		DPT TEST BEFORE & AFTER PROOF LOAD TEST	CRITICAL	NDT	100%	100%	ASTM E-165	NO DEFECT	IR	✓	P	V	V	
B.2	WIRE ROPES	MAKE & IDENTIFICATION	MAJOR	VISUAL	100%	100%	APPROVED MAKES		✓	P	V	V	REFER ANNEX-I FOR MAKE	
		DIMENSION & BREAKING STRENGTH	MAJOR	REVIEW	100% (EACH BATCH)		IS: 2286 / APPROVED DATA SHEET	MTC	✓	P	V	V		
B.3	MOTOR	MAKE/ TYPE/RATING	MAJOR	VISUAL	100%	100%	NTPC APPROVED DRAWING/ DATA SHEET/ NTPC SPECIFICATION / IS:325	IR		P	V	V	REFER ANNEX-I FOR MAKE	
		ROUTINE TESTS	MAJOR	REVIEW	100%	100%	NTPC APPROVED DRAWING/ DATA SHEET/ NTPC SPECIFICATION / APPROVED MAKES	MTC		V	V	V		
B.4	GEAR BOX	MAKE/ TYPE/RATING	MAJOR	VISUAL	100%	100%	NTPC APPROVED DRAWING/ DATA SHEET/ NTPC SPECIFICATION / APPROVED MAKES	IR	✓	P	V	V	REFER ANNEX-I FOR MAKE	
		BACKLASH, TOOTH CONTACT & REDUCTION RATIO	MAJOR	REVIEW	100%	100%		MTC	✓	V	V	V		
		NO LOAD RUN TEST (NOISE LEVEL, TEMP RISE & OIL LEAKAGE)	MAJOR	REVIEW	100%	100%	NTPC APPROVED DRAWING/ DATA SHEET/ NTPC SPECIFICATION/ NO LEAKAGE	MTC	✓	V	V	V		
LEGEND: * RECORDS, IDENTIFIED WITH "TICK" (✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. ** M: MANUFACTURER/SUB-SUPPLIER C: MAIN SUPPLIER, N: NTPC P: PERFORM W: WITNESS AND V: VERIFICATION. AS APPROPRIATE, CHP: NTPC SHALL IDENTIFY IN COLUMN "N" AS "W"							Note: # NTPC Inspection Engineer to check, approval date/ revision no. of reference documents at the time of inspection							

FORMAT NO.: QS-01-QAI-P-10/F1-R1

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ENGG. DIV./QA&I

ITEM (MATERIAL, CLASS, GRADE, RATING, RANGE, SIZE ETC)		STANDARD QUALITY PLAN		QP NO.		0000-999-QOM -S-053		REVIEWED BY:		APPROVED BY:				
ELECTRIC OPERATED HOIST UPTO SWL 15 TON		CONFORMING TO CODE : IS: 3938		REV. NO.		00		H S MAURYA		S SINGH				
				DATE		05.04.2013		M K ASTHANA		RAJEEV GARG				
				PAGE		Page 2 of 4								
				VALID UPTO		04.04.2016								
SN	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORM	Format of RECORD	AGENCY			REMARKS	
1.	2.	3.	4.	5.	M	C/N	6.	7.	8.	9.	D	10.	11.	
B.5	BRAKES -EM/ EHT	MAKE/ TYPE/RATING	MAJOR	VISUAL	100%	100%	NTPC APPROVED DRAWING/ NTPC SPECIFICATION/ IS: 3938	IR	✓	P	V	V	REFER ANNEX-I FOR MAKE	
		ROUTINE TESTS	MAJOR	REVIEW	100%	100%		MTC	✓	V	V	V		
B.6	LIMIT SWITCH/ OVERLOAD RELAY/ SFU / CONTACTOR/ CONTROL TRANSFORMER/ PUSH BUTTON/ TERMINAL BLOCK/ INDICATING LAMP/ SELECTOR SWITCH	MAKE/ TYPE/RATING	MAJOR	VISUAL	100%	100%	APPROVED DRAWING/ NTPC TECH. SPECS/ APPROVED MAKES	IR	✓	P	V	V	REFER ANNEX-I FOR MAKE	
B.7	CABLES - LT POWER/ CONTROL/ EPR FLEXIBLE TRAILING	MAKE/ TYPE/RATING	MAJOR	VISUAL	100%	100%	NTPC APPROVED DRAWING/ NTPC SPECIFICATION/ IS: 1554/ IS: 9968/ IS: 4289/ IS: 7098	IR	✓	P	V	V	REFER ANNEX-I FOR MAKE	
		ROUTINE & ACCEPTANCE TESTS	MAJOR	REVIEW	100%	100%		MTC	✓	V	V	V		
B.8	VVFD (AS APPLICABLE)	MAKE/ TYPE/RATING	MAJOR	VISUAL	100%	100%	NTPC APPROVED DRAWING/ NTPC SPECIFICATION/ APPROVED MAKES	IR	✓	P	V	V	REFER ANNEX-I FOR MAKE	
		ROUTINE & ACCEPTANCE TESTS	MAJOR	REVIEW	100%	100%		MTC	✓	V	V	V		
B.9	CONTROL PANEL & PENDENT STATION HOUSING/ BOX.	MAKE/ TYPE/RATING	MAJOR	VISUAL	100%	100%	NTPC APPROVED DRAWING/ NTPC SPECIFICATION/ APPROVED MAKES	IR	✓	P	V	V	REFER ANNEX-I FOR MAKE	
		SHEET/ GLAND PLATE MATERIAL & THK, DOOR ALIGNMENT, PAINT SHADE/ THK (MIN 70 µ)/ ADHESION	MAJOR	VISUAL	100%	100%		IR	✓	P	V	V		
C	IN PROCESS INSPECTION:													
C.1	ROLLING & WELDING OF ROPE DRUM (FABRICATED)	WPS, PQR & WPQ	MAJOR	REVIEW	100%	100%	APPROVED WPS, ASME SEC-IX	ASME SEC-IX	QW-481-484	✓	P	V	V	REFER NOTE-2
		ROLLING & WELD EDGE PREPARATION	MAJOR	VISUAL & MEASURE	100%	100%	MANUFACTURING DRAWING/ APPROVED WPS	IR		P	V	-		
		POST WELD HEAT TREATMENT	MAJOR	REVIEW	100%	100%	ASME-SEC-VIII DIV 1 (UCS-56)	SR CHART	✓	P	V	V	SR CHART REVIEW BY NTPC DURING FINAL INSPECTION.	
		NDT TEST ON WELD	MAJOR	DPT	100%	100%	ASME SEC - V	ASME SECTION - VIII, DIV-I, APP. 6/8	DPT REPORT	✓	P	V	V	
		RADIOGRAPHY OF BUTT WELD JOINTS	CRITICAL	RT	100%	100%	ASME -SEC-V	ASME -SEC-VIII DIVISION - I, UW 51 & UW-52	RT FILMS & REPORT	✓	P	V	V	FILM REVIEW BY NTPC DURING THE FINAL INSPECTION. CHP
C.2	ROPE DRUM, WHEELS, PULLEYS & HOOK SHANK AFTER MACHINING	VISUAL & DIMENSIONAL	MAJOR	VISUAL & MEASURE	100%	100%	MANUFACTURER'S DRAWINGS	IR		P	V	-		
		NDT ON MACHINED SURFACES	MAJOR	DPT	100%	100%	ASTM E-165	NO DEFECT	IR	✓	P	V	V	

LEGEND: * RECORDS, IDENTIFIED WITH "TICK" (✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION.
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ENGG. DIV./QA&I

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	ELECTRIC OPERATED HOIST		CONFORMING TO CODE : IS: 3938		REV. NO.	00	H S MAURYA			
	UPTO SWL 15 TON				DATE	05.04.2013	S SINGH			
					PAGE	Page 3 of 4	M K ASTHANA			
				VALID UPTO		04.04.2016	RAJEEV GARG			
SN	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORM	Format of RECORD	AGENCY	REMARKS
1.	2.	3.	4.	5.	M C/N	6.	7.	8.	9. D	10.

