1/108

Under Jurisdiction of Dhanbad/Jharkhand Court Only

Bharat Coking Coal Limited

(A Miniratna Company)

A Subsidiary of **Coal India Limited**

Registered Office: Koyla Bhawan, Koyla Nagar, Dhanbad -826005

CIN:U10101JH1972GOI00091

Website: www.bcclweb.in

Material Management Department

Level-III, Commercial Block

Koyla Bhawan, Dhanbad-826005

(Fax No- 0326-2230183)

Phone No.0326-2230181

Email Id: gmmm.bccl@coalindia.in

Purchase Order

Ref: BCCL/PUR/420026/40T Crane/OTE/20-21/15/94 Date: 29.01.2021

To

M/s TIL Limited

1, Taratolla Road, Garden Reach,

Kolkata-700024

Email: amalangshu.pal@tilindia.com

GSTIN: 19AABCT0704G1ZO

Vendor Category : Manufacturer

PAN- AABCT0704G

Vendor Code- 1/13/M/X/300

Sub: Supply, Installation and Commissioning of 1 nos. of 40T Crane Along with All filters and O rings including standard engine filters required for first 3000 hours of operation.

Ref: TIL Limited Online offer Ref: 59638 dtd 13.06.2020 [Bid Id: 535184 dtd 17.07.2020] and subsequent TIL Limited's email dtd 13.01.2021 against open domestic e-tender cum reverse auction No. BCCL/PUR/420026/40T Crane/20-21/15 dtd 04.06.2020 [Tender Id: 2020_BCCL_173844_1, Cover-I opened on 27.07.2020 & cover-II opened on 16.10.2020].

Dear Sirs,

With reference to the above, we, for and on behalf of BCCL, hereby place PURCHASE ORDER on TIL Limited for the following items as per rate, terms and conditions indicated below as above TIL Limited referred offer has been accepted to the extent as indicated here under:

1. SCOPE OF SUPPLY-

Items Description	Price Elements	Unit (Nos)	Unit Rate (In Rs)	Extended Value (In Rs)
40T Crane [Make: TIL, Model: RT740B]	Basic Price	01	1,54,46,095.00	1,54,46,095.00
	Erection & Commissioning Charges		0.00	0.00
	Filter & O rings including standard engine filter required for first 3000 hours of operations Charges		4,82,174.00	4,82,174.00
	Transit Insurance Charge		20,000.00	20,000.00
	Freight Charge		2,50,000.00	2,50,000.00
			Total Value	1,61,98,269.00
			GST @18 % [IGST]	29,15,688.42
			Sub Total Value	1,91,13,957.42
			TCS (Tax Collection at Source) @0.75 %	1,43,354.68
			Total Value (Landed +TCS)	1,92,57,312.10
			Total Value (aprox.)	1,92,57,312.00

Note: Filters and O rings including standard engine filters required for first 3000 hours of operation per equipment is as per Annexure – B

Supply Point: **Equipment & Spares**: Supply and Billing will be from M/s TIL Limited, 517 , Barrackpore Trunk Road , Kolkata-700058

2. Total Purchase Value:- (Equipment & Filters and O rings including standard engine filters required for first 3000 hours of operation): **Rs 1,92,57,312.00** (Rs One Crore Ninety Two Lakhs Fifty Seven Thousand Three Hundred And Twelve Rupees Only.)

The above prices are FIRM and on FOR Destination basis inclusive of packing & forwarding, Freight & insurance. Safe arrival of the complete equipment upto destination stores shall be TIL Limited's responsibility.

3. GST:

a) GST shall be paid at actual against documentary evidence as applicable at the time of dispatch within the stipulated delivery period. The current rate of GST is 18% on equipment. Input Tax credit benefit shall be availed by the consignee, for which TIL Limited should submit GST complaint Invoice. TIL Limited have to comply with the terms and conditions of GST Act / rules such as issuance of Tax invoices, ensure payment of GST and enabling mechanism to facilitate Input Tax credit by BCCL. TIL Limited should upload the Tax Invoices / Debit Note / Credit Note in GST Portal, make payment of GST and file returns in time, as prescribed under GST Act and Rule to facilitate BCCL to avail Input Tax Credit (ITC) as per eligibility under GST. In case BCCL is unable to avail ITC or any liability arises to BCCL due to failure on the part of TIL Limited to comply the above provisions, the entire amount including Interest (if any) borne by BCCL shall be recovered from TIL Limited . The present rate GST applicable on individual items of spares is as per Annex- B enclosed.

b) Invoice issued by TIL Limited should contain following elements as per Section 31 of CGST Act, 2017 along with Rule 46 and 47 of CGST Rule, 2017:

- Firm Name, address and GSTIN;
- A consecutive serial number (not exceeding sixteen characters) containing only alphabets and/or numerals, unique for a financial year; (should not be hand-written)
- Date of its issue;
- Name, address and GSTIN/ Unique ID Number, if registered, of the recipient;
- Name and address of the recipient and the address of delivery, along with the name of State and its code, if such recipient is unregistered and where the taxable value of supply is fifty thousand rupees or more;
- HSN code of goods or Accounting Code of services;
- Description of goods or services;
- Quantity in case of goods and unit or Unique Quantity Code thereof;
- Total value of goods or services;
- Taxable value of goods or services taking into account discount or abatement, if any;
- Rate of tax (CGST, SGST or IGST);
- Amount of tax charged in respect of taxable goods or services (CGST, SGST or IGST);
- Place of supply along with the name of State, in case of a supply in the course of inter-State trade or commerce;
- Place of delivery where the same is different from the place of supply;
- Whether the tax is payable on reverse charge;
- the word "Revised Invoice" or "Supplementary Invoice", as the case may be, indicated prominently, where applicable along with the date and invoice number of the original invoice; and
- Signature or digital signature of TIL Limited or its authorized representative
- GST Registration Number of BCCL in case of supply for Jharkhand is 20AAACB7934MFZB and in case of supply for WB is 19AAACB7934M2Z7. TIL Limited bills should bear this number to enable BCCL to claim INPUT TAX CREDIT.

c) TIL Limited has to ensure proper uploading in TIL Limited return so that BCCL may be able to avail Input Tax Credit.

d) TIL Limited has to ensure that if BCCL does not be able to avail Input Credit due to TIL Limited's fault then the loss amount shall be recovered from TIL Limited's bill.

e) The benefit of any extra input tax credit earned by TIL Limited, if any, in future shall be passed on to BCCL.

f) E-Way bill, if required, shall be arranged by TIL Limited.

g) HSN codes and GST rates of the items covered in the above supply order placed will be as under:

Sl no.	Item	HSN code	GST rate
1	Crane 40T	8426	18 % [IGST]
2	Filters and O rings including standard engine filters	HSN Code & GST mentioned in Annexure-B	

h) TIL Limited GST details are as under:

SN	Particulars	Firm's Details
1	Name	M/s TIL Limited
2	Constitution of Business	Public Limited Company
3	Trade Type (Manufacturer/Dealer/Service Provider)	Manufacturer
4	PAN	AABCT0704G
5	Contact number	7725935942
6	GSTIN No.	19AABCT0704G1ZO

4. **Packing & Forwarding Charges**: Inclusive

5. **Freight/Transportation Charges Inclusive Of Service Tax**: As above

7. **Transit Insurance Inclusive Of Service Tax**: Inclusive

8. **TERMS OF PAYMENT: For Payment of equipment and all filters and O rings including standard engine filters required for first 3000 hours of operation in Indian Rupees:**

i) 80% value of the equipment and all filters and O rings including standard engine filters required for first 3000 hours of operation and 100% taxes and duties and other charges excluding erection & commissioning charges shall be made within 21 days after receipt and acceptance of materials at site at the consignee's end and receipt and acceptance of Performance Bank Guarantee valid till 3 months after the completion of 12 months period from the date of commissioning of all the equipment covered in the contract.

ii) Balance 20% payment including erection & commissioning charges shall be made after successful completion of erection, testing, commissioning and final acceptance of the equipment (along with the accessories) upon presentation of successful commissioning certificate, signed by the concerned officials of the Project and counter-signed by the Area General Manager and HOD of Excavation Deptt. Of BCCL, where the equipment has been deployed.

BCCL is making payment of TIL Limited's bills through Electronic Fund Transfer (EFT). TIL Limited is therefore, advised to indicate their Bank Account number and other Bank Details in their Invoice.

Name of the Bank.
Name of the Branch with complete address.
Party's Account Style.
Party's nature of Account.
Party's Account Number.
TIL Limited E-Payment mandate is enclosed as Annexure-J

4/108

9. **DELIVERY**:

Commencing within 3 months from the date of receipt of purchase orders and supply to be completed within 6 months from the date of receipt of purchase orders. However the early supply will be appreciated.

ERECTION & COMMISSIONING PERIOD:

Erection and Commissioning will be done within 2 Weeks of accepted supply of equipments at site.

The 40T Crane to be made ready for operation at site and handed over to the project authorities within above Schedule. However early supply will be appreciated.

10 **ERECTION & COMMISSIONING**:

TIL Limited shall provide the Services of Specialist Technicians and labour to undertake the installation/erection/assembly, commissioning and any performance testing of the plant, Equipment and accessories supplied. The technicians shall remain at site following commissioning until all necessary personnel are fully conversant with the maintenance and operation of the equipment.

If TIL Limited fails to commission the equipment within the specified period, Liquidated damages will be recovered @ 0.5% of the landed price of the equipment along with accessories per week or part thereof for the delayed period subject to a maximum of 10% of the landed price of equipment along with accessories including erection and commissioning charges.

11 **LIQUIDATED DAMAGES CLAUSE**:

(i) In the event of failure to deliver/dispatch the equipment/store including erection and commissioning with in the stipulated date/ period to effect supply in accordance with the terms and conditions and the specifications mentioned in the supply order and in the event of breach of any of the terms and conditions mentioned in the supply order, BCCL., shall have the right:

(a) To recover from the successful bidder as agreed liquidated damages, a sum not less than 0.5% (Half Percent) of the price of any equipment/stores along with accessories including erection and commissioning charges which the successful tenderer has not been able to supply, erect & commission as aforesaid for each week or part of a week during which the delivery of such stores may be in arrears limited to 10% (Ten Percent),or

(b) To purchase elsewhere after due notice to the successful tenderer on the account and at the risk of the defaulting supplier, the equipment/stores not supplied or others of similar description without cancelling the supply order in respect of the consignment not yet due for supply, or

(c) To cancel the supply order or a portion there of, and if so desired to purchase the equipment/ stores at the risk and cost of the defaulting supplier and also,

(d) To extend the period of delivery with or without penalty as may be considered fit and proper. The penalty, if imposed, shall not be more than the agreed liquidated damages referred to in clause – (a) above.

(e) To forfeit the security deposit fully or in part.

(f) Whenever under this contract any sum of money is recoverable from and payable by the supplier, Bharat Coking Coal Ltd., shall be entitled to recover such sum by appropriating in part or in whole by deducting any sum or which at any time thereafter may become due to the successful tenderer in this or any other contract, should this sum be not sufficient to recover the full amount recoverable, the successful tenderer shall pay Bharat Coking Coal Ltd, the balance amount on demand. The supplier shall not be entitled to any gain on any such purchase.

(ii) Compensation for not achieving guaranteed Availability:-

In the event that Equipment fails to achieve the Availability here in provided, measured over each twelve (12) month period, TIL Limited shall be liable for and pay to BCCL, as liquidated damages, a sum equal to as indicated hereunder for each equipment against the PBG submitted by TIL Limited:

a. 1% of the delivered price of the equipment for every percentage reduction from the Guaranteed Availability for the first 5%.

b. 10% of the delivered price of the equipment for reduction beyond 5% from the Guaranteed Availability

12. **CONSIGNEE:**

The equipment allocated to the mine /projects/ areas as follows which is subject to change as per the requirement of purchaser:

Sl. No.	Name of the Area	Qty. (Nos.)	CONSIGNEE
1	Katras	01	The Depot Officer, Regional Stores, Katras Area, Dhanbad ,Pin-828121.

13. **PAYING AUTHORITY**: The HOD (Finance)/MM, Koyla Bhawan: Koyla Nagar, Dhanbad

14. **COMPOSITE GUARANTEE / WARRANTY:** As indicated in Technical Specification (ANNEXURE-A)

15. **SECURITY DEPOSIT:**

TIL Limited will have to submit Security Deposit for the 3% (as per GM (MM), CIL officer order no.2086 dtd 26.11.20) value of the total landed value of the contract including all taxes, duties and other costs and charges without having any ceiling (i.e. Rs 5,77,719.36) in the form of Bank Draft /Bank Guarantee (As per format given in ANNEXURE-K) within 30 days from the date of order.

In case of FOR destination contract in Indian Rupees, the total landed value of the contract will be arrived at after adding GST and any other tax and duty, if applicable and any other cost and charge, if applicable, to the FOR Destination price of the ordered Equipment and filters & O rings required for first 3000 working hours.

The Security Deposit Bank Guarantee shall remain valid up to 3 months after the supply and commissioning of all the equipment covered in the contract and will be released within 30 days after successful commissioning of all the equipment covered in the contract and on receipt of confirmation of Performance Bank Guarantee (s) for all the equipment covered in the contract. The Bank Guarantee for Security Deposit shall be extended till the Performance Bank Guarantee (s) are submitted by the firm, failing which Security Deposit will be forfeited.