D	FINAL INSPECTION:										
D.1	COMPLETE ASSEMBLED HOIST ALONG WITH ACTUAL CONTROL PANEL, VVFD & PUSH BUTTON (AS APPLICABLE)	VISUAL & DIMENSIONAL	MAJOR	VISUAL & MEASURE	100%	100%	IS: 3938/ APPROVED DRAWING/ DATA SHEET	IR	✓	P W W	REFER NOTE-
	OVERLOAD TEST AT 125%	HOLDING CAPACITY OF BREAK, LIMIT RELAYS OPERATION	MAJOR	VISUAL	100%	100%	IS: 3938/ APPROVED DRAWING/ DATA SHEET	IR	✓	P W W	
	NO LOAD TEST & FULL LOAD TEST,	CURRENT DRAWN, SPEED OF HOIST, ENCHING OPERATION, INTERLOCKING SEQUENCE OPERATION	MAJOR	VISUAL MEASURE	100%	100%	IS: 3938/ APPROVED DRAWING/ DATA SHEET	IR	✓	P W W	
D.2	CONTROL PANEL	VISUAL MAKE VERIFICATION & DIMENSION	MAJOR	VISUAL MEASURE	100%	100%	IS: 3938/ APPROVED DRAWING/ DATA SHEET	IR	✓	P W W	
		DEGREE OF PROTECTION TEST BY PAPER INSERTION METHOD	MAJOR	VISUAL	100%	100%	IS: 3938/ APPROVED DRAWING/ DATA SHEET	IR	✓	P W W	
		HV, IR	MAJOR	MEASURE	100%	100%	IS: 3938/ APPROVED DRAWING/ DATA SHEET	IR	✓	P W W	
		PAINT SHADE, ADHESION, THICKNESS,	MAJOR	VISUAL MEASURE	100%	100%	IS: 3938/ APPROVED DRAWING/ DATA SHEET	IR	✓	P W W	THICKNESS> 70 MICRON
D.3	PAINTING OF HOIST	ADHESION, VISUAL & DFT MEASUREMENT	MAJOR	VISUAL & MEASURE	100%	100%	AS PER NTPC SPECIFICATION	IR	✓	P V V	
NOTES:											
1.	BACK WALL ECHO SHALL BE SET AT 100% OF FULL SCREEN HEIGHT AT SOUND AREA OF THE BAR USING NORMAL BEAM PROBE OF 2 MHz TO 5 Mhz. AT THIS SENSITIVITY LEVEL, ANY DEFECT ECHO EXCEEDING 20% OF FSH IS NOT ACCEPTABLE. IN ADDITION, LOSS OF BACK WALL ECHO MORE THAN 20% OF FSH IS ALSO NOT ACCEPTABLE.										
2.	WPS, PQR & WELDERS QUALIFIED BY LLOYDS, BVQI, TUV, DNV, NTPC, BHEL, NPCIL ARE ACCEPTABLE. ONLY QUALIFIED WELDERS SHALL BE DEPLOYED FOR WELDING.										
3.	MOTOR POWER RATING LESS THAN 30KW: ACCEPTANCE OF MOTOR LESS THAN 30KW IS BASED ON COC OF THE MANUFACTURER & THE CONTRACTOR CONFIRMING AS FOLLOWS: "IT IS HEREBY CONFIRMED THAT THE ABOVE MENTIONED MOTOR/ MOTORS 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 & GLAND PLATE AND TESTED IN ACCORDANCE WITH APPROVED DRAWING/ DATA SHEETS."										
3.	HV TEST ON CONTROL PANELS WILL BE DONE ISOLATING VVFD DRIVE AND OTHER ELECTRONIC PARTS. HV TEST AT 2 KV FOR POWER & 1.5 KV FOR CONTROL CIRCUIT.										
4.	ALL CRITICAL DIMENSIONS SHALL BE MEASURED. THE CURRENT AND SPEED FOR HOISTING MOTION AND LONG TRAVEL MOTION SHALL BE MEASURED DURING NO LOAD TEST AND SAFE WORKING LOAD (SWL) TEST. ALL INTERLOCKS, BRAKE OPERATION, LIMIT SWITCHES AND SAFETY MEASURES SHALL BE CHECKED.										
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					DATE	05.04.2013	S SINGH			
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1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.

5. LIST OF ALL MAJOR BOUGHT OUT ITEMS AND THEIR ACCEPTABLE MAKES ARE LISTED BELOW

LIST OF BOUGHT OUT ITEMS AND THEIR SOURCES

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
4	GEAR BOX	ELECON, SHANTI GEAR, NEW ALLENBURY WORKS, PETL, BONFIGLIOLI - ITALY
5	MOTOR	LHP, ABB, SIEMENS, MARATHON ELECTRIC, KEC, BBL, CGL, NGEF (UP TO 15 KW), JYOTI
6	LIMIT SWITCHES	JAIBALAJI, BCH, SPEED-O-CONTROL (NOTED), SIEMENS
7	CONTACTOR&OLR, TIME DELAY RELAY, AUX RELAY	SIEMENS, L&T, TELEMCHANIC, C&S
8	FUSES, SFU, MCB, MCCB	SIEMENS, L&T, GEI, C&S
9	FLEXIBLE CABLE, LT POWER AND CONTROL CABLE	UNIVERSAL, POLYCAB, KEI, NICCO, DELTON*, PARAMOUNT*, CORDS*, GEMS*, HAVELLS* * ONLY FOR FIXED CABLE
10	BEARING	SKF, FAG, NRB, NTN, NBC, TIMKEN,
11	PUSH BUTTONS	VAISHNO, SIEMENS, L&T, TELEMCHANIC
12	PUSH BUTTON STATIONS (PENDANT)	VAISHNO, SIEMENS, L&T
13	INDICATING LIGHT	VAISHNO, SIEMENS
14	TRANSFORMERS (CONTROL)	INDCOIL, LOGICSTAT, PACTIL, AE, PRAGATI, PRAYOG, PRECISE, SOUTHERN ELECTRIC, GUJARAT PLUG-IN, KAPPA
15	CURRENT TRANSFORMERS	INDCOIL, AE, PRAGATI, PRECISE, KAPPA
16	VVVF DRIVE	L&T, ABB, SIEMENS, SCHIENDER, DANFOSS
17	CONTROL PANEL	RITTAL, PYROTECH, POSITRONICS, MPP
18	BRAKES - DCEM	EMCO, PETHE, WMI, BCH
19	BRAKES - EHT	WMI, ELECTROMAG
20	TERMINAL BLOCK	ELMEX, CONNECTWELL, WAGO (FOR CONTROL ONLY)
21	INDICATING METER	MECO, RISHABH, IMP
22	DSL&CURRENT COLLECTING SYSTM	SUSHEEL, STOMAG
23	SELECTOR SWITCH	L&T, KAYCEE

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ANNEXURE- A

PROCEDURE TO PARTICIPATE IN E-PROCUREMENT

BHEL Trichy has implemented e-Procurement (www.bheleps.buyjunction.in) and it is going to be the way of working in future.

Interested bidders / Suppliers shall submit their offer through e-Procurement mode at <https://bheleps.buyjunction.in>. Offers in any other mode will not be accepted.

The Requirement:

1. A PC with Internet connectivity &
2. DSC (Digital Signature Certificate) (**Class 3- SHA2- 2048 BIT- SIGNING & ENCRYPTION**)

The following are the benefits of e-Procurement Process.

1. Ensuring no offer is missed due to last minute submission, postal delays etc.
2. Reduced Tendering & ordering cycle time
3. Economical, smoother & speedy communication
4. Greater Transparency
5. Big step towards paperless procurement process, Minimal human error
6. No geographical barriers
7. Vendor gets alerts regarding issue of new tender enquiry, amendments, clarifications etc
8. Submission of offer from the comforts of their office from any location
9. on line clarifications
10. Direct Cost Savings such as reduced Paper costs, reduced printing costs, reduced mailing costs, reduced telephone costs and reduced fax costs.

BHEL has finalized the e-procurement service Provider

M/s mJunction services Limited, Kolkata

Godrej Water Side, 3rd Floor, Tower-1, Plot-V, Block - DP
Sector - V, Salt Lake, Kolkata-700091, West Bengal, INDIA

Please get in touch with them immediately. The contact details of the service provider is given below:

- a. DHANARAJ.P email: panneer.dhanaraj@mjunction.in, Cell 9500199108
- b. HELPDESK email: eps.customercare@mjunction.in, Phone No: 033-66106426/6217/6013/6046/6176, 9163348283 / 9163348284 / 9163348285 / 9163348286 / 8584008116

The process of utilizing e-procurement necessitates usage of DSC (Digital Signature Certificate)(**Class 3- SHA2- 2048 BIT- SIGNING & ENCRYPTION**) and you are requested to procure the same immediately, if not presently available with you. Please note that only with DSC, you will be able to login the e-procurement secured site and take part in the tendering process. The contact details of the DSC Certifying Authority as given below

1	e-Mudhra	http://www.e-Mudhra.com	5	NIC	www.safescrypt.com
2	GNFC	www.ncodesolutions.com	6	Safescrypt	www.safescrypt.com
3	IDRBT	www.idrbtca.org.in	7	TCS	www.tcs-ca.tcs.co.in
4	MTNLTrustline	www.mtnltrustline.com			

Vendors are requested to go through seller manual available on www.bheleps.buyjunction.in

ANNEXURE-B

ENQUIRY TERMS AND CONDITIONS FOR SUPPLY OF ELECTRICAL HANDLING EQUIPMENTS

Note: This Annexure has to be mandatorily filled & signed by the manufacturer (or) mill and submitted along with Technical Bid.

Any deviation to the below mentioned terms shall be stated specifically in the comments column for each term and also in case of acceptance to our terms, it will be construed that the whole term is understood and agreed in totality without any deviation (if otherwise mentioned).

Sl No	<u>BHEL Requirements</u>	Supplier Comments (Acceptance or otherwise for each point to be given)
1	Supply of Electrical Handling Equipment shall be as per the enclosed specification No. MOU/TPBHEL/HOIST Rev.01, Annexure-I, III & Section -5.0 to specification and following drawings: - Drg No.0-99-100-80375/01 - Drg No.1-99-400-80004/00 - Drg No.1-99-502-80008/00	
1.1	Vendor has to follow NTPC SQP (QP No.0000-999-QOM-S-053 dt.05.04.2013) enclosed with the tender . Acceptable makes of all major bought out items like hook, gearbox etc. are listed in the SQP and vendor has to strictly follow the same and submit the signed and sealed copy along with the technical offer.	
1.2	Painting shall be done as per the applicable painting schedule for this project as per painting schedule, Annexure E attached with the tender	
1.3	Packing Requirements: A. All openings (Fluid, Pneumatic & Electric) shall be firmly capped. B. Items shall be packed in wooden Boxes with water proof under cover. C. Packing and struts shall be used to arrest rolling of items and to avoid transit damage D. Limit switches and such components shall be encapsulated properly with Thermocole.	
1.4	Your offer shall be considered only if your company is meeting Tender Prequalification requirement (Annexure D). Vendor to comply with Pre-Qualification requirement (Annexure D) of the tender and submit along with their technical bid - the credentials and other documents as indicated in the PQR in the format prescribed. Otherwise their offer may get rejected.	
1.5	Vendor to confirm compliance to our specification requirement	
1.6	Filled & duly signed data sheet as per Annexure-III to Specification shall be furnished along with the offer.	
1.7	End customer approval is applicable for this tender. Vendor has to submit all credentials along with your offer to take up with our customer for approval of your firm. It may please be noted that, your priced bid will be considered only if you get approved by our customer before the date of Price bid opening.	
1.8	Tender will be evaluated on total package basis.	
2	Payment terms:	
	2.1 Indigenous	

	a) Payment term is 100% direct EFT payment after 45 days from the date of receipt and acceptance of materials. For Infn: Any deviation in the above payment term will attract loading as mentioned below. "Base rate of SBI (as applicable on the date of bid opening. Techno-commercial bid opening in case of two part bids) + 6% shall be considered for loading for the period of relaxation sought by bidders.	
	b) Offers of indigenous Suppliers with payment terms as LC / Advance Payment/ BOE are liable for rejection.	
	2.2 Import	
	a) BHEL Payment term is 100% payment on CAD basis after 45 days from the date of receipt of documents, specified in PO, at BHEL bank. Respective bank charges to respective account. For Infn: Any deviation in the above payment term will attract loading as mentioned below. "Base rate of SBI (as applicable on the date of bid opening. Techno-commercial bid opening in case of two part bids) + 6% shall be considered for loading for the period of relaxation sought by bidders.	
	b) In the case of Usance LCs (45 days from the date of receipt of documents, specified in PO, at BHEL bank) the loading will be considered @ 1.5% on the offered Value.	
	c) For LC at sight the loading will be considered @ 3.5% on the offered Value.	
	d) If the LC payment is insisted, TWO sets of original TCs to be submitted prior to dispatch and a certificate to that effect from BHEL should form a part of the documents to be negotiated. If this condition is not complied by the vendor, the offer is liable for rejection.	
	e) Specify the Quoted currency	
	f) Normally CAD at sight and Confirmed LC's are liable for rejection.	
	<i>Note: LC will be opened one month prior to material readiness. Hence supplier shall intimate the material readiness accordingly for opening of LC. LC validity period will be 90 days and for any extension applicable charges will be deducted from your bills- This is for your kind infn.</i>	
3	Delivery Terms:	
	The offer shall clearly indicate delivery period in fixed number of weeks/Months from the date of Purchase Order. Our delivery requirement is 4 months from the date of document approval.	
4	LD Clause Confirm acceptance for	
	Delivery of the goods specified in the purchase order should be made within the time prescribed. Failure to dispatch the materials in the time as per the delivery quoted in our Purchase Order would make the supplier liable to an un-conditional LD at the rate of 0.5% of the total order value per week or part thereof subject to a maximum of 10% of the total order value. GST is applicable on LD.	
	For Info: Any deviation from the above LD clause, loading will be applied to the extent to which it is not agreed by the bidder (at offered value). Loading will be done for deviation. Loading value = (Mentioned LD in the enquiry - Accepted LD in the offer by the vendor) in % x Base value Imports: CFR order- LD will be calculated based on date to Bill of Lading/Airway Bill Indigenous: FOR order - LD will be reckoned from the date of LR/Invoice whichever is later. However inordinate delay in delivering the materials will not suffice the case.	
5	Offer Submission:	
	5.1 Indigenous:	
	1. Submit your FIRM competitive offer - (basic price & freight) with best possible delivery for Main Hoist (Enquiry SI. Nos. 10 to 180) on FOR NSPCL Rourkela site basis and Mandatory spares (Enquiry SI Nos. 190 to 1530) on FOR BHEL Trichy Stores only.	
	2. Price Variation Clause (PVC) is not acceptable and offer shall be rejected.	

	3. All Taxes, Duties, Service Taxes etc. payable as extra to the quoted price should be specifically stated in offers along with GSTN registration Number/ HSN code. etc., failing which the purchaser will not be liable for payment of such Taxes and Duties. Our GST registration no. 33AAACB4146P2ZL TIN No. 33243560005, TNGST No. 3560005, CST. No. 239383 Dt. 11-06-1991 & BHEL ECC No. AAACB4146PXM012, Assessment circle Tiruverambur.	
	3. Any other extra charges are to be indicated clearly.	
	GST: 1. Response to Tenders for Indigenous supplier will be entertained only if the vendor has a valid GST registration no. which should clearly mentioned in the offer. If any specific exemption is available, a declaration with due supporting documents need to be furnished for considering the offer. 2. Supplier shall mention their GSTN registration number in all their invoices and invoices shall be in the format as specified/prescribed under GST laws. Invoices shall necessarily contain Invoice number (in case of multiple numbering system is being followed for billing like SAP invoice no, commercial invoice no etc., then the Invoice No which is linked/uploaded in GSTN network shall be clearly indicated), item description as per PO, Quantity, Rate, Value, applicable taxes with nomenclature (like IGST, SGST, CGST & UTGST) separately, HSN/ SAC Code, etc. 3. All invoices shall bear the HSN Code for each item separately (Harmonized System of Nomenclature)/ SAC code (Services Accounting Code). 4. A declaration to the effect that all invoice particulars are/were uploaded in the GSTN network/ portal & all tax liability as per GST rules and regulations have been and will be discharged, shall be mentioned in the invoice. If not mentioned in the invoice, a separate declaration shall be submitted as per the requirement of BHEL. 5. All documents like Mill Test Certificate, LR copy, Guarantee/Warrantee certificate, work completion certificate, any other document mentioned in PO, shall be sent along with the vehicle/consignment. For all consignments received within the calendar month, input credit will be availed within that month in line with monthly returns filing cycle. In case of any discrepancy in the document or non-submission of documents mentioned in the PO, then BHEL will not be able to accept or account the material, in such case availing of tax credit will be deferred to next month or so. 6. In case of discrepancy in the data uploaded by supplier in the GSTN portal or in case of any shortages or rejection in the supply, then BHEL will not be able to avail the tax credit and will notify the supplier of the same. Supplier has to rectify the data discrepancy in the GSTN portal or issue credit note (details to be uploaded in GSTN portal) for the shortages or rejections in the suppliers, within the calendar month notified by BHEL. 7. For any such delay in availing of tax credit for reasons attributable to supplier (as mentioned above), interest (calculated @ SBI Base Rate + 6%) alongwith penalty if any will be deducted for the delayed period i.e. from the month of receipt till the month tax credit is availed, from the running bills.	
	8. The offer will be evaluated on total landed cost to BHEL, Trichy as below,	