The SDBG issued by issuing bank on behalf of the bidder in favour of "Bharat Coking Coal Ltd.," shall be in paper form (Stamp Paper) as well as issued under "Structured Financial Messaging System". Issuing Bank should send the underlying confirmation to either of following banks:

Name of beneficiary & its details	Name	Bharat Coking Coal Limited
	Area	HQ,BCCL
	Bank Account no.	35160317947
	Deptt.	MM Department
Beneficiary Bank, Branch & Address	State Bank of India	
	Main Branch Dhanbad	
IFSC code	SBIN0000066	

Or

Name of beneficiary & its details	Name	Bharat Coking Coal Limited
	Area	HQ,BCCL
	Bank Account no.	019605001057
	Deptt.	MM Department
Beneficiary Bank, Branch & Address	ICICI Bank	
	ICICI Bank, Dhanbad	
IFSC code	ICIC0000196	

Original copy of the Bank Guarantee issued by the Issuing Bank shall be sent by the issuing bank to MM department of BCCL.

6/108

16. **PERFORMANCE GUARANTEE:**

In accordance with the provisions of the Technical Specifications, TIL Limited shall guarantee that the availability of the equipment shall be not less than 85% (eighty five per cent) for a period of 12 months from the accepted date of commissioning.

TIL Limited shall furnish a Performance Guarantee equivalent to 10% of the total value of the supply order (by adding all .taxes such GST etc to the FOR destination price of the equipment ordered, in case of suppliers from purchaser's country and the estimated Marine Freight & Insurance, port charges and Customs Duty etc., in case of imported items).

This Bank Guarantee shall be initially valid for a period of 15 months from the date of commissioning of the equipment (The PBG(s) shall remain valid till 3 months after the completion of 12 months period from the date of commissioning of respective equipment covered in the contract) and the same shall either be released or extended depending upon the merit of the case. This Performance Guarantee shall be for the performance of the Contract /Supply Order.

The release of the Performance Bank Guarantee(s) after above indicated period shall be subject to satisfactory performance of the equipment during 12 months period from the date of commissioning of the equipment and fulfilment of contractual obligations failing which, action for further extension or encashment of PBG, as deemed suitable shall be taken. Release of PBG for each equipment may be done separately on satisfactory performance of the respective equipment as above. TIL Limited has to submit the Performance Bank Guarantee in INR.

The Performance Bank Guarantee shall be issued by a scheduled bank in the format attached as ANNEXURE -L and shall be irrevocable and unconditional and BCCL shall have the powers to invoke/en-cash it notwithstanding any dispute or difference between TIL Limited and BCCL pending before the court, tribunal, arbitrator or any other authority.

In case of Performance Bank Guarantee, TIL Limited may also please note the following:

The Bank Guarantee issued by the Bank on behalf of TIL Limited in favor of "BHARAT COKING COAL LIMITED" shall be in paper form as well as issued under "Structural Financial Messaging System". The detail of beneficiary for issue of BG under SFMS platform is furnished below.

Name of beneficiary & its details	Name	Bharat Coking Coal Limited
	Area	HQ,BCCL
	Bank Account No	35160317947
	Deptt	MM Department
Beneficiary Bank Branch &Address	State Bank of India	
	Main Branch Dhanbad	
IFSC Code	SBIN0000066	

Or

Name of beneficiary & its details	Name	Bharat Coking Coal Limited
	Area	HQ,BCCL
	Bank Account No	35160317947
	Deptt	MM Department
Beneficiary Bank Branch &Address	ICICI Bank	
	ICICI Bank Dhanbad	
IFSC Code	ICIC0000196	

The PBG issued by Issuing bank on behalf of TIL Limited in favour of "Bharat Coking Coal Limited" shall be in paper form (Stamp Paper) as well as issued under "Structured Financial Messaging System". Original copy of the PBG issued by the Issuing Bank shall be sent by the issuing bank to BCCL. **The total value of Performance Bank Guarantee is Rs. 19,25,731.20/-**

7/108

17. PRICE FALL CLAUSE –

TIL Limited undertakes that it has not offered to supply/ supplied/ is not supplying same or similar product/ systems or sub systems at a price lower than that offered in the present bid in respect of any Organization/ Ministry/ Department of the Govt. of India or Coal India Ltd. and/or its Subsidiaries or other PSU or any other private organization during the currency of the contract and if it is found at any stage that same or similar product/ systems or sub systems was supplied by the bidder to any Organization/ Ministry / Department of the Govt. of India or Coal India Ltd. and/or its Subsidiaries or other PSU or any other private organization at a lower price during the currency of the contract, then that very price will be applicable to the present case and the difference in the cost would be refunded by the bidder to buyer, if the contract has already been concluded.

18. INSPECTION AND TESTS:

i. BCCL or its representative shall have the right to inspect and/or to test the Goods to confirm their conformity to the Contract Specifications at no extra cost to the Purchaser. SCC and the Technical Specifications shall specify what inspections and tests the Purchaser requires and where they are to be conducted. The Purchaser shall notify the Supplier in writing, in a timely manner, of the identity of any representatives retained for these purposes. Sufficient time, at least 30 days in advance should be given for inspection.

ii. The inspections and tests may be conducted on the premises of the Supplier, at point of delivery and/or at the Goods' final destination. If conducted on the premises of the Supplier, all reasonable facilities and assistance, including access to drawings and production data, shall be furnished to the inspectors at no charge to the Purchaser. However, any drawing and proprietary information provided for this purpose shall remain in control of the supplier.

iii. Should any inspected or tested Goods fail to conform to the Specifications, the Purchaser may reject the Goods, and the Supplier shall either replace the rejected Goods or make alterations necessary to meet specification requirements free of cost to the Purchaser.

iv. The Purchaser's right to inspect, test and, where necessary, reject the Goods after the Goods'arrivalinthePurchaser'scountryshallinnowaybelimitedorwaivedbyreason of the Goods having previously been inspected, tested and passed by the Purchaser or its representative prior to the Goods' shipment from the country of origin.

v. Nothing in GCC Clause 8 shall in anyway relieve the Supplier of any warranty or other obligations under this Contract.

19. FORCE MAJEURE CLAUSE:

i. TIL Limited shall not be liable for forfeiture of its Security Deposit, liquidated damages or termination for default, if and to the extent that it's delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.

ii. For purpose of this Clause, "Force Majeure" means an event beyond the control of the Supplier and not involving the Supplier's fault or negligence. Such events may include, but are not restricted to, acts of the Purchaser in its sovereign capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes.

iii. If a Force Majeure situation arises, the Supplier shall promptly notify the Purchaser in writing of such condition and the cause thereof. Unless otherwise directed by the Purchaser in writing, the Supplier shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.

8/108

20. **SUBMISSION OF BILLS**: For payment for equipment in Indian Rupees, the supplier will submit the following documents along with bills to the paying authority:

a. Four copies of the Supplier's invoice, Pre-Receipted and Stamped showing Contract Number, Goods description, quantity, unit price, total amount and GST No. of Ultimate Consignee.
b. Receipted Challan / Consignment Note of all the consignments.
c. Manufacturer's Test & Inspection Certificate.
d. Manufacturer's Warranty /Guarantee Certificate.
e. Lowest Price Certificate as per SCC clause -8.2.
f. Copy of Performance Bank Guarantee
g. Documentary evidence for freight and transit insurance charges up to the destination.
h. Copy of Certificate of Insurance.
i. Any other document(s) required as per contract.

21. **GENERAL TERMS AND CONDITIONS:**

Unless otherwise specified in the purchase order, the Purchase order shall be subject to the General Terms and Conditions of Supply of Stores given as ANNEXURE –I. In case there is a conflict in any particular term of the NIT with the General Terms, the terms of the NIT will prevail.

22. **JURISDICTION**:

Any dispute arising out of this enquiry shall come under the sole jurisdiction of the Dhanbad/Jharkhand High Court, (INDIA).

All Other Terms & Conditions shall be as per NIT & as per TIL Limited techno- commercial accepted offer.

Two copies of the order is being sent to TIL Limited. TIL Limited is advised to acknowledge the receipt and acceptance of the order by returning one copy duly signed and stamped to this office positively within 15 days, failing which this order shall be deemed to have been accepted by TIL Limited for execution.

Enclosures:		
SL	**ANNEXURE**	**DESCRIPTION**
1	ANNEXURE - A	Technical Specifications Comprising Schedule Of Requirement; Parts I,II, Schedule Of Requirements Of Service , Technical Specifications Preface ,A. Scope Of Supply , B. Specific Project Requirements, C. General Requirements, D. Equipment Specification
2	ANNEXURE - B	Filters and O rings including standard engine filters required for first 3000 hours of operation per equipment
3	ANNEXURE - C	List of Tools to be provided with 40T Crane
4	ANNEXURE – D	List of Major Bought Out Items
5	ANNEXURE – E	Technical Details of offered Model
6	ANNEXURE – F	Detailed schedule of all necessary oils, lubricants, fluids for the operation and maintenance of Equipment , Details of Depot/Warehouse and service facility available
7	ANNEXURE – G	Quality Assurance Plan
8	ANNEXURE – H	Technical Parameter sheet
9	ANNEXURE – I	General Conditions of Contract
10	ANNEXURE – J	Bank Details for Electronic Payment
11	ANNEXURE – K	Performa of Security Deposit Bank Guarantee
12	ANNEXURE - L	Performa Of Performance Bank Guarantee

AHPL

9/108

INDENT & BUDGET CERTIFICATION REFERENCE:

Area Indent ref no. and Date			e-BC & e-FC Reference
Sl	Area	Indent no	e.B.C.No.BCCL/C&B/CAP/REG.PN:25/SN:13/eBCNo:772 Dated:09.01.2021, HEAD: HEMM, Sub Head-HEMM, File Org Authority : GM(Excvn)Hq , UNIT CODE: 2200 for amount of Rs 1,92,57,312.00/- e. F.C. No:-514 dtd 22.01.2021 for amount of Rs 1,92,57,312.00
1	Katras	151 dtd 07.04.2020	
IR No.420026 dtd 28.05. 2020			

Yours faithfully,
For & on behalf of Bharat Coking Coal Limited

20/01/2021
(Alok Kumar)
DM(MM)

29/1/2021
(A.K.Sinha)
CM (MM)

[Note: - This is issued with approval of competent authority. This order is placed against the indent Ref no. Indent/HEMM/Capital/40T Crane/20-21/23 dated 24.04.20 of GM (Excavation)/HOD, Excavation Department, BCCL HQ.]

Copy to:

1. GM(Excv) HOD, Koyla Bhawan: Koyla Nagar, Dhanbad
2. The HOD (Finance) MM, Koyla Bhawan: Koyla Nagar, Dhanbad
3. The GM(Area), Katras Area , BCCL
4. GM/GM(MM), ECL/CCL/WCL/SECL/NCL/MCL
5. The Depot Officer , Regional Store, Katras Area , BCCL
6. Tech-cell, MM Division, Koyla Bhawan: Koyla Nagar, Dhanbad

Annexure-A

Part I: Table – A

Sl. No.	Brief Description of Goods & Services	Qty.	Expected Delivery, erection and commissioning Schedule at Site
1	40T Crane as per design criteria given in Technical Specification (Section – VI, part- E, Clause-3)	01 Nos	Delivery, erection, commissioning and testing to be completed as per following schedule in the BCCL Areas. **Area wise Allocation: Katras Area - 01 nos** **Period for supply, erection and commissioning of complete equipment shall be as under**: Commencing within 3 months from the date of receipt of purchase orders and supply to be completed within 6 months from the date of receipt of purchase orders. However the early supply will be appreciated. Erection and Commissioning will be done within 2 Weeks of accepted supply of equipments at site. The 40T Crane to be made ready for operation at site and handed over to the project authorities within above schedule. However early supply will be appreciated.
2	Ancillary Equipment and other requirements for each of Item 1 as specified in Technical Specifications, Section-VI.		Delivery to be made along with the Machine.
3	Provision of spare parts; - All filters & O rings (including engine filters) required for first 3000 working hours. Maintenance tools, special tools in accordance with Part C.6 of the Technical Specification, Section-VI . The cost of filters & O rings requirement shall be quoted for each equipment. All costs of filters & O rings shall identify unit cost, total cost, costs incidental to delivery, building up to a total cost CIP final place of destination / FOR destination.		To comply with the terms of part C.6 of Technical Specifications, Section VI and in consideration of Items 1 and 2 above. The delivery of spare parts and consumables for individual machine should be made as follows: a) All filters & O rings (including engine filters) required for first 3000 working hours – at the time of commissioning.

11/108

The quantities of equipment allocated to the mine projects are as follows:

Sl	Project with Consignee Address	Company	Total Requirement	
			Under NCD	Under PCD
1	Katras	BCCL	01 Nos	Nil
	Total		**01 Nos**	**Nil**

Note:

1. Price for the equipment along with accessories and Spares & Consumables for the projects shown under NCD heading should be quoted with Normal Custom Duty(NCD).
2. Price for the equipment along with accessories and Spares & Consumables for the projects shown under PCD heading should be quoted with Project Concessional Duty (PCD) applicable for the imported contents, as per extant customs rules and regulations.

Part II:

Sl. No	Brief Description of Services	Period/Quantum
1	Training of Purchaser's Personnel at the manufacturers works or elsewhere outside India.	Please refer to Schedule of Requirements of Services later in this Section and to the Technical Specifications.
2	Training of Purchaser's Personnel on Site.	Please refer to Schedule of Requirements of Services later in this Section and to the Technical Specifications.
3	Assembly and erection of equipment at Site in accordance with the Technical Specification and Conditions of Contract.	To be specified by the Bidder to comply with the Technical Specifications and the terms and Conditions of Contract.

12/108

Schedule of Requirements of Services

The Supplier's scope of the Contract will include the following

I. Type test on each equipment included in the technical specification and offered in the bid.

II. Providing Services of Supplier's qualified engineer(s)/personnel for:

A. unloading, transportation to site, storage at site and/or

B. Transportation from storage to erection site, installation, testing and commissioning.

III. Training of Purchaser's Personnel:

BCCL 's estimates of the minimum training requirements (in terms of Purchaser's personnel, periods and locations) are given in the following table. These estimates relate to the total number of items of equipment specified in Part I

Type of Personnel	***At Manufacturer's Works***				***At Site***			
	No	***Period***	***Total***		***No***	***Period***	***Total***	
Mech Engineer		*weeks*	*weeks*			*1 Week*		*Week*
Elec Engineer		*weeks*	*weeks*			*1 Week*		*Week*
Mech Supervisor		*weeks*	*weeks*			*1 Week*		*Week*
Elec Supervisor		*weeks*	*weeks*			*1 Week*		*Week*
Mech Fitter						*1 Week*		*Week*
Electrician						*1 Week*		*Week*
Operator						*1 Week*		*Week*
Total			*weeks*					***weeks***

Definitions:

Mech/Elect Engineer- *Graduate Engineer having basic knowledge of the equipment*

Elect/Mech Supervisor - *Diploma Holder Engineer having basic knowledge of the equipment*

Mech Fitters/Electricians/Operators - *Un-skilled, semi-skilled and skilled.*

13/108

Technical Specifications

Preface - Instructions to Bidders

Introduction

These Technical Specifications identify the technical requirements of the Goods and Services which are the subject of this IFB.

The Technical Specifications are presented in four parts as follows:

A. Scope of Supply

B. Specific Project Requirements

C. General Requirements
   1) Geography and Climatic Conditions
   2) Goods (Equipment and Machinery)
   3) Services
   4) Standards
   5) Supplier's Responsibility
   6) Spare Parts Provisions
   7) Availability Provisions
   8) Deemed Breakdown
   9) Composite Warranty /Guarantee
   10) Quality Assurance

D. Equipment Specifications

Part A Scope of Supply

A.1 Equipment Package

The Supplier is required to provide a complete package of equipment for the supply of 40T Crane to open cast (surface) coal mining projects: The supplier is required to bid for the Equipment; including accessories, consumables, training, installation, commissioning and testing at the coal mining project.

A.2 Supplementary Items

i. The first fill of all oils, grease and lubricants needed for test and commissioning of equipment.

ii. The equipment shall be provided with a comprehensive tool kit, which shall include any special tools required for erection, commissioning and for the maintenance and repair of all the equipment.

iii. All filters & O rings (including engine filters) required for first 3000 working hours. List of such spares justifying the total requirement as per maintenance schedule should be submitted.

A.3 Information and Drawings

At least one month before the scheduled installation date, the Supplier shall provide not less than:
a) Suitably illustrated copies of Operating, Repair and Maintenance Manuals for each type/model of equipment and accessories, written in the English language, substantially bound in book form; Three (3) copies to each project site; and
One (1) copy along with soft copy to the General Manager(Excv.), BCCL HQ. Koyla Bhawan;

(b) Suitably illustrated copies of detailed Spares Parts Manuals for each type/model of equipment and accessories, written in the English language, substantially bound in book form; Three (3) copies to each project site; and
One (1) copy along with soft copy to the General Manager (Excv.), BCCL Hqrs. Koyla Bhawan;

The Supplier shall also submit (in the same number of copies) the data identified in the specifications for each item of Equipment proposed. In addition to the Equipment drawings requested, where appropriate the Supplier shall supply detailed drawings illustrating erection/assembly site(s), foundation and accommodation requirements for such items as drive motors, switch installations etc.

A.4 Erection/Assembly, Commissioning and Performance Testing

The Supplier shall provide the Services of Specialist Technicians (refer Part-C3) and labour to undertake the installation/erection/assembly, commissioning and any performance testing of the plant, Equipment and accessories supplied. The technicians shall remain at site following commissioning until all necessary personnel are fully conversant with the maintenance and operation of the equipment. The erection and commissioning should be done within two weeks of accepted supply of Equipment.

15/108

A.5 Training

The supplier in consultation with the project in-charge / HOD [Excavation] of the respective site shall make available experienced personnel to conduct training of engineers, supervisors, technicians and operation personnel for suitable period from the date of issue of acceptance certificate of the equipment. The training shall cover the following:

a) Equipment system, safety and risk assessment
b) Equipment operation and maintenance
c) Trouble shooting, localization of fault and their remedies covering:
1. Electrical and electronics
2. Mechanical
3. Hydraulic system
4. Lubrication system
5. Pneumatic system etc.

Comprehensive training manuals with clear illustration shall be provided to each participant in English language. The training courses shall be conducted in both English and Hindi language.

Part B. Specific Site Requirements

B.1 Project Specific Requirements

The equipment shall be suitable for use at the specific site projects under the conditions detailed below.

B.1.1 OPENCAST PROJECTS

All the Opencast Project is owned by the Bharat Coking Coal Limited, a wholly owned subsidiary of Coal India Limited (the "Purchaser"). The mine is located partly in the Dhanbad District of Jharkhand approximately 30 Km from Dhanbad railway station.

16/108

Part C.

General Requirements

C.1 Geography and Climatic Conditions

Elevation:-

The natural surface varies from 100 to 1000 m above mean sea level.

Climate:-

The climate is sub-tropical to tropical, dusty, with a hot and humid atmosphere. Monsoon rains occur in the period from June to October.

Ambient Conditions:-	Relative Humidity	-	Maximum 98%
	Temperature	-	Minimum 0° C
			Maximum 50° C

Rainfall:- The mean annual rainfall is 1,000mm, 90 to 95 % of which may fall in rainy season from June to October.

Wind:-	April to September	-	South to South Westerly
	October to March	-	North Westerly
	Speed:-	-	8 km per hr average
		-	100 km per hr maximum

C.2 Goods (Equipment and Machinery)

Detailed specifications of the Equipment to be supplied are given in Part E of this section.

In general, all items shall be:
Designed and constructed to handle without overload and for the working hours stated, the maximum volumes/rates specified;
Designed to facilitate ready access, cleaning, inspection, maintenance and repair of component parts;
Designed to facilitate rapid changeover of consumable items.
The component parts of all items shall, wherever possible, be selected from the standard ranges of reputable manufacturers.
The Equipment and accessories shall be physically robust and where necessary capable of dismantling for transportation and ready re-assembly using simple tools. All Equipment items provided shall be designed to be compatible within the proposed overall Scope of Supply.
Electrical Equipment shall provide all protection devices, controls and interfaces for the Equipment to operate safely and efficiently.
All workmanship and materials shall be of first class quality in every respect.
All parts and surfaces which are exposed to corrosive environment shall be suitably protected to prevent any effects of corrosion or erosion.

17/108

C.3 Services

The supplier shall be responsible for the erection and commissioning of the equipment at site. The supplier shall depute qualified and competent Engineer(s) and specialist technicians to supervise the entire assembly, erection and commissioning of equipment.

C.4 Standards

The design supply, erection, testing and commissioning of all Equipment under this Contract shall in all respects comply with the requirement of this specification and with the appropriate current Indian standards and codes, or relevant Standards issued by the International Standards Organisation or any other equivalent international standards, which corresponds to specific ISO/Indian standards indicated in the technical specification. Such equivalent international standards are to be supported by documentary evidence certifying that offered standards are identical to the corresponding ISO/Indian standards. The equipment shall be to the approval of the Statutory Government Authorities including Director General of Mines Safety (DGMS) having jurisdiction over the Equipment and its use. The system of units for all measurements shall be the System'e International d'Unites (S.I.)

C.5 Suppliers Responsibility

The Purchaser requires that the Supplier shall accept responsibility for the provision of complete operable and compatible Equipment and systems within the Scope of Supply. This document identifies only the major items required for the installation and the Supplier shall ensure that the total supply includes all necessary Equipment for it to function effectively, safely and efficiently. Any additional items the Supplier considers necessary to ensure compliance with such a requirement shall be identified and included.

If the Supplier observes that this Specification document contains any anomalies, ambiguities, flaws, errors or omissions, the Supplier shall immediately bring these to the attention of the Purchaser but not later than 15 days prior to the due date of opening. The Supplier shall be responsible for the testing and commissioning of the Equipment and ensure that it meets the requirements as specified. The commissioning and setting to work of the whole Equipment Supply package shall be carried out under the supervision of the Supplier in conjunction with the Purchaser's nominated personnel.

C.6 Spare Parts Provisions

C.6.1.a. Availability of Spare Parts

All items and Equipment proposed shall be of current design and manufacture. The Supplier shall warrant that sufficient spares and servicing facilities will be available to maintain the Equipment in use throughout its life.

C.6.1.b Bought-out assemblies and sub-assemblies

The supplier is required to furnish the details of all bought-out items as indicated in the technical specification against "Information to be provided by the bidder". The bidder has to furnish a certificate indicating therein that "All other components not identified/ mentioned herein are manufactured by the bidder at their works exclusively i.e. the components are propriety of bidder's firm."

C.6.2 Provision of Spare Parts

C.6.2.1Within the Contract Price, the Purchaser shall agree to purchase all filters and O rings including standard engine filters required for first 3000 hours of operation of each equipment.

The Bidder shall stock sufficient fast moving & maintenance and other spares in their Local Depots to ensure maximum availability of their equipment

C.**6.3. Emergency Spare Parts** The Bidder shall ensure that Spare Parts required urgently by the Purchaser for repair of breakdown equipment are supplied at overriding priority.

C.6.3.1. Lifetime Spare Parts: The Supplier undertakes and guarantees to produce and maintain stocks, to be available for purchase by the Purchaser under separate agreement, of all Spare Parts and Consumables as may be required for maintenance and repair of the equipment throughout its working life. In the event that the Supplier wishes to terminate production of such Spare Parts, the Supplier shall:

a) Give not less than six months' notice in writing of its intention to terminate production in order to permit the Purchaser reasonable time in which to procure needed requirements; and

b) Immediately following termination, provide to the Purchaser at no cost, manufacturing drawings material specifications and all necessary permissions to facilitate manufacture of the Spare Parts elsewhere.

c) Any change in part number or superseded part number should be informed to the HOD of Excavation department / MM department of BCCL HQ and the project site wherever the equipment is operating.

In any event, the Supplier shall not seek to terminate manufacture of spare parts for a period of not less than (10) years from the date of completion of warranty period.

C.6.4 Oils, Lubricants and Fluids

Not less than three (3) months before the scheduled date for Acceptance, the Supplier shall provide to the Purchaser a detailed schedule of all necessary oils, lubricants, fluids for the operation and maintenance of Equipment. The schedule shall indicate estimated annual consumption and specify the appropriate international standard number or the name and reference number of an equivalent available in India considered to be acceptable by the Supplier.

C.6.5 General

C.6.5.1 Nothing in this Clause C.6 shall relieve the Supplier of any Guarantee, Availability, Performance or other obligations or liabilities under this Contract.

C 7 Availability Provisions

C.7.1 Introduction

C.7.1.1 The Supplier shall guarantee that the Equipment supplied pursuant to this Contract shall be available for use by the Purchaser and shall meet the, performance criteria specifications at the level and in accordance with the terms and conditions of the Availability Guarantee herein contained.

C.7.1.2 Where Equipment supplied under the Contract fails to meet the criteria of the Availability Guarantee, the Supplier shall, at its own suitably qualified and experienced personnel at Site to demonstrate to the Purchaser's satisfaction that the required level of availability can be achieved and maintained. The Supplier shall provide the Services of such personnel at Site within seven (7) days of notification by the Purchaser that the availability criteria have not been met in any one (1) month.

C.7.2 Guarantee

C.7.2.1 The Supplier shall guarantee that the Equipment supplied pursuant to the Contract shall be available to the Purchaser at the level hereinafter defined to perform to criteria of not less than that defined in the Technical Specifications incorporated in the Contract.

C.7.2.2 The Supplier shall guarantee that the Equipment shall be available to perform its duty to minimum criteria and to the minimum availability percentage level as defined in the individual Equipment specifications included in the Technical Specifications. The method of assessment applied shall be as follows: Method of Assessment: The following calculation shall determine the availability of the Equipment:

19/108

$$\%\ \text{Availability} = \frac{\text{Scheduled Available Time - Downtime}}{\text{Scheduled Available Time}} \times 100$$

Scheduled Available Time shall equate to 24 hours daily.

Downtime:-

Downtime shall mean all hours of work lost due to mechanical, electrical or other failure, including:

a) routine servicing and maintenance in accordance with the manufacturer's published recommendations, including :
changing oils, oil filters and air filters; lubrication; changing identified consumable or wear parts.
b) planned preventative maintenance programmes;

It shall not however include:

I. damage due to abusive use or incorrect operation methods by BCCL ;
II. accidents;
III. strikes or stoppage of work by BCCL 's personnel;
IV. natural disaster;
V. lack of Spare Parts not attributable to a failure of the Supplier, it's Agents or Representatives.

Downtime shall also specifically include all hours lost due to failures determined to be guarantee failures.

The Supplier shall provide a schedule of maintenance required to carry out (a) and (b) above for the first three years of operation and shall state the number of hours required to carry out each maintenance task. The time stated shall, with the agreement of the Purchaser, form the basis of the assessment of the availability. This schedule of tasks and time will be reviewed periodically by the Purchaser and the Supplier, jointly, to monitor the practicality of the schedule. The Purchaser will assist the Supplier, without relieving the Supplier of any other obligations under the Contract, to achieve the guaranteed availability by:

1. Providing normal and proper maintenance, including preventative maintenance in accordance with the Supplier's standard/published recommendations, and making all necessary repairs using only spare parts provided by the Supplier in accordance with the requirements specified in part B6.