	Total landed cost = Base Price +Quoted Freight Charges (Vendor Scope) + Insurance charges (vendor Scope)+applicable taxes + commercial loading as applicable - applicable tax credits	
9.	Offer shall be submitted in TWO PART bid system i.e Technical bid along with commercial conditions and price bid separately through BHEL e-Procurement route only.	
	5.2 Imports: Offer shall be submitted on CFR/Chennai sea port basis. Material price & sea freight shall be indicated separately. For CFR terms, moved through CONTAINERS (Suppliers should clearly specify this in their offer) it would be presumed by BHEL that the freight charges quoted is on LILO (LINER IN LINER OUT) basis including extra charges, if any, like Container Imbalance Charges, Trade Imbalance charges or any other charges payable to the Liner. No other charges other than the quoted Freight rate will be paid by BHEL excepting applicable Terminal Handling Charges, Container cleaning Charges, DO charges to Shipping Liner at Discharge Port. 14 FREE DAYS FOR Container detention shall be provided. If any deviation is taken by Tenderer, a loading of 22% on the freight rate per MT shall be considered by BHEL for arriving at the Total landed Cost. In case of shipment through Containers on CFR basis, the BL should bearthe endorsement that "14 free days for Container Detention is applicable".	
	The offer will be evaluated on total landed cost to BHEL-Trichy as below : Total landed cost =CFR/ Chennai + Customs duty+ Import Incidentals + Commercial loading as applicable+ Inland Freight - applicable tax credits	
	Offer shall be submitted in TWO PART bid system i.e Technical bid along with commercial conditions and price bid separately through BHEL e-Procurement route only.	
	Note: - Exchange rate for converting such offers to INR will as SBI TT selling rate as on the date of Technical/Un-priced bid opening date in case of two part (technical + price bid) bid - Multiple PO may also be placed considering the applicable custom duty structure of the respective requirement/Qty.	
6	Guarantee / Warranty Period	
	Guarantee clause 24 months from the date of supply or 18 months from the date of Commissioning of the equipment, Whichever is earlier.	
	Warranty Period: No Deviation is permitted. If still vendor offered any deviation on the Guarantee / warranty period it may leads to rejection of offer.	
7	Performance Bank Guarantee: Submission of Performance Bank Guarantee as per the attached standard BHEL format is mandatory. PBG for 10% material value is required in case of order.	
8	Agency commission, if any should be clearly given in the offer (% on FOB).	
9	Repair & replacements	
	With in the guarantee period, vendor has to replace / rectify the defective/ damaged items on free of cost within a reasonable time of reporting from our end. All incidental charges like freight, insurance and customs duty are to vendor account only. The defective parts and components shall be collected by vendor's Indian agent or / authorized person, only after completing the replacement / repairs. PI note that the defective parts / components will not be returned back to vendor works by us due to procedural problems.	
10	Indicate the Port of shipment	
11	Indicate the Mill (Name, Location) & Country of origin	

12	One Indian agent can represent one foreign principal only and submit one offer for these tender items. Note: In order to maintain sanctity of the tender system it is mandatory that one agent cannot represent two suppliers or quote on their behalf in a particular tender enquiry. If any agent represents more than one supplier, all such offers will be rejected.	
13	Agency Commission : a) In respect of offers from overseas suppliers, agency commission, if any, payable to their agents in India, shall invariable be shown separately in the Performa invoice & shall be declared in techno-commercial offer itself and this will be paid by us in India, in Indian rupees, on satisfactory completion of the contract. b) For calculation of rupee equivalent for agency commission, exchange rate as prevailing on the date of order will be taken.	
14	The due date mentioned in the enquiry is the date of opening of techno-commercial bid. After the scrutiny of technical bids, price bids of only technically accepted offer shall be opened with prior intimation.	
15	Offer is to be submitted in TWO part bids system in the E-Procurement portal. Scan copy of the filled Annexures, Tender documents etc., shall be uploaded in the EPS portal	
16	Offers for this enquiry will be accepted through e-procurement (EPS) route only. For EPS system vendors have to arrange their own digital signature (DSC). BHEL will not provide DSC to any vendor.	
17	Lowest Prices received against BHEL tender need not be the technically acceptable one and in that case BHEL reserve the right not to consider the same	
18	Any other conditions which might have been quoted by the seller and are in contravention to the terms prescribed in the order and which have not been specifically accepted in by purchaser will not be applicable to the contract	
19	Risk Purchase Clause: BHEL at its option will be entitled to terminate the contract and to purchase elsewhere at the risk and cost of the seller either the whole of the goods or any part which the supplier has failed to deliver or dispatch within the time stipulated as aforesaid or if the same were not available, the best and the nearest available substitute thereof. The supplier shall be liable for any loss which BHEL may sustain by reason of such risk purchases in addition to LD at the maximum rate mentioned in the LD clause above. Confirm your acceptance.	
20	Bidders are requested to submit their best competitive prices at the first instant itself and no revision of prices will be entertained after the tenders are opened.	
21	MSE VENDOR: MSE suppliers can avail the intended benefits only if they submit along with the offer, attested copies of either EM II certificate having deemed validity (five years from the date of issue of acknowledgement in EM, II) or valid NSIC certificate or EM II certificate along with attested copy of a CA certificate (Format enclosed at Annexure -1 where deemed validity of EM H certificate of five years has expired) applicable for the relevant financial year (latest audited). Date to be reckoned for determining the deemed validity will be the date of bid opening (Part 1 in case of two part bid). Non submission of such documents will lead to consideration of their bid at par with other bidders. No benefit shall be applicable for this enquiry if any deficiency in the above required documents are not submitted before price bid opening. If the tender is to be submitted through e-procurement portal, then the above required documents are to be uploaded on the portal. Documents should be notarized or attested by a Gazetted officer.	
22	Tender Finalization: The tender will be finalized based on the total cost to BHEL and L1 vendor will be arrived accordingly.	
23	Validity of offer: 120 days minimum from the date of techno commercial bid opening.	
24	BHEL will consider the ranking after the loading is applied as referred above wherever deviations are observed.	

25	Reverse Auction: BHEL may finalize the tender through Reverse Auction Process.	
26	In case of order, Documents (Drawings, Data sheet & Quality plan in triplicate) shall be submitted within two weeks from the receipt of order	
27	For New Vendors (only offer of manufactures will be considered) a. It is suggested that for new suppliers (not registered with BHEL) may register through online portal http://www.supplier.bhel.in and submit all relevant documents. b. Offer from traders/stockist will not be considered. In case of foreign suppliers representing through their Indian/foreign agents, agency agreement should be submitted, along with registration documents else offer is liable for rejection. Agency agreement requirements attached as separate file and full compliance to it shall be ensured while submitting the same. c. Along with the offer document the following documents shall be submitted in part-I bid. i. Mandatory requirements (Supplier must submit the below mentioned documents or else offer may be liable for rejection): 1. Details of the mill with equipment & facilities. 2. Past 3 year audited financial report. 3. Agency agreement (in case of Foreign or Indian agents). ii. Additional details required (not mandatory and these shall be submitted additionally for establishing the credentials) 1. Recent D&B or Creditreform reports (In case of import vendor) of mill, foreign agent or principal. 2. Approval certificates issued by international agencies or your customers such as Lloyds, TUV etc. 3. Product catalogue and other related documents.	
28	Fraud Prevention Policy Bidder along with its associate /collaborators /sub-contractors /sub-vendors / consultants / service providers shall strictly adhere to BHEL Fraud Prevention Policy displayed on BHEL website http://www.bhel.com and shall immediately bring to the notice of BHEL Management about any fraud or suspected fraud as soon as it comes to their notice.	
29	Cartel Formation All the firms should desist from forming cartel as the practice is prohibited under Section 3(3) (a) & (d) of the competition Act 2002. If any such instance is observed during this tender will attract disciplinary action as per BHEL policies.	
30	Authorisation for participation in EPS portal through DSC a. E-Tender Participation requirements Either Principal or authorised agent shall register their Digital Signature Certificate (DSC) (Class 3- SHA2- 2048 BIT- SIGNING & ENCRYPTION). You are advised to pls go through the FAQ available in the web portal (https://bheleps.buyjunction.in). DSC shall be registered for the authorised person and all transaction done using that DSC against our tenders shall be taken as valid communication and shall be binding on principal/agent and is valid legally. b. For foreign Principal In case of Principal (being foreigner) they may apply for DSC through Indian embassy at their country and can register with us for participating in E-tenders. Details of the applicable procedure is available in the webpage http://www.cca.gov.in/cca/ c. For Indian agent	