2. Providing co-operation to all Supplier's authorised representatives, complying with all reasonable procedural suggestions to improve efficiency of machine operation or reduce downtime.

3. Where appropriate, providing and maintaining such conditions as:
- Proper electrical Supply
- Terrain Area
- Bench preparation
- Reasonable floor conditions

4. Providing all Supplier's authorised representatives access at all reasonable times to the machine service and repair facilities.
Maintaining a logbook for each shift wherein the working hours, breakdown hours, maintenance hours, idle hours, etc. shall be recorded. This record will be available for examination and signature by the Supplier's representative

C.7.3.1 Effect and Duration of Guarantee

C.7.3.1 This Guarantee shall become effective on the day on which the Equipment is commissioned at the Site. Commissioning shall be evidenced by the issue of the Purchaser's Acceptance Certificate.

C.7.3.2 This guarantee shall remain effective for Twelve (12) months from the date of commissioning irrespective of the hours operated by the Equipment during the period of the guarantee.

C.7.3.3 Compensation for not achieving Guaranteed Availability In the event that Equipment fails to achieve the Availability here in provided, measured over each twelve (12) month period, the Supplier shall be liable for and pay to the Purchaser, as liquidated damages, a sum equal to as indicated hereunder for each equipment against the PBG submitted by the bidder as per clause-2 of SCC

a. 1% of the delivered price of the equipment for every percentage reduction from the Guaranteed Availability for the first 5%.

b. 10% of the delivered price of the equipment for reduction beyond 5% from the Guaranteed Availability The Supplier has however the option to modify the equipment , if felt necessary , to bring its availability to the guaranteed level within three (3) months after expiry of initial guarantee period of twelve (12) months from the date of commissioning .

C.8 Deemed Breakdown

When the supplier is unable to supply the replacement of a failed part under warranty within 21 days of giving intimation by the consignee and if the machine is commissioned by using the spare from the stock of the project the period (after 21 days) till the supplier replaces the part under warranty shall be treated as "Deemed Breakdown" (the credit for keeping machine available shall not be given to the supplier).

C.9 Composite-warranty/guarantee

The supplier shall warrant that the equipment supplied under this contract is: a. In accordance with the contract specifications. b. The equipment will be warranted against any manufacturing defects/workmanship for a period of 12 months from the date of commissioning or 18 months from the date of receipt and acceptance. Any defect observed on this account shall be attended to immediately and in no case beyond a period of one month. The warranty shall cover for total equipment so that ultimate responsibility lies only with the Equipment Bidder although components may be supplied by different suppliers to the Bidder.

C.10 Special Condition

The machines under supply against this tender should have the same major assys. / sub assys. which were fitted on the machines supplied against CIL's last supply order. In case any change is contemplated prior clearance of BCCL will be necessary.

C.11 Quality Assurance

C.11.1 The Supplier should furnish in detail its quality assurance plan for various stages of manufacture. The Quality Assurance plan shall comply with an internationally recognised quality assurance standard such as ISO 9000 or of equivalent merit acceptable to BCCL.

C.11.2 The Supplier shall provide facilities to Purchaser or their authorised representatives for progress inspection during manufacture at his works and furnish all test data available in this regard for quality control, both for bought out items and his own manufactured items.

C.11.3 The Purchaser or his agent, when so required by him, shall also be provided with samples of "bought-out" materials for the purposes of undertaking independent tests, which independent tests shall be at the expense of the Purchaser.

21/108

C.12 After Sales Service/Product Support

The supplier must have adequate facility for product support for such machines in India with nearest Depot/Warehouse, Service facility and Personnel. Details of such facilities are to be mentioned as at Clause 9 of Equipment Specification.

PART D:- EQUIPMENT SPECIFICATIONS EQUIPMENT SPECIFICATION OF 40T CRANE

1. Scope of Specification:

This specification is intended to cover the technical requirements for the design, manufacture, testing, delivery, on-site erection and commissioning of a diesel powered 40 tonne hydraulic rough terrain mobile crane.

2. References:

The following International Standards are referred to in, and form part of, the Specification. The equivalent standards, if any, to any of the following ISO standards if offered are to be supported by documentary evidence in form of copies of the equivalent standards certifying that offered standards are identical to the corresponding ISO standards of NIT.

The following International Standards are referred to in, and form part of, the Specification:

ISO 4305	Mobile cranes - Determination of stability
ISO 7363	Cranes and lifting appliances - Technical characteristics and acceptance documents
ISO 7752-1	Lifting appliances - Controls - Layout and characteristics - Part 1: General principles
ISO 7752-2	Lifting appliances - Controls - Layout and characteristics - Part 2: Basic arrangement and requirements for mobile cranes
ISO 8087	Mobile cranes - Drum and sheave sizes
ISO 4573-1982	Specification for power drive mobile crane

Any other ISO specifications as may be applicable

3. Design Criteria:

- The crane shall be designed for heavy duty application and be capable of operating for protracted periods on a system of 3 shifts each of 8 hours duration per day throughout the year.
- The crane should have a lifting capacity, with fully extended outriggers, of not less than 40 tonne at a radius of 3 m and a basic boom length of not less than 9.0 m. The fully extended boom length should be not less than 24.5m.
- The lifting capacity shall be in accordance with American Standard CS 90-58 and should not exceed 85% of the tipping load in accordance with ISO 4305.
- The crane should be capable of 360-degree rotation with all rated loads.
- The crane should be capable of lowering the rated loads a minimum of 4m below ground level and should have adequate pick up and carry capacity of not less that 5MT at 9m radius over the front.
- The carne shall have a grade ability of not less than 40%. Ground clearance shall not be less than 430mm (from differential).

4. Technical Requirements

4.1 Engine

The crane shall be powered by a direct injection 4-stroke diesel engine of adequate power. The engine shall be provided with 24V electric starting, dry type 2- stage air-cleaner with automatic dust evacuator and dust level indicator and 2- stage fuel filter with water separator.

The engine shall have a water jacket cooling system, thermostatically controlled, using an engine driven water pump, with the cooling water recirculated through a heavy duty radiator. The system shall be capable of providing sufficient cooling to allow the crane to continuously operate at the full rated output at the maximum ambient temperature. The moving parts of the engine shall be lubricated by an engine driven oil pump, with full flow oil filtration and cooling. The engine shall be equipped with an over-speed governor. The engine shall be environment certified for minimum BS-III or its equivalent.

4.2 Transmission

The crane shall be provided with power shift hydraulic transmission having a sufficient number of speeds to enable it to travel in rugged mining conditions. Suitable protection of the transmission pan from external damage should be provided. The pan guard should be designed to minimise accumulation of dirt and debris.

4.3 Drive System

A 4 x 4 wheel drive-steer with differential and planetary reduction hubs shall be provided.

4.4 Steering

Full hydraulic power steering shall be provided, which should have the capability of normalising steering control when the machine is slewed to the rear of the chassis. Provision for normalization of steering should be present when superstructure is slewed to the rear.

4.5 Hoses

All hoses shall be grouped as far as possible and suitably clipped to reduce damage from scuffing and it shall be heat resistant.

4.6 Brakes

Suitable & reliable air/ air over oil/ oil assisted foot operated service brakes acting on all wheels shall be provided. Parking and emergency brakes for locking the wheels during operation of the crane should also be provided.

4.7. Tyres

Suitable tubeless, rock duty, cut-resistant earthmover tyres shall be provided, preferably selected from the ranges of Indian manufacturers.

4.8. Frame

The frame should be a rugged, durable construction of high strength steel, free from any stress concentration, with integral outrigger housings. The design must take care of all forces encountered during the operation of the crane.

4.9. Outriggers

An adequate number of hydraulically operated outriggers with integral check valves on each extension cylinder shall be provided. The outriggers shall be controlled from the operator's cab.

4.10. Boom

The boom shall be provided with full power synchronized hydraulic telescoping sections.

4.11. Lifting Block

A hook block suitable for the maximum designed lifting capacity of the crane shall be provided.

23/108

4.12. Hoist System

A multiple speed hoist system shall be provided with a counter-balance valve for controlled load lowering. Limit switches for over hoist and over lowering and an adequate capacity fail-safe braking system shall be provided.

4.13. Safe Load Indicator

The crane shall be fitted with an electronic safe load indicator to indicate the hook load and provide audio-visual warning of overload. Digital indication of net/gross load, boom inclination, boom length and radius shall also be provided.

4.14. Derricking and Slewing

High-speed derricking and slewing motions with sensitive fail-safe controls and brakes shall be provided. Full 360° continuous rotations shall be provided.

4.15. Drums and sheaves

The diameters of the drums and sheaves used for hoisting and derricking shall be in accordance with ISO 8087.

4.16. Fuel Tank

The fuel tank shall be of sufficient capacity to allow 16 hours operation without refuelling and be provided with a level indicator and lockable-hinged filler cap. Construction of the tank should be such that it provides for easy accumulation and drainage of water with minimum loss of fuel.

4.17. Operator's Cab

A fully insulated, sound suppressed Air conditioned lockable operator's cab with tinted safety glass should have adequate window area to provide full vision in all directions. A rear-view mirror, windshield wipers and washers, a fully adjustable operator's seat, floor mat and a cooling fan shall be provided. All operating controls, gauges (with colour indication for safe and unsafe working), monitoring and working signals shall be conveniently located within easy reach of the operator and comply with ISO 7752-1 and ISO 7752-2. Steps and handrails shall be provided for access to the operator's cab.

4.18. Warning Alarms/Lights

Audio/visual warning alarm systems shall be provided for the following:

a) Parking brake actuation.
b) High torque converter oil temperature.
c) Low engine oil pressure.
d) High coolant temperature.
e) Low air pressure (if applicable).
f) Hoist drum rotation indicator.
g) Low coolant level.

4.19 .Gauges and Indicators:

The following shall be provided as a minimum: a) Water temperature b) Engine oil pressure c) Converter oil temperature d) Fuel capacity e) Engine tachometer f) Engine hour-meter In case any of these gauge/s is/are not provided then it may be adequately explained that how the job of the same shall be accomplished in the offer product.

4.20. Electrical Equipment:

The crane shall be provided with the following: a) 24V DC electrical system with suitably rated alternator of reputable make b) Electric start c) Reputable make high capacity batteries d) Battery isolation switch All electrical circuits shall be protected by adequately rated fuses/ MCBs which shall be easily accessible for maintenance. In case of fuses, at least two spare fuses of each size/ratings shall be provided in each fuse box. 4.21. Lighting adequate lighting shall be provided for safe nightshift operation. The lighting system should include the following:

a) Headlights
b) Brake, tail and parking lights
c) Front and rear turn indicators
d) Hazard warning lights
e) Working lights

4.22. Guards and Shields

Adequate guards and shields shall be provided on the crane.

4.23. Fire Extinguisher

02 nos. Of DGMS approved fire extinguisher shall be provided on the crane, suitably mounted in a heavy duty bracket for ease of removal. The extinguisher shall be dry powder (cartridge type) with a minimum capacity of 5 kg and shall comply with Indian Standard IS: 2171.

5. Ancillary Equipment and Other safety Requirements

The following shall be provided on the crane:
a) Front and rear tow hooks and two lifting loops
b) Tyre inflation kit
c) Safety features and devices as detailed in DGMS Notification dated: 0.1.10.2018. Firm should not only give overall compliance against point no.1 general requirement of this notification but also submit clause wise details separately (as applicable for the offered HEMM).

Details available at:
http://www.dgms.gov.in/writereaddata/UploadFile/Gazette_notification_of_diferrent_Standards_and_Forms_under_CMR-2017.pdf

6. Special Guarantee:

The following guarantee will apply for the different components from the accepted date of commissioning
i) Complete engine system - 24 months or 6000 hours (whichever is earlier) In case of failure of engine system within 5000 hrs. , the failed components of the engine system will have to be replaced / repaired depending on the merit of the case, free of cost by the supplier.
(ii)Transmission Assy. - 24 months or 6000 hrs. (Whichever is earlier).
iii) Body Chasis: - 10,000Whrs or 36 months from the date of commissioning (whichever is earlier).
iv) Hydraulic Pumps/Motors & Cylinders: - 24 months or 6000 W/hrs from the date of commissioning (whichever is earlier).
v) Batteries: - 24 months.
In case of any guarantee failure intimated reasonably in time to the bidder, the replacement or repair job (as per guarantee settlement) must be completed within 21 days at site by the bidder at no cost to the purchaser.

7. Performance Guarantee

In accordance with the provisions of clauses C.7.2.2 and C.7.3.2 of the Technical Specifications, the Supplier shall guarantee that the availability of the equipment shall be not less than 85% (eighty five per cent) for a period of 12 months from the accepted date of commissioning.

8. Information to be provided by the Supplier: The Supplier shall furnish the following information which will be used for the assessment of bids and as guaranteed technical particulars in any subsequent contract. All technical information shall be in SI units.