	In case of agents participating/registering their DSC (of authorised person), it will be at the sole authorisation of principal to their agents to participate on their behalf and all transactions done using that DSC against our tenders shall be known as valid communication and shall binding on principal and is legally valid.	
	d. DSC Authorisation	
	Pls intimate the authorised person name, Mail ID for registering DSC with us to participate in E-Tenders	
31	Documents to be sent during dispatch required for Indigenous suppliers (after PO placement)	
	1. Invoice and LR.	
	2. One set of MTC, Original invoice (Triplicate), LR copy shall be sent to MM/Purchase for bill processing.	
32	Documents to be sent during dispatch required for Import suppliers (after PO placement)	
	a. Bill Of Lading	
	b. Invoice, should show the description of the goods and the unit rate of each item as in the purchase contract. Against each item in the invoice and packing list, the serial number of the corresponding item in the purchase contract or as per order acknowledgement should be indicated.	
	c. Packing list must indicate case identification, case dimension, and case contents, no of bundles, gross and net weight.	
	d. Country of origin Certificate	
	e. ALL TEST CERTIFICATES ARE TO BE SUBMITTED IN COMPLETE SET AS INDICATED IN OUR SPECIFICATION/QAP	
	f. In case of Branch office / Liaison office in India bidding against this tender on behalf of their principal RBI clearance letter to be submitted.	
	All the above documents should be submitted in triplicate & in all documents Contract No., L.C. No. and Import License No. are to be indicated.	
33	Execution of the Order	
	a. BHEL will have the option to pre-inspect the materials at Supplier's works by BHEL's own inspector or by third party agency appointed by BHEL or BHEL's end customer/s. The mere act of the pre-dispatch inspection (PDI) does not absolve the Supplier from giving the specifications as agreed upon in the Purchase Order.	
	b. In the case of overseas suppliers Inspection call for carrying out the inspection shall be given 30 days before the scheduled contract delivery date. The Inspection date/s given by the Supplier shall be on firm basis. For local Suppliers the Notice period of Inspection shall be 10 working days.	
	c. In the event of any short supply, it shall be the responsibility of the supplier to deliver such short supplied/ missing items on Free-of-Cost basis at BHEL stores, including customs clearances at Indian Ports in the case of foreign suppliers.	
34	Role of Agents:	
	a. BHEL will deal directly with manufacturers only. Offers from Traders & Stockist will not be considered.	
	b. BHEL strongly discourages the engagement of Agents in India by foreign principals, to deal with BHEL, in BHEL's tenders.	
	c. BHEL, due to business reasons would ban, would have banned Indian agents from dealing with BHEL. Any foreign principal who engages such a banned agent, or an employee of the banned agency, or any other person connected with the banned agency, at any time during the tender proceedings, would be disqualified from the tender proceedings. The decision of BHEL in this regard shall be final and be binding on the OEM. Hence in their own interests, prospective tenderers may check with BHEL, the status of their proposed agent vis-à-vis BHEL.	
	d. In view of the requirement of BHEL, it is strongly suggested that in their own interest, foreign principals may desist from engaging any Indian agent and deal with BHEL directly and it is stressed that any Main producer proposing to deal with BHEL by engaging and through an Indian Agent does so at their own risk. BHEL shall in no	

	way be responsible for any consequences that may arise to the foreign principal on account of the antecedents / actions	
35	Conditions for transportation: In the event there is a delay by the Supplier in negotiating / submitting the document, any demurrage / wharfage arising out of the same shall be to the account of the Supplier and shall be deducted from the final payment. Also, in such cases, the Supplier shall authorize the transporter to freely release the consignment to BHEL by providing a "Surrender Bill of Lading".	
36	Resolution of Disputes a. If dispute or difference of any kind shall arise between the Purchaser/Consignee and the supplier in connection with or relating to the contract, the parties shall make every effort to resolve the same amicably by mutual consultations. b. If the parties fail to resolve their dispute or difference by such mutual consultation within 30 days of its occurrence, then, unless otherwise provided in the contract, either the Purchaser/Consignee or the supplier may give notice to the other party of its intention to commence arbitration, as hereinafter provided the applicable arbitration procedure will be as per the Arbitration and Conciliation Act, 1996 of India. In the case of a dispute or difference arising between the Purchaser/Consignee and a domestic Supplier relating to any matter arising out of or connected with the contract, such dispute or difference shall be referred to the sole arbitration of an officer in BHEL Trichy, appointed to be the arbitrator by the General Manager/MM BHEL Trichy. The award of the arbitrator shall be final and binding on the parties to the contract subject to the provision that the Arbitrator shall give reasoned award in case the value of claim in reference exceeds Rupees One lakhs (Rs. 1,00,000/-) c. Venue of Arbitration: The venue of arbitration shall be the place from where the contract has been issued, i.e., BHEL Trichy. d. Jurisdiction of the court will be from the place where the tender enquiry document has been issued, i.e., Trichy, India	
37	In the event of Force Majeure: a. Notwithstanding the provisions contained in other clauses, the supplier shall not be liable for imposition of any such sanction so long the delay and/or failure of the supplier in fulfilling its obligations under the contract is the result of an event of Force Majeure. For purposes of this clause, Force Majeure means an event beyond the control of the supplier and not involving the supplier's fault or negligence and which is not foreseeable and not brought about at the instance of the party claiming to be affected by such event and which has caused the non – performance or delay in performance. Such events may include, but are not restricted to, wars or revolutions, hostility, acts of public enemy, civil commotion, sabotage, fires, floods, explosions, epidemics, quarantine restrictions, strikes excluding by its employees , lockouts excluding by its management, freight embargoes and Acts of GOD. b. If a Force Majeure situation arises, the supplier shall promptly notify the Purchaser/Consignee in writing of such conditions and the cause thereof within twenty one days of occurrence of such event. Unless otherwise directed by the Purchaser/Consignee in writing, the supplier shall continue to perform its obligations under the contract as far as reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event. c. If the performance in whole or in part or any obligation under this contract is prevented or delayed by any reason of Force Majeure for a period exceeding sixty days, either party may at its option terminate the contract without any financial repercussion on either side. d. In case due to a Force Majeure event the Purchaser/Consignee is unable to fulfil its contractual commitment and responsibility, the Purchaser/Consignee will notify the supplier accordingly and subsequent actions taken on similar lines described in above sub-paragraphs	
38	General terms 1. Bids including all enclosures and supporting documents like catalogues, pamphlets, etc., shall be submitted / uploaded in ENGLISH language only. If the documents	

	submitted have other than English language, translation of the same shall be provided for evaluation.	
	2. A person signing (manually or digitally) the tender form or any documents forming part of the contract on behalf of another shall be deemed to warrantee that he has authority to bind such other persons and if, on enquiry, it appears that the persons so signing had no authority to do so, the purchaser may, without prejudice to other civil and criminal remedies, cancel the contract and hold the signatory liable for all cost and damages	
	3. All uploaded/submitted documents against this tender shall be signed in each page and sign shall be by principal / Mill.	
	4. Offers for part quantities on item level basis are not acceptable to BHEL. While tenderers can quote for some or all the tendered items, no supplier shall quote for partial quantity of any given enquiry item. Such partial offer would not be considered in the enquiry for that item.	
	5. Any clarification regarding tender shall be done before Part –I due date itself through EPS portal itself, and in case of immediate non-availability of DSC you can clarify through with the following mail ids prateekkumar@bheltry.co.in or mradha@bheltry.co.in The above mail id is provided for initial clarification purpose only and no further correspondences shall be entertained through this mail ids.	
	6. Unloading of the materials is in the scope of BHEL. However Demurrages on account of delay in unloading due to improper packing, non-availability of proper dunnage, not adhering to the tender conditions and other reasons attributable to supplier shall be on supplier's accounts only.	
	7. Applicable INCO term for this tender is INCOTERMS 2010	
	8. Supplier has to submit the Non-Negotiable Document before the shipment reaches the port or else the demurrage and detention charges will be deducted from suppliers invoice.	
	9. The supplier shall arrange for packing suitably in all respects for normal transport by air / rail / road and Materials shall be suitably protected against effect of tropical salt laden atmosphere in the event of shipment being delayed at ports / store yards. In case of dispatch through air then materials shall be shipped in Air worthy packing condition. Packing charges will be supplier's account.	
	10. If any Supplier attempts to bribe, or pay commission, gift or any advantage or bring in undue influence either by himself or on his behalf any one including a stranger to the tender, in addition to instituting legal proceedings as per the extant laws prevailing, will disqualify the supplier from this tender and all future tenders of BHEL. Decision of the Purchaser would be final in this matter.	
	11. In case the day up to which the tenders are to remain valid falls on/ subsequently declared a holiday or closed day for the purchaser, the tender validity shall automatically be extended up to the next working day.	
	12. In exceptional cases, the tenderers may be requested by the purchaser to extend the validity of their tenders up to a specified period. Such request(s) and responses thereto shall be conveyed by EPS / e-Mail message. The tenderers, who agree to extend the tender validity, are to extend the same without any change or modification of their original offer.	
	13. Any of the terms and conditions not acceptable to supplier, shall be explicitly mentioned in the tender. Otherwise, it will be treated as that all those terms and conditions as mentioned in the tender are acceptable in Toto.	
	14. Deviations shall be summarized and provided in a "Deviation Statement", listing the points and the deviation against each point.	
	15. At its option, BHEL may consider extending the due date/s for the tender openings. Sufficient notice would be given by BHEL for such extensions and it will be published as corrigendum in following websites, ➤ https://bheleps.buyjunction.in ➤ http://tenders.gov.in ➤ http://eprocure.gov.in	
	16. The price break-up should be in line with technical specification / scope of the tender. (Cost of material, packing charges, forwarding charges, freight shall be shown appropriately, as applicable). Insurance in Vendor scope.	