25/108

Annexure-B									
Filters and O rings including standard engine filters required for first 3000 hours of operation per equipment (Value in RS)									
Sl. No.	Part No.	Description	Unit of Measurement	Quantity	Unit Rate	Extended Value	HSN Code	GST Rate	GST Value
1	5285612	ELEMENT LUB. FILTER	Nos	12	1,800.00	21,600.00	8412	18%	3,888.00
2	3978040	ELEMENT FUEL FILTER	Nos	12	1,550.00	18,600.00	8412	18%	3,348.00
3	3329289	SEPARATOR, FUEL WATER	Nos	6	3,870.00	23,220.00	8412	18%	4,179.60
4	3815928	ELEMENT OUTER - AIR	Nos	6	4,700.00	28,200.00	8412	18%	5,076.00
5	3815929	ELEMENT INNER - AIR	Nos	6	1,910.00	11,460.00	8412	18%	2,062.80
6	9.437E+09	FILTER ELEMENT -HYD	Nos	6	21,790.00	1,30,740.00	8412	18%	23,533.20
7	9.437E+09	ELEMENT HYD ,HI-PRESSURE	Nos	6	8,049.00	48,294.00	8412	18%	8,692.92
8	7.756E+09	O-RING	Nos	6	74.00	444.00	4016	18%	79.92
9	7.755E+09	O-RING	Nos	6	42.00	252.00	4016	18%	45.36
10	7.437E+09	FILTER ASSY.	Nos	6	13,044.00	78,264.00	8412	18%	14,087.52
11	9999100170	GROVE ORING KIT	Nos	1	1,09,211.00	1,09,211.00	4016	18%	19,657.98
12	9999100855	ORFS KIT	Nos	1	11,889.00	11,889.00	4016	18%	2,140.02
					Total Value (In Rs)	4,82,174.00			86,791.32

ANNEXURE - C

26/108

Standard tool kit list for RT 740B		
Item	Description	Quantity
Z7902000001	PREVENTIVE MAINTENANCE TOOL KIT ASSY	1
Z7902000002	TOOL BOX	1
Z7902000003	1/2 " DRIVE 12 POINT SOCKET SET	1
Z7902000057	STD SOCKET 12 POINT 7/16" (1/2" DRIVE)	1
Z7902000058	STD SOCKET 12 POINT 1/2" (1/2" DRIVE)	1
Z7902000059	STD SOCKET 12 POINT 9/16" (1/2" DRIVE)	1
Z7902000060	STD SOCKET 12 POINT 5/8" (1/2" DRIVE)	1
Z7902000061	STD SOCKET 12 POINT 11/16" (1/2" DRIVE)	1
Z7902000062	STD SOCKET 12 POINT 3/4" (1/2" DRIVE)	1
Z7902000066	STD SOCKET 12 POINT 15/16" (1/2" DRIVE)	1
Z7902000070	STD SOCKET 12 POINT 1 - 1/4" (1/2" DRIVE)	1
Z7902000005	1/2" DRIVE EXTENSION 10"	1
Z7902000006	1/2" DRIVE RACHET	1
Z7902000155	D.E. SPANNER SET	1
8346551	D/E SPANNER 8X10	1
8346699	D E SPNR. 5/16" X 1/4"	1
114687	D.E.SPANNER 3/8"X7/16"	1
4735200	D.E. SPANNER 1/2" X 9/16"	1
114689	D.E.SPANNER 5/8"X3/4"	1
Z7902000157	D.E. SPANNER 25/32" X 7/8"	1
114691	D.E.SPANNER 15/16"X1"	1
8305471	D.E. SPANNER 1" X 1. 1/8"	1
Z7902000158	D.E. SPANNER 1. 1/16" X 1. 1/4" (27X32 MM.)	1
Z7902000174	D.E. SPANNER 7/8" X 13/16"	1
Z7902000175	D.E. SPANNER 11/16" X 19/32"	1
Z7902000011	BALL PIN HAMMER	1
Z7902000012	STD SCREW DRIVER SET	1
Z7902000023	PHILLIPS # 2 X 4"	1
114680	SCREW DRIVER-6" ELEC - 936	1
8380008	SCREW DRIVER 10"	1
114683	COMBINATION PLIER-8"	1
Z7902000015	ALLEN WRENCH SET	1
Z7902000047	ALLEN KEY SIZE - 5/64"	1
Z7902000048	KEY SIZE - 3/32"	1
Z7902000049	ALLEN KEY SIZE - 1/8"	1
Z7902000050	KEY SIZE - 5/32"	1
Z7902000051	ALLEN KEY SIZE - 3/16"	1
Z7902000052	KEY SIZE - 7/32"	1
Z7902000053	ALLEN KEY SIZE - 1/4"	1
Z7902000054	ALLEN KEY SIZE - 5/16"	1
Z7902000055	ALLEN KEY SIZE - 3/8"	1
Z7902000056	KEY SIZE - 1/2"	1
Z7902000016	OIL CAN 6 OZ	1
Z7902000017	GREASE GUN	1
X7902000167	GREASE GUN HOSE	1
Z7902000160	ADJUSTABLE RANGE - 6"	1
320206	ADJ.SPANNER-15"	1
Z7902000329	D. E. SPANNER - 6 x 7MM	1
Z7902000330	D. E. SPANNER- 8 x 9MM	1
Z7902000331	D. E. SPANNER - 10 x 11MM	1
Z7902000332	D. E. SPANNER - 12 x 13MM	1
Z7902000333	D. E. SPANNER - 14 x 15MM	1
Z7902000334	D. E. SPANNER - 16 x 17MM	1
Z7902000335	D. E. SPANNER - 18 x 19MM	1
Z7902000336	D. E. SPANNER - 20 x 22MM	1
Z7902000337	D. E. SPANNER - 21 x 23MM	1
Z7902000338	D. E. SPANNER - 24 x 27MM	1
Z7902000339	D. E. SPANNER - 25 x 28MM	1
Z7902000340	D. E. SPANNER - 30 x 32MM	1
Z7902000341	D. E. SPANNER - 32 x 36MM	1

ITL Limited * 1, TARATOLLA ROAD GARDEN REACH * KOLKATA-700 024

Amalendhu Pal

27/108

Annexure -C

LIST OF SPECIAL TOOL LIST

Sl. No.	Part No.	Description	Unit of Measurement	Quantity
1	X790200021	FEELER GAUGE HSN 9026	EA	1
2	8341484	HYDRAULIC OIL PRESSURE GAUGE HSN CODE : 8481	EA	1
3	Z744300030	MINIMAX CPLG.(PARKER- EMA3/1/4 ED) HSN : 9026	EA	1
4	X7486000122	MINITESTHOSE-M16X2CONN./PR.GAUGE.CONN.-1MTR HSN : 3917	EA	1
5	X7902000218	PIPE WRENCH 18" HSN : 8204	EA	1
6	Y7902000219	PISTON SEAL INSERT HSN : 8204	EA	1
7	X7902000220	SET OF INNER CIRCLIP PLIER HSN : 8204	EA	1
8	X7902000231	SET OF OUTER CIRCLIP PLIER HSN : 8204	EA	1
9	X7902000222	ALLEN KEY SET HSN : 8204	EA	1
10	X7902000223	SCREW DRIVER SET HSN : 8204	EA	1
11	X7902000214	MULTIMETER HSN : 9030	EA	1
12	Z7402000374	TORQUE WRENCH 135 NM - 540 NM HSN : 8204	EA	1
13	Z7902000354	SPECIAL C- SPANNER HSN : 8204	EA	1

Amalangshu Pal

TIL Limited
1, TARATOLLA ROAD, GARDEN REACH
KOLKATA-700 024

Annexure - D

Major Bought out Assemblies/Subassemblies

SL NO.	ITEMS	RT 740B
1	ENGINE	CUMMINS
2	TRANSMISSION	DANA SPICER
3	FRONT AXLE	AXLE TECH
4	REAR AXLE	AXLE TECH
5	O/R JACK CYLINDER	WIPRO/OEPL/PRECISSION
6	O/R RAM CYLINDER	WIPRO/OEPL/PRECISSION
7	LIFT CYLINDER	WIPRO
8	TELE CYLINDER	WIPRO
9	HYDRAULIC PUMP	COMMERCIAL INTERTECH (PARKER) (GROVE SUPPLY)
10	STEERING CYLINDER	WIPRO / PRECISION
11	SUSPENSION CYLINDER	WIPRO / PRECISION
12	DIRECTIONAL CONTROL VALVES	COMMERCIAL INTERTECH (PARKER)
13	SLEW RING	ROTHE ERDE
14	SLEW UNIT	COMER INDUSTRIES / BONFIGLIOLI
15	HOIST UNIT	BRADEN / DINAMIC OIL
16	JOYSTICK CONTROLLER	HYDRO CONTROL / REXROTH
17	HYDRAULIC SWIVEL	ALA
18	HYDRAULIC OIL COOLER	AKG
19	HYDRAULIC OIL FILTER	SCHROEDER INDUSTRIES
20	HOIST ROPE	USHA MARTIN/ VEROPE/ KISSWIRE
21	LMI SYSTEM	COBO / WIKA
22	HOOK BLOCK	FORGING ENTERPRISES / ROPEBLOCK / DEHAAN
23	TYRES	MRF/JK TYRES OR EQUIVALENT
24	BATTERY	EXIDE / AMARON / EQV

NOTE : THE ABOVE ITEMS CAN BE REPLACED BY FUNCTIONALLY EQUIVALENT ITEMS DEPENDING UPON AVAILABILITY

Amalangshu Pal

TIL Limited
1, TARATOLLA ROAD
GARDEN REACH
KOLKATA-700 024

29/108

GAUGES & INDICATORS FOR RT740B

Sl. No.	Instruments Type	Instrument Details	Supplier
1.	Gauge	Voltmeter	VDO
2.	Gauge	Fuel Gauge	VDO
3.	Gauge	Transmission oil temp. gauge, 12V, 50-150 Deg. C	VDO
4.	Gauge	Water Temp. Gauge	VDO
5.	Gauge	Oil Pressure Gauge	VDO
6.	Gauge	Digital Tech-Hourmeter	Cummins
7.	Indicator	Load Moment Indicator	COBO / WIKA
8.	Indicator	Left Turn Signal Indicator	Various sources
9.	Indicator	Axle load Override Indicator	Various sources
10.	Indicator	Swing Brake Indicator	Various sources
11.	Indicator	Boom Elevation/Slew Indicator	Various sources
12.	Indicator	Alternator warning light	Various sources
13.	Indicator	Right Turn Signal Indicator	Various sources
14.	Indicator	Rear Wheel Steered Indicator	Various sources
15.	Indicator	Drive line Distress Indicator	Various sources
16.	Indicator	Low Brake Pressure Indicator	Various sources
17.	Indicator	3rd Wrap Indicator	Various sources
18.	Indicator	Parking Brake Indicator	Various sources

Amalangshu Pal

TIL Limited
1, TARATOLLA ROAD
GARDEN REACH
KOLKATA-700 024

ANNEXURE - E

30/108

Tender No.: BCCL/PUR/420026/40T Crane/20-21/15
PART E:- EQUIPMENT SPECIFICATIONS Clause 8.

8. Information to be provided by the Supplier:

The Supplier shall furnish the following information which will be used for the assessment of bids and as guaranteed technical particulars in any subsequent contract. All technical information shall be in SI units.

TIL Response – Noted.

8.1. General

a. Number of similar model supplied during the last five years. The information shall be given in the following format and in the order of most recent first:

Company Name	Mine Name	Mine Location	Mine type	Number of Machines	Model	Commissioned date

TIL Response – Find attached Annexure A- (List of Similar models supplied) attached in Techical Doc -3

b. Details of nearest existing Depot, Warehouse and Service Facility available with manufacturer or their exclusively authorized dealer & after sales service provider for the present offer, in the format given below:

Major Depot Warehouse			Service Facility		
Location	Contact Numbers	Inventory value (Approx.)	Location	Type of facility available	Number of Engineers*

* Engineers/ Technicians employed to service the equipment either at the facility or on-site.

TIL Response – Find attached Annexure B - Details of Nearest Depot and Warehouse attached in Technical Doc-3

c. Details of special tools to be provided with the equipment.
TIL Response – Find attached Annexure C - Details of special tools attached in Technical Doc-3

d. Details of erection programmes for the bid.
TIL Response – Find attached Annexure D- Details of erection programme attached in Technical Doc-3

8.2. Technical Details

a) Technical characteristics and acceptance documents in accordance with ISO 7363.
TIL Response – Find attached Annexure E - Cranes And Lifting appliances – Technical characteristics and acceptance documents attached in Technical Doc-3

b) Lifting capacity range diagrams and tables.
TIL Response – Find attached Annexure F – Technical specification_ Refer Page no 3-4 documents attached in Technical Doc-3.

31/108

c) Detailed technical descriptions of the crane.

TIL Response – Find attached Annexure F- Technical specification documents attached in Technical Doc-3.

d) Layout drawings & detail technical descriptions of hydraulic systems & components.

TIL Response – Find attached Annexure G–Hydraulic system and components documents attached in Technical Doc-3.

e) Details of major bought-out assemblies & sub-assemblies including manufacturer, type, etc.

TIL Response – Find Annexure H- List of Major bought out assemblies/subassemblies attached in the Technical Doc-3.

f) Comprehensive commercial literature specifications.

TIL Response – Not Applicable.

g) Operation and maintenance manuals.

TIL Response – Will be supplied along with the machine.

8.3. Dimensions, Weights and Performance Details

8.3.1. Dimensions

a) Maximum overall length : 12789 mm
b) Maximum overall width : 2997 mm
c) Maximum overall height : 3630 mm
d) Tail radius : 4064 mm
e) Wheelbase : 3810 mm
f) Ground clearance : 450 mm

8.3.2. Weight Distribution

a) Front axle : 16015 kg
b) Rear axle : 14062 kg
c) Total : 30077 kg

8.3.3. Lifting capacity

a) At 3 m radius : 40T @ 3m radius with 10.6m boom , on outriggers , 360 deg. slew
b) At 4 m radius : 28.275T @ 4m radius with 10.6m boom , on outriggers , 360 deg. slew
c) 360^0 clear outreach:

at 0 m : 28.275T @ 4m radius with 10.6m boom

at 1 m : 23.9T @ 5m radius with 10.6m boom

at 1.5 m : 20.275T @ 6m radius with 10.6m boom

d) On wheels:

at 3 m radius :14.90T (360 deg)

at 4 m radius :11.25T (360 deg)

at 5 m radius: 8.67T (360 deg)

e) On wheel clear outreach:

at 0 m : 11.25T @ 4m radius with 10.6m boom , 360 deg. slew

at 1 m : 8.67T @ 5m radius with 10.6m boom , 360 deg. slew

at 1.5 m : 6.835T @ 6m radius with 10.6m boom , 360 deg. slew

f) Pick and carry capacity at 5 km/h:

at 3 m radius :17.35T (4 kph)

at 4 m radius :13.95T (4 kph)

at 5 m radius: 11.425T (4 kph)

g) Lift of rated load at minimum radius in meters :

Below ground level : 4m approx.

Above ground level : 10m approx.

8.3.4. Operating speeds

a) Hoist : 105 m/min. (Unladen)
b) Slewing RPM : 2.0 RPM (Unladen)
c) Derricking : 40 Sec. (approx.)
d) Travelling : 26 Km/hr. (Max. speed)

8.3.5. Engine

a) Manufacturer and model : Make – Cummins ; Model – B5.9 173 C31
b) Number of cylinders : 6
c) Bore :102 mm
d) Stroke : 120 mm
e) Displacement : 5883 cc
f) Net power at 2500 r/min : 155 HP
g) Maximum torque : 660 Nm at 1500 RPM

8.3.6. Transmission

a) Type : Engine mounted full powershift
b) Number of gear speeds : 6 forward & 3 reverse speeds
c) Travel speeds :
Front- Forward 26/ 19.6/ 13.6/ 8/ 5.27/ 3 km/hr.
Rear - Reverse 19.6/ 8/ 3 km/hr.

8.3.7. Final Drive

a) Type : 4x4 / 4x2 , drive and steer
b) Ratio : 24.6 (carrier 6.83 x wheel 3.6)

8.3.8. Steering

a) Type : Fully independent hydraulic power steering
b) Emergency steer method : Through manual operation of same orbitrol steering unit
c) Turning circle.
a) All Wheel Steer (m) – 6.39 m radius
b) Front Wheel steer (m)- 10.955 m radius

d) Clearance circle:
a) All Wheel steer (m) – 9.912 m

b) Front Wheel steer (m) – 13.45 m
c) Rear Wheel steer (m) – 13.45 m

8.3.9. Brakes

8.3.9.1. Service brakes

Front

a) Type : Foot operated hydraulic brake on all wheels

b) Actuating system : Hydraulic

Rear

a) Type : Foot operated hydraulic brake on all wheels

b) Actuating system : Hydraulic

8.3.9.2. Parking brake

a) Type : Spring applied hydraulically released brake

b) Actuating system : Mechanical

8.3.9.3. Emergency brakes

a) Type : Accumulator based hydraulic brake

b) Actuating system : Hydraulic

8.3.10. Derricking System

a) Derricking method : Through single double acting hydraulic cylinder

b) Max. to Min. radius in secs. : 40 sec (approx.)

c) Min. to max. radius in secs. : 40 sec (approx.)

8.3.11. a) Slew System : Ball bearing swing circle with 360 deg. continuous rotation with foot applied multi disc brake. Spring applied hydraulically released parking brake, mechanicalhouse lock operated from cab.

b) Slewing RPM : Maximum 2.0 RPM (Unladen)

8.3.12. Tyres

a) Make, Size and type : Reputed Indian manufacturer .18.00 X 25, Earthmover tubeless tyre

b) Tread : E3

c) Ply rating : 32 PR

d) Rim size : 13.00 x 25 inches

8.3.13. Hydraulic System

a) Number, Flow rates and operating pressures of Pumps: 1 no.- 2 section gear pump (P320) - flow rating- 1st sec.- 44.4 cc/rev.; 2nd sec. - 32.28 cc/rev.; Operating pressure - 207 bar 1 no.- 2 section gear pump (P350) - flow rating - 1st sec.- 62.76 cc/rev.; 2nd sec.- 52.27 cc/rev.; Operating pressure - 240 bar

b) Number, Piston diameters and Stroke lengths of cylinders: Tele cyl. 2 nos. bore X stroke- 140 X 7646 mm, Lift cyl. 1 no. bore X stroke- 250 X 2259 mm, O/R ram 4 nos. bore X stroke- 63 X 1937 mm, O/R jack 4 nos. bore X stroke- 110 X 534 mm, Lockout cyl. 2 nos. bore X stroke- 125 X 168 mm, Steering cyl. 4 nos. bore X stroke- 80 X 263 mm

c) Relief Valve Operating Pressures: Press. relief setting- Hoist + Tele + Lift + O/R - 240 bar ; Slew- 103 bar

8.3.14. Outriggers

a) Horizontal stroke : 1937 mm

b) Vertical stroke : 534 mm

8.3.15 Axles

a) Front Axle : Rigidly mounted to chassis frame
b) Rear Axle : Pivot mounted at center of the chassis frame

8.3.16. Boom

a) Basic length : 10.6m
b) Fully retracted length : 10.6m
c) Intermediate position length : 12.2, 15.2, 18.2, 21.3, 24.4, 27.4, 30.5 m
d) Fully extended length : 33.5m

8.3.17. Boom telescoping

a) Normal speed : 95 sec (approx.) - tele out
b) Fast speed : No fast speed

8.3.18 With Derrick down

a) Overall length : 12789 mm
b) Overall height : 3630 mm
c) Overall width : 2997 mm

8.3.19 a) Tail radius (m) : 4064 mm
b) Wheel base (m) : 3810 mm
c) Ground clearance (mm) : 450 mm (approx.,)
d) Angle of approach : 25 deg
e) Gradient (unladen and at max. rated load) : 45% unladen ; Not recommended to travel with load on gradient
f) Max. travel speed : 26 kmph

8.3.20. Electrical System

a) Starter make and Model - As per engine manufacturer
b) Starter control make and model - As per engine manufacturer
c) Alternator make and model - As per engine manufacturer
d) Batteries – number and rating - 2 nos. 12V each; 180 AH
e) Lighting details indicating location and rating - Head light, Tail and stop lights , flashing direction indicators

8.3.21. Turning Circle

a) 4 wheel steer (m) : 6390 mm radius
b) Front wheel steer (m) : 10955 mm radius

8.3.22. Rope

a) Make : Verope/Kisswire/Usha Martin
b) Dimension : 19 mm dia x 152 m long
c) Specification: Non-spin hoist rope ,galvanized , RHL

(35/108)

Annexure – E Pg (1/14)

IS 14471 : 1997
ISO 7363 : 1986

भारतीय मानक

क्रेन और उत्थापक उपकरण – तकनीकी लक्षण और स्वीकरण दस्तावेज

Indian Standard

CRANES AND LIFTING APPLIANCES — TECHNICAL CHARACTERISTICS AND ACCEPTANCE DOCUMENTS

ICS 53.020.01

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

May 1997

Price Group 6

Amalangshu Pal

TIL Limited
1, TARATOLLA ROAD
GARDEN REACH
KOLKATA-700 024

NATIONAL FOREWORD

This Indian Standard which is identical with ISO 7363 : 1986 'Cranes and lifting appliances — Technical characteristics and acceptance documents', issued by International Organization for Standardization (ISO), was adopted by Bureau of Indian Standards on the recommendations of the Cranes, Lifting Chains and Its Related Equipment Sectional Committee, and approval of the Heavy Mechanical Engineering Division Council.

The text of ISO standard has been approved for publication as Indian Standard without deviations. Certain terminology and conventions are, however, not identical to those used in Indian Standards. Accordingly wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.

In this adopted standard, reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards which are to be substituted in their place are listed below along with their degree of equivalence for the editions indicated:

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
ISO 4301-1 : 1986	IS 13834 (Part 1) : 1994 Cranes — Classification: Part 1 General	Identical
ISO 4301-2 : 1985	IS 13834 (Part 2) : 1993 Cranes — Classification: Part 2 Mobile cranes	Identical
ISO 4301-3 : 1993	IS 13834 (Part 3) : 1995 Cranes — Classification: Part 3 Tower cranes	Identical
ISO 4301-4 : 1989	IS 13834 (Part 4) : 1993 Cranes — Classification: Part 4 Jib cranes	Identical
ISO 4301-5 : 1991	IS 13834 (Part 5) : 1993 Cranes — Classification: Part 5 Overhead travelling and portal bridge cranes	Identical
ISO 4306-1 : 1990	IS 13473 (Part 1) : 1992 Cranes — Vocabulary: Part 1 General	Identical

In reporting the results of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'.

Amalendu Pal

L.T. Limited 1, TARATOLLA ROAD GARDEN REACH KOLKATA-700 024

37/108

Pg(3/14)

IS 14471 : 1997
ISO 7363 : 1986

Indian Standard

CRANES AND LIFTING APPLIANCES — TECHNICAL CHARACTERISTICS AND ACCEPTANCE DOCUMENTS

1 Scope

This International Standard establishes the form of presentation and content of the documents which a manufacturer should provide with cranes and lifting appliances (hereafter called "equipment"). Such documents give technical information and include acceptance documents for the equipment to facilitate its installation, testing and use. Specimen acceptance documents are given in the annex.

2 Field of application

This International Standard applies to all types of equipment defined in ISO 4306/1. For specific appliances, only data relating to these appliances (listed in ISO 4306/1) shall be included.

If necessary, the documents may be supplemented (or amended) with information to define specific features of a particular appliance.

3 References

ISO 4301, *Lifting appliances — Classification.*

ISO 4306/1, *Lifting appliances — Vocabulary — Part 1: General.*

4 Document content

4.1 The documents shall contain the basic specifications and nominal ratings of the equipment as supplied by the manufacturer, and shall list the principal parameters and operating conditions appropriate to the intended use of the equipment.

4.2 In compliance with clause 1, the documents shall contain general data, technical characteristics of the equipment and its assembly units, and acceptance documents.

4.3 Clause A.1, general data, shall contain information on both the vendor and the manufacturer of the equipment, basic data of the equipment, characteristics of the environment and job site, and other general information.

4.4 Clause A.2 on technical characteristics shall detail the equipment and its component parts in terms of overall dimensions, working configurations, mass of units and other relevant parameters.

4.5 The acceptance documents shall record technical data on the actual condition of the equipment and its component parts, and be witnessed and confirmed during the final tests by a competent person, prior to acceptance.

5 Presentation and format of documents

5.1 The documents shall be compiled in the national language (or languages in multilingual countries) of the country in which the equipment is to be used, unless otherwise decided by mutual agreement between the parties to the contract.

5.2 Should the contract provide for the documents to be presented in the language of the country of origin, then a second copy of the documents shall be supplied with all the sketches and dimensions inserted, but with the text omitted. This will facilitate a translation into the language(s) of the countries where the equipment is to be used.

5.3 The format of acceptance documents, which may vary from country to country, shall be in accordance with the national regulations or practice of the country of manufacture. Specimen acceptance documents are shown in clause A.5 of the annex.

5.4 The documents shall be compiled using A4 pages (of 210 mm × 297 mm) (for printed editions — 218 mm × 290 mm).

5.5 Where larger pages are required for technical data, then sizes 315 mm × 297 mm, 420 mm × 297 mm, etc. are preferred (for printed editions — 327 mm × 290 mm, 436 mm × 290 mm, etc.).

5.6 The layout of the tables may be altered if the data required by this International Standard are provided.

IS 14471 : 1997
ISO 7363 : 1986

Annex

Specimen acceptance documents

(This annex forms an integral part of the Standard.)

ISO description of equipment : ROUGH TERRAIN HYDRAULIC CRANE WITH PICK & CARRY OPERATION

Identification, equipment reference : MODEL RT740B, ROUGH TERRAIN CRANE OF 40T CAPACITY MADE BY TIL LIMITED

Technical characteristics and acceptance documents

FOR TIL LIMITED

[Space for manufacturer's and/or vendor's trade-name (trade-mark)]

Country : INDIA

Amalangshu Pal

TIL Limited
1, BRATOLLA ROAD GARDEN REACH KOLKATA-700024

39/108

Warning

1 These documents shall be available to the persons who own, operate, inspect, and maintain the equipment.

2 Before use, the owner/user shall have the equipment examined and tested (as appropriate) by a competent person. The results shall be recorded in clause A.5, Acceptance documents.

3 Other data which should be noted by the equipment owner/user/competent person :

3.1 : .....

3.2 : .....

3.3 : .....

Contents of annex

Amalangshu Pal

Pg(6/m) 40/108

Name of document based on which the equipment has been manufactured : RT740B MACHINE IS DESIGNED AS PER IS 4573-1982

Number of document, date of issue and body issuing the document : .....

A.1 General data

A.1.1 Name and address of manufacturer, including information on major sub-contractors : TIL LIMITED, 5TH BT ROAD, KANARHATTY, KOLKATA 7000

A.1.2 Name and address of vendors (distributor or agent), including maintenance and spares facilities : Vendors details will be provided as and when required.

A.1.3 Equipment data

A.1.3.1 Illustration (photograph or sketch) of equipment in working position. PLEASE REFER ANNEXURE F Pg(1/12).