	17. In case, there is a discrepancy in the term quoted in techno-commercial bid and price bid, the term as per the techno-commercial bid (Part I) shall hold good and the commercial term quoted in the Price Bid (Part II) shall not be considered.	
	18. Indigenous suppliers should submit the prices in Indian Rupees only. Import suppliers may submit their bid in foreign currency. The currency for quoting shall be selected from the drop-down menu provided.	
	19. In their own interest, all Tenderers are advised to double check their prices, applicable duties and taxes. Incomplete documents / offer will be rejected.	
	20. Evaluation of offer	
	a. The price bids including the impact price (if any) of the technically acceptable offers alone shall be opened.	
	b. Offers with pre-conditions (like conditional discounts) for price are liable to be not considered / rejected. For evaluation such conditions would be removed and only the base offer would be considered for evaluation and comparison.	
	c. BHEL reserves the right to reject an offer due to unsatisfactory past performance during tender finalisation / execution of a contract at any of BHEL projects / units or if unsatisfactory performance report is received from the party/s referenced by the supplier at any time during tender finalisation.	
	d. BHEL reserves the right to conduct negotiations on the "Price" and "Other Commercial Terms and Conditions" with the lowest ranked offerer at any time after the bid opening but before the release of the Purchase Order and If so required by BHEL, Supplier may have to share their costing sheet with BHEL.	
	e. In the event of any change in scope / quantity arising out of the discussions, offerer would be given a chance to submit their revised offer / Impact bids. The option for the revised offer / impact offer will be triggered by BHEL. The Supplier then will have the facility to feed-in the revised price / impact price as per the provision given by BHEL. The impact price can be positive or negative (or nil). The impact price option shall contain only the price addition / deletion for such change in the scope / quantities, over and above the original scope and price quoted. The original price quoted would remain unchanged. The total price would then be computed by the arithmetic addition of the original price and the impact price. Where BHEL gives the option of submitting the revised offer, the impact would be computed as the arithmetic difference of the revised price and the original price	
	f. Unless otherwise specified, evaluation will be on individual line item basis only and ordering will be on respective L1 vendors	
39	Signed copy of THIRD PARTY NON-DISCLOSURE AGREEMENT attached to technical bid.	
40	Patent Right The supplier shall, at all times, indemnify and keep indemnified the purchaser, free of cost, against all claims which may arise in respect of goods & services to be provided by the supplier under the contract for infringement of any intellectual property rights or any other right protected by patent, registration of designs or trademarks. In the event of any such claim in respect of alleged breach of patent, registered designs, trademarks etc. being made against the purchaser, the purchaser shall notify the supplier of the same and the supplier shall, at his own expenses take care of the same for settlement without any liability to the purchaser.	
41	Caution: ➤ The suppliers are severely cautioned to note that the price bid document accepts the price in figures only. It does not allow the supplier to write the value by words. Therefore all care shall be exercised by the supplier while filling in the figures. Once the price bid is opened no option is available for the supplier to retract the offer under any grounds. If a supplier, for any reason whatsoever approaches BHEL with a request for change in the price, it would be treated as going back on the offer submitted. In such cases, action would be initiated by BHEL for suspending further business dealings with such suppliers as per policy of BHEL which prevails at that point of time. ➤ The language in the tender documents downloaded by the Bidders shall at no point of time be changed, altered or modified in any manner by the Tenderer. If such changes are made by any tenderer, it shall be considered as tampering with BHEL's terms and the offer shall be summarily rejected, whenever it is noticed by BHEL. Such Bidders would be disqualified from the Bidding Process and their offers would be forfeited / Bank Guarantees invoked. They would also not be allowed to participate in future tenders of BHEL.	

42	In the event of our customer order covering this tender being cancelled /placed on hold / otherwise modified, BHEL would be constrained to accordingly cancel / hold / modify the tender at any stage of execution.	
43	Offers shall be submitted in TWO PART bids system (TECHNO-COMMERCIAL BID + PRICE BID).The bidder shall submit his response through bid submission to the tender on e-procurement platform at https://bheleps.buyjunction.in within 14:00 Hrs (GMT +05:30) of the due date of this tender. The bidder would be required to register on the e-procurement market place https://bheleps.buyjunction.in and submit their bids online. SEALED COVER BIDS/ E-MAILS / FAX / MANUAL OFFERS WILL NOT BE ACCEPTED. Supplier shall upload any other tender documents in the E-Procurement Portal only.	
On behalf of BHEL		To be filled & Signed by Original Manufacturer/Mill Name of the mill / Principal: Signature: (Affix Seal) (All conditions were read & clearly understood and agreed in totality with the mentioned deviations only)

Annexure C

MM/BOI/BHEL TRICHY

SPECIAL TERMS AND CONDITIONS

1. This tender is for the supply of Electrical Handling Equipments, DSL & Mandatory Spares shall be as per attached specification No. Supply of Electrical Handling Equipment shall be as per the enclosed specification No. **MOU/TPBHEL/HOIST Rev.01, Annexure-I, III & Section -5.0 to specification** and following drawings:

- Drg No.0-99-100-80375/01
- Drg No.1-99-400-80004/00
- Drg No.1-99-502-80008/00

2. Tender will be evaluated on total package basis.

3. The tender shall be floated through e-Procurement system. The tender is in two parts. One part consisting of techno-commercial details and other with price details:

- (i) **Technical Bid** (Consisting of Technical Specifications viz. Product Specification Sheets/Brochures, OEM Certificate etc.) Bidders may name the files indicating the nature of content in pdf/zip format which would be required to be attached in e-tender.
- (ii) **Price Bid** – Prices to be quoted through e Procurement system only

For indigenous vendors prices shall be quoted on for Main Hoist on FOR respective site basis ONLY and Mandatory spares on FOR BHEL Trichy Stores only FOR/ BHEL Trichy basis, freight shall be quoted extra. Insurance shall be in BHEL scope.

For Import vendors prices shall be quoted on CFR/Chennai sea port basis, Materials price & sea freight shall be indicated separately.

A) Technical Tender (UN priced Tender)

All Technical details (eg. Eligibility Criteria requested (as mentioned below)) should be attached in e-tendering module, failing which the tender stands invalid & may be REJECTED. Bidders shall furnish the following information along with technical tender (preferably in pdf format):

- (i) Technical Bid (without indicating any prices).
- (ii) Tenderer/Agent who quotes for goods manufactured by other manufacturer shall furnish Manufacturer's Authorization Form. While giving authorization to agent, to quote on their behalf, manufacturer has to give the reasons for not quoting directly against this tender.

B) Price Bid:

1. Price Bid to be submitted through our e Procurement system.

Annexure C

2. The price should be quoted for the accounting unit indicated in the e-tender document.

Note: It is the responsibility of tenderer to go through the Tender document to ensure furnishing all required documents in addition to above, if any. Any deviation may result in REJECTION of offer.

For any queries regarding tender you may contact

1) Mr. Prateek Kumar Jain
SR. Engineer /MM/BOI
BHEL Trichy
0431-257876
prateekkumar@bheltry.co.in

2) Mr.M Radhakrishnan
DGM/MM/BOI
BHEL Trichy
0431-2574086
mradha@bheltry.co.in

4. BHEL reserves the right to increase or decrease the tendered quantity.
5. BHEL reserves the right to negotiate the L1 rate.
6. BHEL reserves the right to re-float the tender opened, if L1 price is not the lowest acceptable price to BHEL inter-alia other reasons.
7. Vendors have to confirm to the Annexure B - Commercial Terms attached.
8. Point wise confirmation to enquiry conditions are to be submitted with technical offer.
9. Inspection by BHEL or BHEL nominated agency shall be carried out at vendor's works prior to despatch.

Annexure-D

Technical Pre-Qualification Requirements:- ELECTRIC HOIST– Minimum 20 T capacity (To be submitted along with Technical Bid)

- 1) Electric Hoists with minimum capacity of 20 T should have been successfully put in use for at least one year in power plant or other industries e.g. refinery/steel/process/commercial etc. For this the supplier has to submit either of following supporting documents meeting above mentioned pre-qualifying requirement:
 - i) Copy of minimum two performance certificate from end user along with copy of related Purchase Order specifying that the product is running successfully for one (1) year from date of commissioning.

OR
 - ii) Minimum three customer's/third party inspection reports along with purchase order copy meeting the minimum pre-qualifying requirement

OR
 - iii) Minimum three purchase orders (placed with minimum gap of 6 months from previous purchase order) from same purchaser meeting the minimum pre-qualifying requirement
- 2) Vendor should have in-house designing/manufacturing capability and having in house or outsourced testing facility.
- 3) To establish above, supplier shall submit the following for BHEL verification:-
 - a) Vendor shall submit design documents to substantiate technical parameters specified in PQR, if the same is not mentioned in performance certificate/purchase order.
 - b) Minimum two (2) nos. Purchase orders shall be submitted which should not be more than ten (10) years old as on date of bid submission, for establishing continuity in business. Supplier's Experience List of offered system on the enclosed format.
 - c) Vendor may also qualify based on the credential of principal meeting package specific pre-qualifying requirements having technical valid collaboration/licensing agreement.
 - d) In case documents submitted for meeting PQR are in language other than English, notarized English translation shall also be submitted.

General:

- 1) BHEL reserves the right to assess the capabilities and capacity of the bidder/collaborators to perform the contract, as per BHEL evaluation procedure.
- 2) Final acceptance of the bidder is subject to BHEL and end customer's approval to consider in this tender.

Format for submission of credentials

Sl.No.	Description of Project	Brief Scope of work	P.O. Ref. No. & Date	Purchase order value (Rs).	Date of completion as per P.O.	Performance Certificate enclosed (Y/N)	Remark

ANNEXURE –E

PAINTING SCHEDULE

Sl. No.	Enquiry Sl Nos.	Surface Preparation & Surface Profile	Primer coat		Intermediate Coat		Finish coat			Total DFT Jim (min)
			Paint	No. of coats	Paint	No. of coats	Paint	No. of coats	Shade	
1	Enquiry Sl. Nos 10 to 140	Power tool Cleaning to St3 grade/ SSPC-SP3	Red Oxide Zinc phosphate Primer (Alkyd Base) to IS 12744	1 DFT= 30µm per coat	--	—	Synthetic Enamel paint (Long Oil Alkyd) to IS 2932	2 DFT= 20	Smoke Grey Shade No: 692 of IS 5	70
2	Enquiry Sl. Nos.150 to 180	Power tool Cleaning to St3 grade/ SSPC-SP3	Red Oxide Zinc phosphate Primer (Alkyd Base) to IS 12744	2 DFT= 30µm / coat	-	--	--	--	Red Oxide	60

Micro Small and Medium Enterprises (MSE) – Clause for NIT

In line with Gazette notification issued by Ministry of Micro Small and medium enterprises on MSE suppliers, the following special provisions shall be applicable.

20% of the tendered quantity is earmarked for MSE suppliers in this tender.

Out of the 20% tendered quantity reserved for MSE suppliers, 4% shall be earmarked for procurement from MSE owned by SC / ST entrepreneurs.

In case MSE vendor participating in the tender quotes within the price band of LI + 15%, they will be allowed to supply the portion of the requirement subject to acceptance of LI price by MSE vendor. In case of more than one such MSE, the supply shall be shared proportionately.

MSE suppliers can avail the intended benefits only if they submit along with the offer, attested copies of either

1. EM II certificate having deemed validity (two years from the date of issue of acknowledgement in EM II) **or**
2. Valid NSIC certificate or EM II certificate along with CA certificate (Format enclosed) applicable for the year, certifying quantum of investment in plant and machinery within the permissible limits as per the act for relevant status (MICRO or SMALL) where the deemed validity of EM II is over.

Date to be reckoned for determining the deemed validity will be the last date of technical bid submission (Part 1 in case of two part bid).

Non submission of such documents will lead to consideration of their bid at par with other bidders and MSE status of such suppliers shall be shifted to NON MSE suppliers till the supplier submit this documents.

Documents should be notarized or attested by a Gazetted officer.

Definitions of MSEs owned by SC/ST is under:

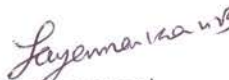
- ***In case of proprietorship firm, proprietor must be SC/ST.***
- ***In case of partnership firm, the SC/ST partners must be holding at least 51% shares in the unit.***
- ***In case of private limited companies, at least 51% share must be held by SC/ST promoters.***

Authorised Offices to Issue SC/ST certificate.

The caste/Tribe/Community certificate issued by the following authorities in the prescribed form for SCs/STs can be considered.

- District Magistrate/Additional District Magistrate/Collector/Deputy commissioner/Additional Deputy commissioner/Deputy collector/1st class stipendary magistrate/Sub divisional Magistrate/Taulka Magistrate/Executive magistrate/Extra Assistant commissioner.
- Chief Presidency magistrate/Additional chief presidency magistrate/Presidency magistrate.
- Revenue Officer not below the rank of thasildar.
- Sub-Divisional officer of the area where the individual and / or his family normally resides.

To avail the benefits of MSE under SC/ST category, the related documents as stated above should be submitted along with tender documents.


(B. Manivannan)
DGM/OS
Prepared by

Certificate by Chartered Accountant on letter head

This is to Certify that M/S
(hereinafter referred to as 'company') having its registered office at
is registered under MSMED Act 2006, (Entrepreneur
Memorandum No (Part-II) dtd:.....,
Category: (Micro/Small)). (Copy enclosed).

Further verified from the Books of Accounts that the investment of the company as per the latest audited financial year as per MSMED Act 2006 is as follows:

1. **For Manufacturing Enterprises:** Investment in plant and machinery (i.e. original cost excluding land and building and the items specified by the Ministry of Small Scale Industries vide its notification No.S.O.1722(E) dated October 5, 2006 :
Rs.....Lacs
2. **For Service Enterprises:** Investment in equipment (original cost excluding land and building and furniture, fittings and other items not directly related to the service rendered or as may be notified under the MSMED Act, 2006:
Rs.....Lacs

(Strike off whichever is not applicable)

The above investment of Rs.....Lacs is within permissible limit of Rs.....Lacs forMicro / Small (Strike off which is not applicable) Category under MSMED Act 2006.

Or

The company has been graduated from its original category (Micro/ Small) (Strike off which is not applicable) and the date of graduation of such enterprise from its original category is (dd/mm/yyyy) which is within the period of 3 years from the date of graduation of such enterprise from its original category as notified vide S.O. No. 3322(E) dated 01.11.2013 published in the gazette notification dated 04.11.2013 by Ministry of MSME.

Date:

(Signature)

Name -

Membership number -

Seal of Chartered Accountant

 BHEL - TRICHY	THIRD PARTY NON-DISCLOSURE AGREEMENT		Doc.No. : ISMS-04/TP/011
			Ver. No: 3.0 Rev. No: 00
	Date : 27 - 10 - 14		

THIRD PARTY NON-DISCLOSURE AGREEMENT

I, _____, on behalf of the _____ (Name of Company), acknowledge that the information received or generated, directly or indirectly, while working with BHEL, Trichy on contract is confidential and that the nature of the business of the BHEL, Trichy is such that the following conditions are reasonable, and therefore:

I warrant and agree as follows:

I, or any other personnel employed or engaged by our company, agree not to disclose, directly or indirectly, any information related to the BHEL, Trichy Without restricting the generality of the foregoing, it is agreed that we will not disclose such information consisting but not necessarily limited to:

- Technical information: Methods, drawings, processes, formulae, compositions, systems, techniques, inventions, computer programs/data/configuration and research projects.
- Business information: Customer lists, project schedules, pricing data, estimates, financial or marketing data,

On conclusion of contract, I, or any other personnel employed or engaged by our company shall return to BHEL, Trichy all documents and property of BHEL, Trichy, including: drawings, blueprints, reports, manuals, computer programs/data/configuration, and all other materials and all copies thereof relating in any way to BHEL, Trichy 's business, or in any way obtained by me during the course of contract. I further agree that I, or any others employed or engaged by our company shall not retain copies, notes or abstracts of the foregoing.

This obligation of confidence shall continue after the conclusion of the contract also.

I acknowledge that the aforesaid restrictions are necessary and fundamental to the business of the BHEL, Trichy and are reasonable given the nature of the business carried on by the BHEL, Trichy I agree that this agreement shall be governed by and construed in accordance with the laws of country.

I enter into this agreement totally voluntarily, with full knowledge of its meaning, and without duress.

Dated at _____, this ____ day of _____, 20__.

Name

Company

Signature

Loading Criteria

Payment Term (Indigenous)	
If materials are receivable at Project Sites without PBG	<u>Option-1:</u> Payment term is 100% direct payment after 45 days from the date of dispatch against site acknowledgement <u>Option-2:</u> a) Payment term is 100% direct payment after 45 days from the date of dispatch against site acknowledgement. (or) b) Payment term is 90% direct payment after 45 days from the date of dispatch against submission of dispatch documents and balance 10% against site acknowledgement. For this option – (b), a loading of 2% on the 90% of the offered value shall be made.
If materials are receivable at Project Sites with PBG	<u>Option-1:</u> Payment term is 100% direct payment after 45 days from the date of dispatch against site acknowledgement and against 10% PBG valid for the warranty period. <u>Option-2:</u> a) Payment term is 100% direct payment after 45 days from the date of dispatch against site acknowledgement and against 10% PBG valid for the warranty period. (or) b) Payment term is 90% direct payment after 45 days from the date of dispatch against submission of dispatch documents and 10% PBG valid for the warranty period and balance 10% against site acknowledgement. For this option – (b), a loading of 2% on the 90% of the offered value shall be made.