A.1.3.2 Equipment type (in accordance with ISO 4306/1) : TYRE MOUNTED ROUGH TERRAIN CRANE

A.1.3.3 Serial No. : SHALL BE PROVIDED AT THE TIME OF SUPPLY

A.1.3.4 Year of manufacture (ex-works) : 2020-2021

A.1.3.5 Group classification (in accordance with ISO 4301) : Class-2

A.1.3.6 Power source : DIESEL HYDRAULIC

A.1.3.7 Function of equipment : LOAD HANDLING

A.1.4 Environment where equipment can operate (temperature, permissible wind speed for both in-service and out-of-service conditions of equipment, and other features of the environment such as explosive, flammable or saline environments) : As per IS 4573

A.1.5 Requirements on job site for mobile cranes (slope, permissible ground pressure, etc.) : As per Crane design Capacity

A.1.6 Requirements on tracks (parallelism, horizontality, alignment, maximum permissible difference in level across tracks) : N/A

A.1.7 Basic engineering codes of practice, regulations, technical supervision instructions, standards, etc. followed when manufacturing the equipment (designations and titles) : IS 4573

Amalangshu Pal

TIL Limited 1, TARATOLLA ROAD GARDEN REACH KOLKATA-700 024

41/108

Pg (7/14)

A.2 Specifications and technical characteristics of equipment

A.2.1 Basic characteristics of equipment (for mobile cranes, with main working attachments)

A.2.1.1 Maximum load lifting capacity of main/auxiliary lift, t (e.g. 100/25 t) : 40T @ 3m radius

A.2.1.2 Maximum load moment of main/auxiliary lift, t·m : 121.65

A.2.1.3 Appropriate radius, m : 30m. (max. working radius)

A.2.1.4 Minimum turning radius (for mobile cranes) m : 6.39m (with 4 wheel steer)

A.2.1.5 Appropriate maximum lifting height[1], m : 35.9m (Tip height)

A.2.1.6 Maximum depth of lowering[1], m : 4m below ground level

A.2.1.7 Span, cantilever outreach, m : 26.m clear outreach.

A.2.2 Drive and control

A.2.2.1 Type of drive : Diesel drive

A.2.2.2 Type of control : Electro-Hydraulic

A.2.2.3 Feasibility of carrying out combined operations : Yes

A.2.2.4 Location of control stations : Inside Operator's Cab

A.2.2.5 Power supply : see table 1.

Table 1 — Power supply

Circuitry	Current A (a.c. or d.c.)	Voltage V	Number of phases
Power	—	—	—
Control	D.C	24	—
Working lighting	D.C	24	—
Repairs lighting	—	—	—

A.2.3 Height and load ratings

Tables and/or charts of height and load ratings (see A.2.3.1 and A.2.3.2) shall be drawn up for all those combinations of working applications and equipment configurations for which operation of the crane is envisaged.

Tables and/or charts shall be supplemented with necessary symbols and other indications for both calculating the load ratings and interpreting the tables and/or charts. Combination of tables and/or charts specified in A.2.3.1 and A.2.3.2 is allowed.

A.2.3.1 Lifting height ratings (tables and/or charts).

A.2.3.2 Load ratings (tables and/or charts).

} Please refer Annexure - F Pg (3/14) & Pg (4/14)

1) Relative to a datum of ground level.

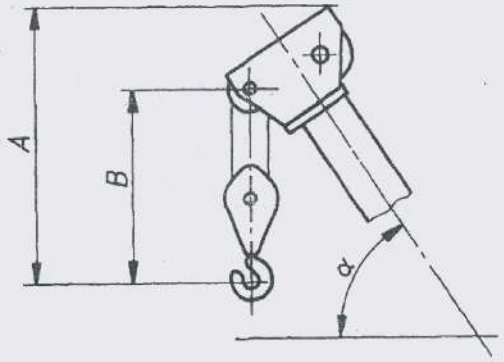
Amalongshen Pal

Pg(8/14)

42/10

A.2.3.3 Maximum lifting capacity under travel, t : 17·35t

A.2.3.4 Characteristics of hook blocks : see the figure and table 2.



Figure

Table 2 — Hook block characteristics

Characteristic	Number of pulleys					
	1	2	3	4	5	6
Maximum lifting capacity, t				40t		
Mass, kg				500 kg		
Maximum boom angle, α, ° (degrees)				78°		
Dimension *A*, mm				2·239m		
Dimension *B*, mm				2·129m		

A.2.4 Speeds (for mechanisms having a number of speeds, all speed values or speed ranges shall be given in A.2.4.1 to A.2.4.6).

A.2.4.1 Speed of load lifting/lowering, m/s : see table 3.

Conditions leading to higher speeds shall be stated underneath the table, for example : "When operating without load" or "With load not exceeding 50 % of that specified in A.2.3.2", etc.

Table 3 — Load lifting and lowering speeds

Rope fall of reeving system	Main lift			Auxiliary lift		
	Rated	Fast	Precision lowering	Rated	Fast	Precision lowering
	105m/min	—	—			

A.2.4.1.1 Derricking time (for main boom), s : 40 Sec. approx.

A.2.4.2 Angular speed (to be specified for all configurations of working equipment, for example, main boom, booms with extensions, tower-jib equipment, etc.), rad/s (rpm) : 2rpm

A.2.4.3 Boom section extension/retraction speed, m/s : 95 Sec. approx.

Amalangshu Pal

TIL Limited 1, YARATOLLA ROAD CALCUTTA KOLKATA 700 017

43/108

Pg(9/14)

A.2.4.4 Trolley traverse speed, m/s : N/A

A.2.4.5 Travel speeds of equipment, working and travelling (all speeds of equipment for both forward and reverse directions or their ranges shall be specified), km/h or m/s : 26 kmph

A.2.5 **Gradeability** (values for all configurations of crane transfer shall be specified), rad. (°) : 45%

A.2.6 **Slewing platform rotation angle** (to be specified only for equipment having limited slew; relative positions of revolving superstructure and base mounting of the equipment shall be specified), rad. (°) : 360°

A.2.7 **Basic dimensions of equipment** (sketches of the equipment and tables containing equipment basic dimensions) — Please s Annexure-F Pg(11/14) for the same

A.2.8 **Mass of equipment** and major component parts, t : 30.077 T (Approx.)

A.2.9 **Loads of wheel and outrigger** on ground, kN : Depends on load configuration.

A.2.10 **Mean ground pressure** (for crawler cranes), Pa : N/A

A.2.11 **Mass distribution**, t (if requested by the purchaser) : Depends on Load configuration.

A.2.12 **Additional information** (as required, e.g. minimum radius in curves for mobile cranes, m) : 6.39 m turning radius.

A.3 Specifications and technical characteristics of assembly units

A.3.1 **Driving engines** (power plant engines) (basic ratings such as horsepower, rpm, torque, specific fuel consumption, etc. shall be specified). — Power 173HP @ 2500 rpm, Torque 660 Nm @ 1500 rpm.

A.3.2 **Electric and/or hydraulic machinery** for mechanism drives (basic ratings such as power, rpm, torque, load rating, etc. plus total power of electric motors shall be specified). — Hydraulic Pump & motor.

A.3.3 **Schematic diagrams of drive and control systems** (schematic diagrams with characteristics of equipment shall be given).

A.3.3.1 Electric circuit diagram.
A.3.3.2 Hydraulic circuit diagram.
A.3.3.3 Pneumatic circuit diagram. — N/A

Please refer Annexure - G Submitted along with our offer.

A.3.3.4 Diagram of gears (parameters of gearings and reduction gear ratios shall be specified on the diagram). — Proprietory designs

A.3.3.5 Group classification for mechanisms (listed below) :

- main lift
- auxiliary lift
- boom elevation
- crane slewing
- trolley traverse
- crane travel, etc.

To be filled in according to ISO 4301. Shall be as per IS 4573-1982 whichever is applicable.

Amalangshu Pal

L. TARATOLA ROAD GARDEN REACH KOLKATA-700 024

Alpa

A.3.3.6 Characteristics of brakes : see table 4.

Table 4 — Characteristics of brakes

Mechanism controlled by brake	Wheel brake
Brake location	Wheel Hub
Type (system)	Full Hydraulic brake
Brake pulley (disc) diameter, mm	As per mfg. Standard
Number of brakes	4
Braking safety margin (only for hoist brakes)	As per mfg. Standard

A.3.4 Reeving diagrams (dimensions of drums, sheaves and methods of anchoring ropes and chains shall be specified on the diagrams).

A.3.5 Characteristics of ropes (to be filled in according to a declaration of conformity issued by rope manufacturer) : see table 5.

Table 5 — Characteristics of ropes

Rope function	Hoisting / lowering
Rope class (designation of ISO or national standard)	As per IS 2266
Rated diameter, mm	19 mm
Length, m	152 m
Tensile grade of rope, MPa	1960
Actual breaking load, N (kg)	284.4 kN
Design rope pull, N	5580 kN
Rope working load limit, kg	less than 5500 kg
Surface finish of wire (bright, galvanized, etc.)	Ungalvanized.

A.3.6 Load handling devices (to be filled in according to a declaration of conformity issued by load handling device manufacturer).

A.3.6.1 Hooks : see table 6.

Table 6 — Characteristics of hooks

Function	
Type	'C' Hook type
Number and designation according to Standard	DIN 15400
Rated lifting capacity with regard to hoist group classification (safe lifting capacity), t	40t
Manufacturer (supplier)	Robeblock or equivalent
Serial No.	As per Test certificate
Inspection department stamp (identification marking)	Inspection agency stamp will be there in the Test certificate.

Amalangshu Pal

AMP

ITI Limited
1, Mayfield Road
Garden Reach
Kolkata 700 024

45/108

Pg (11/14)

A.3.6.2 Clamshells

- mass of clamshell, t : .....
- mass of material grabbed, t : .....
- manufacturer (supplier) : .....
- serial No. : ..... N/A
- inspection department stamp (identification marking) : .....
- type of material to be handled with clamshell : .....
- maximum bulk mass density, t/m³ : .....

A.3.6.3 Lifting magnet (electromagnet) :

- type : .....
- power supply (a.c. or d.c., voltage, wattage) : .....
- power source (type, power, wattage) : .....
- mass of magnet, t : .....
- maximum temperature of load to be lifted, °C (K) : ..... N/A
- manufacturer (supplier) : .....
- serial No. : .....
- inspection department stamp (identification marking) : .....
- lifting force with regard to magnetic gap and thickness (when handling chips, pig iron ingots, pig iron slabs), kN : .....

A.3.6.4 Forks (for stacking cranes) :

- type : .....
- mass of forks, t : .....
- length/width of forks, mm : ..... N/A
- manufacturer (supplier) : .....
- serial No. : .....
- inspection department stamp (identification marking) : .....

A.3.6.5 Other load-handling devices (basic characteristics shall be given). —— N/A

Amalangshu Pal

46/10

Pg (12/14)

A.3.7 Safety devices and instrumentation

A.3.7.1 Limiters — Not Applicable

A.3.7.1.1 Limit switches (list and main specifications). — Provided

A.3.7.1.2 Load lifting capacity limiter (list and main specifications). — LMI System Provided

A.3.7.1.3 Stops and bumpers (list and main specifications). — N/A

A.3.7.2 Alarms (list and main specifications). — Provided

A.3.7.3 Indicators (list and main specifications). — Provided

A.3.7.4 Signal and interphone devices (list and main specifications). — N/A

A.3.7.5 Other devices (list and main specifications). — N/A

A.3.8 Cabs (main specifications and equipment). — Please refer annexure-F, Pg (7/12) for Operator's Cab submitted along with offer.

A.3.9 Data on materials of major (design) members and units of equipment steel structures. — High Strength alloy steel plates & Section

(Brief information shall be given as agreed upon with purchaser. For more detailed information see special documentation.)

A.4 Set of delivery documents

A.4.1 Scope of equipment delivery — Shall be as per Customer Order.

A.4.2 Set of documentation to be delivered by manufacturer along with technical characteristics and acceptance documents, which shall contain at least :

- technical description;
- service manual;
- maintenance manual;

} SHALL BE FURNISHED ALONG WITH CRANE AT THE TIME OF DELIVERY / SUPPLY

- instructions on running repairs;
- instructions on erection;

} SHALL BE FURNISHED ALONG WITH CRANE AT THE TIME OF DELIVERY / SUPPLY AS APPLICABLE.

- list of spare parts and accessories. Please refer list of Spare parts & assemblies submitted along with offer.

(This set of delivery documents may comprise other documents if required or stipulated by the contract.)

Amalangshu Paul

EIL Limited 1, TARATOLLA ROAD GARDEN REACH KOLKATA-700 024

47/108

A.5 Acceptance documents

A.5.1 Equipment acceptance document

Description and index of equipment : SHALL BE MENTIONED

Serial No. : SHALL BE MENTIONED

has been manufactured in compliance with (basic international and/or national standards and/or similar documents) : MANUFACTURED AS PER IS 4573

The equipment has passed the tests[1] (spacing and types of tests) : TESTS CARRIED OUT AS PER IS 4573

The equipment is declared suitable within the parameters specified in the documents.

The equipment has undergone preservation and packaging in accordance with the requirements specified in the technical description and service manual.

Term of preservation : STANDARD PACKAGING SHALL BE DONE

Place of acceptance :

Date :

[Space for seal and signatures of authorized persons in accordance with national practice]

A.5.2 Acceptance document for erection of equipment

The acceptance document concerning the satisfactory erection of equipment shall be compiled for each particular item of equipment. The document shall be signed by specially authorized persons. Date, position of the authorized person, and place of erection shall be stated. – Erection is done at our works. It is as per erection schedule.

A.5.3 Acceptance document for engineering inspection

The acceptance document concerning a comprehensive engineering inspection shall be filled in by representatives of supervisory bodies in the course of operation according to the format in table 7.

Table 7 – Engineering inspection

Date	Results of inspection	Date of next inspection	Position, name and signature of supervisory body representative

The format shall be repeated on several pages, their number being defined by the manufacturer upon agreement with the purchaser.