Payment through Bank is not preferred. In case of Payment through Bank is opted by Supplier, BHEL prefers documents submission through bank with copy of LR and door delivery of Goods to Site/Stores with Consignee copy attached. In this case Loading will be 3% on the offered value. In case of Direct to Site (DTS), only 90% through bank will be considered.

Offers of indigenous Suppliers with payment terms as LC/Advance Payment are liable for rejection.

Liquidated Damages / Penalty

Liquidated damages shall be 0.5% of the total order value per week or part thereof subject to a maximum of 10% of the total order value.
--

For staggered delivery schedule, LD shall be 0.5% of the undelivered portion per week of the delay or part thereof subject to a maximum of 10% of the total order value.
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Any deviation from the above LD clause, loading will be applied to the extent to which it is not agreed by the bidder (at offered value).

Guarantee / Warranty Period

Normally No deviation permitted and the deviated offers are liable for rejection.

Performance Bank Guarantee

Normally No deviation permitted and the deviated offers are liable for rejection.

<u>BHEL will consider the ranking after the loading is applied as referred above wherever deviations are observed.</u>

BANK GUARANTEE FOR PERFORMANCE SECURITY

(Non-Judicial Stamp paper/e-stamp paper of appropriate value as per Stamp Act prevailing in the State(s))

Bank Guarantee No:

Date:

To

NAME

& ADDRESSES OF THE BENEFICIARY

IFSC AND MICR CODE

Dear Sirs,

1. In consideration of Bharat Heavy Electricals Limited (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 _____¹ through its Unit at.....(name of the Unit) having awarded to (Name of the Vendor / Contractor / Supplier) (VENDOR CODE) with its registered office at _____² hereinafter referred to as the ' Vendor / Contractor / Supplier ', which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns), a contract Ref No.....dated³ valued at Rs.....⁴ (Rupees -----)/FC.....(in words.....) for⁵ (hereinafter called the 'Contract') and the Vendor / Contractor / Supplier having agreed to provide a Contract Performance Bank Guarantee, equivalent to% (... Percent) of the said value of the Contract to the Employer for the faithful performance of the Contract,

2. 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 any sum or sums upto a maximum amount of Rs -----⁶ (Rupees -----) without any demur, immediately on first demand from the Employer and without any reservation, protest, and recourse and without the Employer needing to prove or demonstrate reasons for its such demand.

3. 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. _____.

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

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

6. We thebank 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/satisfactory completion of the performance guarantee period as per the terms of the 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.

7. 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 Vendor / 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 Vendor / Contractor / Supplier and to forbear or enforce any of the terms and conditions relating to the said Contract and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Vendor / Contractor / Supplier or for any forbearance, act or omission on the part of the Employer or any indulgence by the Employer to the said Vendor / 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.

8. 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 Vendor / Contractor / Supplier and notwithstanding any security or other guarantee that the Employer may have in relation to the Vendor / Contractor / Supplier's liabilities.

9. This Guarantee shall remain in force upto and including.....⁷ and shall be extended from time to time for such period as may be desired by Employer.

10. This Guarantee shall not be determined or affected by liquidation or winding up, dissolution or change of constitution or insolvency of the Vendor / 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.

11. Unless a demand or claim under this guarantee is made on us in writing on or before the⁸we shall be discharged from all liabilities under this guarantee thereafter.

12. Any claim or dispute arising under the terms of this document shall only be enforced or settled in the Courts at Tiruchirappalli.

13. 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.....⁶

- b) This Guarantee shall be valid up to⁷
- c) Unless the Bank is served a written claim or demand on or before (minimum 3 to 6 months from the expiry date)⁸ 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.

14. 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)

Dated.....

Place of Issue.....

BANK EMAIL ID:

BANK PHONE NO:

AUTHORISED SIGNATORIES CELL PHONE NO:

BANK FAX NO:

¹ NAME AND ADDRESS OF EMPLOYER I.e Bharat Heavy Electricals Limited

² NAME AND ADDRESS OF THE VENDOR /CONTRACTOR / SUPPLIER.

³ DETAILS ABOUT THE NOTICE OF AWARD/CONTRACT REFERENCE

⁴ CONTRACT VALUE

⁵ PROJECT/SUPPLY DETAILS

⁶ BG AMOUNT IN FIGURES AND WORDS

⁷ VALIDITY DATE

⁸ DATE OF EXPIRY OF CLAIM PERIOD

Details of Gateway Airport with applicable Foreign Currency and Airlines for FSC payment **Schedule F**

Sch. No.	Country	CUR Code	Gateway Airport/s	Airlines with its Code For FSC Payment will be made	
D01	UK	GBP	London (Heathrow)	Air India	AI
D02	UK	GBP	New Castle	British Airways	BA
D03	UK	GBP	Oxford, Chellam	British Airways	BA
D04	UK	GBP	Bristol, Wellingborough	British Airways	BA
D05	UK	GBP	Birmingham	British Airways	BA
D06	UK	GBP	East Midlands	British Airways	BA
D07	UK	GBP	Manchester	British Airways	BA
D08	UK	GBP	Leeds	British Airways	BA
D09	UK	GBP	Glasgow	British Airways	BA
D10	France	EURO	Paris (Roissy) & Lyon	Air India	AI
D11	Sweden	EURO	Stockholm	Emirates	EK
D12	Sweden	EURO	Gothenberg & Malmo	Emirates	EK
D13	Italy	EURO	Rome, Milan	Carrier Used	Carrier Used
D14	Italy	EURO	Turin, Bologna, Florence	Carrier Used	Carrier Used
D15	Netherlands	EURO	Amsterdam, Rotterdam	Klm Airlines	KLM
D16	Austria	EURO	Vienna, Linz, Graz	Lufthansa	LH
D17	Belgium	EURO	Antwerp, Brussels	Singapore Airlines	SO
D18	Denmark	DKK	Copenhagen	Cathay Pacific	CX
D19	Japan	JPY	Tokyo, Osaka	Air India	AI
D20	Singapore	SGD	Singapore	Air India	AI
D21	Canada	CAD	Toronto	Carrier Used	Carrier Used
D22	Canada	CAD	Montreal	Carrier Used	Carrier Used
D23	USA	USD	New York, Boston	Air India	AI
D24	USA	USD	Chicago	Carrier Used	Carrier Used
D25	USA	USD	San Francisco, Los Angeles	Carrier Used	Carrier Used
D26	USA	USD	Atlanta, Houston	Carrier Used	Carrier Used
D27	Germany	EURO	Munich, Koln, Dusseldorf, Hannover, Hamburg, Stuttgart, Darmstadt, Manihem, Nurnberg	Lufthansa	LH
D28	Germany	EURO	Frankfurt	Lufthansa	LH
D29	Germany	EURO	Berlin	Lufthansa	LH
D30	Switzerland	SFR	Basle, Zurich, Geneva	Swiss World Cargo	LX
D31	Spain	EURO	Barcelona	Emirates	EK
D32	Australia	AUD	Sydney	Qantas Airlines	QF
D33	Australia	AUD	Melbourne	Qantas Airlines	QF
D34	Australia	AUD	Perth	Qantas Airlines	QF
D35	Czech	EURO	Prague	Lufthansa	LH
D36	Hong Kong	HKD	Hong Kong	Air India	AI
D37	New Zeland	NZD	Auckland	Carrier Used	Carrier Used
D38	Russia	USD	Moscow	Carrier Used	Carrier Used
D39	South Korea	USD	Kimpo International, Incheon	Air India	AI
D40	Finland	EURO	Helsinki	Finnair Cargo	AY
D41	Romania	EURO	Bucharest	Carrier Used	Carrier Used
D42	Norway	EURO	Oslo	Carrier Used	Carrier Used
D43	Ireland	EURO	Dublin	Carrier Used	Carrier Used
D44	Israel	USD	Tel Aviv	El Al Israel	LY
D45	UAE	USD	Dubai	Air India	AI
D46	Oman	USD	Muscat	Air India	AI
D47	Egypt	USD	Cairo	Carrier Used	Carrier Used
D48	Taiwan	USD	Taipei	Carrier Used	Carrier Used
D49	Ukraine	USD	Kiev	Lufthansa	Carrier Used
D50	China	USD	Shanghai, Shenzhen	Carrier Used	Carrier Used
D51	Philippines	USD	Manila	Carrier Used	Carrier Used
D52	Malaysia	USD	Kualalumpur, Pe Nang	Malaysia Airlines	Carrier Used
D53	Cyprus	USD	Larnaca	Carrier Used	Carrier Used
D54	South Africa	USD	Johannesberg, Durban	Carrier Used	Carrier Used
D55	Slovakia	EURO	Bartislova	Lufthansa	LH
D56	Saudi Arabia	SAR	Riyadh	Saudi Arabia Airlines	SV
D57	Turkey	EURO	Istanbul	Turkish Airlines	TK
D58	Thailand	USD	Bangkok	Thai Airways	TG
D59	Brazil	USD	Sao Paulo, Rio De Janeiro	Emirates	EK