A.6 Additional information

That information shall be given which is necessary for the activities of the inspection body representatives of the country where the equipment is intended to be used. Information shall also be given on registration of the equipment with supervisory authorities in the form adopted in the country where the equipment is intended to be used.

1) To be filled in where the manufacturer completely assembled the equipment prior to delivery.

Amalangshu Pal

48/108

Pg(14/14)

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act*, 1986 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Handbook' and 'Standards : Monthly Additions'.

This Indian Standard has been developed from Doc : No. HMD 14 (0410).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones : 323 01 31, 323 94 02, 323 33 75

Telegrams: Manaksanstha
(Common to all offices)

Regional Offices: Telephone

Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002 — 323 76 17, 323 38 41

Eastern : 1/14 C. I. T. Scheme VII M, V. I. P. Road, Maniktola, CALCUTTA 700054 — 337 84 99, 337 85 61, 337 86 26, 337 86 62

Northern : SCO 335-336, Sector 34-A, CHANDIGARH 160022 — 60 38 43, 60 20 25

Southern : C. I. T. Campus, IV Cross Road, CHENNAI 600113 — 235 02 16, 235 04 42, 235 15 19, 235 23 15

Western : Manakalaya, E9 MIDC, Marol, Andheri (East), MUMBAI 400093 — 832 92 95, 832 78 58, 832 78 91, 832 78 92

Branches : AHMADABAD. BANGALORE. BHOPAL. BHUBANESHWAR. COIMBATORE. FARIDABAD. GHAZIABAD. GUWAHATI. HYDERABAD. JAIPUR. KANPUR. LUCKNOW. NAGPUR. PATNA. PUNE. THIRUVANANTHAPURAM.

Amalangshu Paul

T.T. Limited 1, TARATOLLA ROAD GARDEN REACH KOLKATA-700 024

Printed at New India Printing Press, Khurja, India

B9/108

Annexure-F Pg(1/12)

GROVE® by Manitowoc

TIL Tractors India

RT 740B

Product Guide

Features

MAX. CAPACITY (Outriggers) - 40.0 Tonnes at 3m Radius (85% Rating) 360° Slew

MAX. CAPACITY (On Tyres) - 17.35 Tonnes at 3m Radius (85% Rating) Over Front

BOOM - 4 SECTION Trapezoidal 10.6m - 33.5m

MAX. ROAD SPEED - 26 km/hr

CARRIER - 4 X 4 Wheel Drive with 4 Wheel Steer

Amalangshu Pal

Pg (2/12) 50/10

Superstructure Specifications

BOOM
10.6m - 33.5m four section, telescopic, full power, sequence synchronized, trapezoidal boom with single lever control. Telescoping boom sections slide on adjustable & replaceable low friction wear pads.

BOOM NOSE
Four nylatron sheaves mounted on heavy duty tapered roller bearings with removable pin-type rope guards.
Maximum Tip Height: 35.9m

BOOM ELEVATION
One double acting hydraulic cylinder with integral holding valve.

BOOM ANGLE
Maximum: 78°, Minimum: -3°.

SUPERSTRUCTURE FRAME
Fabricated from high tensile steel plates and sections.

SLEW SYSTEM
Ball bearing swing circle with 360° continuous rotation. Planetary "Glide-Swing" with foot applied multi-disc brake. Spring applied hydraulically released parking brake, mechanical house lock operated from cab. Free slew facility provided.

SLEW SPEED
Maximum 2.0 RPM (Unladen).

HOIST SYSTEM
Power up and down equal speed, grooved drum, planetary reduction with automatic spring applied multi-disc brake. Hoist drum fitted with third wrap indicator.

Non Spin Hoist Rope: 19mm dia. & length 152m.

Line Speed: Top layer 105m/min (Max) Unladen.

Maximum Permissible Line Pull: 5500Kg.

HOOK BLOCK
40.0 Tonnes; 4 Sheaves - 8 falls.

COUNTERWEIGHT
Bolted with superstructure - 3708kg

OPERATOR'S CAB
Totally enclosed steel construction, full vision type cab with all crane functions control levers, driving controls, engine instrumentation & automotive type steering wheel. All windows fitted with toughened safety glass, lockable sliding door, cab interior light, circulating air fan, pantograph type electric wiper & electric horn.

LMI & A2B SYSTEM
Load Moment Indicator and Anti-Two Block system with audio-visual warning and control lever lock-out provides electronic display of boom angle, boom length, radius, relative load moment, maximum permissible load, load indication and warning of impending two-block condition.

HYDRAULIC SYSTEM

Pumps
Two Section Gear pump driven through engine PTO.
Two Section Gear pump driven through transmission PTO.

Valves
Precision 4 way double acting pilot operated control valves. 3 Individual valve banks permit simultaneous control of multiple crane functions.

Filters
Return line filter with replaceable cartridge having full flow with by-pass protection and service indicator.

Reservoir
378 liters with spin-on breather filter, external sight gauge, oil temperature gauge, clean out access, strap mounted to frame.

Pressure Check Panel
System pressure test panel with quick release type fittings for each circuit.

OPTIONAL EQUIPMENT

Fixed Swingaway Extension
9.8m lattice Swingaway boom extension with integral offset mechanism, off settable at 0°, 15° or 30°. Stows alongside base boom section when not in use.

Maximum tip height: 45.4m

Telescopic Swingaway Extension
9.8m to 13.4m or 17.1m telescopic lattice swingaway extension with integral offset mechanism, off settable at 0°, 15° or 30°. Stows alongside base boom section when not in use.

Maximum tip height: 52.7m

Auxiliary Hoist

AC Cabin

Protective Super Cab

RT 740B

TIL Limited
1, TARATOLLA ROAD GARDEN REACH
KOLKATA-700 024

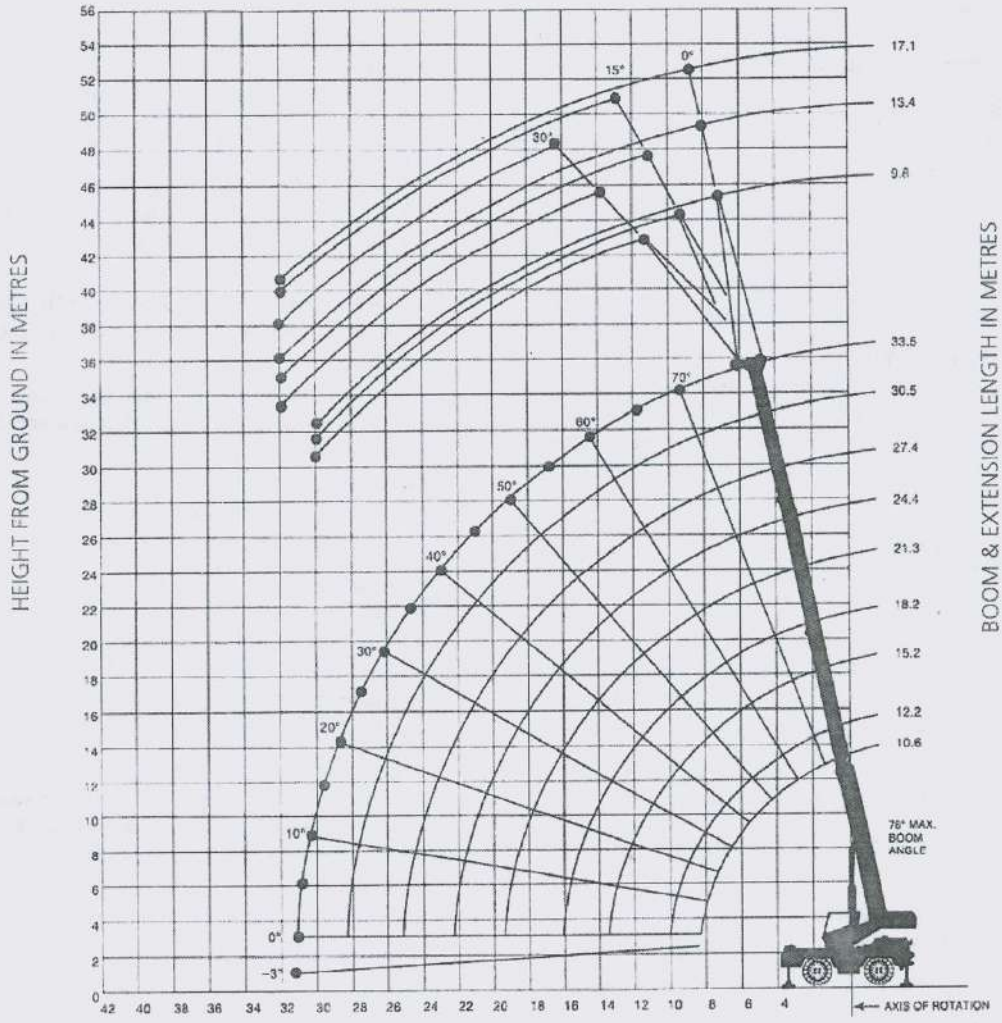
Amalangshu Pal

51/108

Pg (3/12)

Height of Lift : 10.6m - 33.5 Full Power Boom

WORKING RANGE DIAGRAM
(BOOM DEFLECTION NOT SHOWN)



NOTE
The above heights of lift and boom angles are based on a straight (unladen) boom and allowance should be made for boom deflections obtained under laden conditions.

TIL Limited
1, TARATOLLA ROAD GARDEN REACH
KOLKATA-700 024

Hookblock Capacities - Tonnes

No. of fall	8	7	6	5	4	3	2	1
Permissible Load	40.0	34.0	28.0	23.0	18.0	14.0	10.0	5.0

Amalangshu Pal

52/108
Pg (4/12)

Metric 85% Lifting Capacities (Kilograms) on Outriggers Fully Extended - 4 Section Boom

Main Boom - On Outriggers Fully Extended - 360°

Radius in Meters (m)	Main Boom Length in Meters								
	10.6	12.2	15.2	*18.2	21.3	24.4	27.4	30.5	33.5
3	40,000 (66)	30,825 (69.5)	26,350 (74)						
3.5	31,875 (63)	29,050 (67)	24,850 (72)	20,250 (76.6)					
4	28,275 (60)	27,025 (64.5)	23,975 (70)	19,750 (73.5)					
4.5	25,900 (56.5)	25,000 (61.5)	22,075 (68)	18,975 (72)	16,125 (75)	14,950 (77)			
5	23,900 (53)	23,125 (58.5)	20,325 (66)	17,900 (70.5)	15,500 (73.5)	14,300 (76)			
6	20,275 (45)	20,000 (52.5)	18,050 (61.5)	15,425 (67)	13,975 (70.5)	12,825 (73.5)	11,550 (75.5)	10,025 (77.5)	
7	17,050 (36)	16,650 (46)	16,000 (57)	13,500 (63.5)	12,375 (67.5)	11,500 (71)	10,550 (73.5)	9630 (75.5)	8390 (77.5)
8	14,100 (23)	14,100 (38.5)	13,800 (52)	12,025 (59.5)	10,900 (64.5)	10,375 (68.5)	9,635 (71.5)	8,960 (73.5)	8,065 (75.5)
9		12,250 (29)	11,800 (47)	10,725 (56)	9,700 (61.5)	9,390 (66)	8,865 (69)	8,085 (71.5)	7,250 (73.5)
10			10,175 (41)	9,680 (51.5)	8,710 (58.5)	8,455 (63)	8,010 (66.5)	7,285 (69.5)	6,570 (72)
12			7,480 (26)	7,465 (42.5)	7,160 (51.5)	6,950 (57.5)	6,510 (62)	6,040 (65.5)	5,530 (68)
14				5,315 (31.5)	5,670 (44)	5,720 (51.5)	5,445 (57)	5,060 (61)	4,705 (64.5)
16					4,210 (35)	4,410 (46)	4,535 (51.5)	4,255 (56.5)	4,050 (60.5)
18					3,145 (22.5)	3,370 (37.5)	3,705 (46)	3,635 (51.5)	3,435 (56)
20						2,580 (28)	2,800 (39)	3,020 (46.5)	2,945 (51.5)
22							2,095 (31.5)	2,320 (40.5)	2,505 (47)
24							1,530 (21)	1,750 (34)	1,965 (42)
26								1,285 (25.5)	1,515 (36)
28								890 (12)	1,140 (29)
30									825 (19.5)
Minimum boom angle (deg.) for indicated length (no load)									0
Maximum boom length (m) at 0 deg. boom angle (no load)									33.5

Note ( ) Boom angles are in degrees.
*18.2 m boom length is with inner-mid extended and outer-mid & fly retracted.

TIL Limited
1, TARATOLLA ROAD GARDEN REACH
KOLKATA-700 024

Weight Reductions for Load Handling Devices. (Approx.)

9.8m Boom Extension	
*Stowed	304 kg
*Erected	1887 kg

9.8m - 17.1m Boom Extension	
*Stowed	384 kg
*Erected	2,889 kg
*Erected Extended	3,759 kg

*Reduction of main boom capacities

Hookblocks and Headache Balls	
40MT, 4 Sheave	500 kg
Auxiliary Boom Head	65 Kg
10MT Headache Ball	254 Kg

Note: MT refers to metric tonne

RT 740B

Amalangshu Pal

53/108

Pg (5/12)

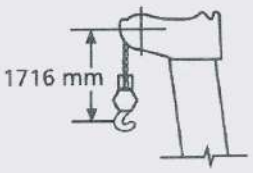
Metric 85% Lifting Capacities (Kilograms) on Outriggers Fully Extended - 4 Section Boom

9.8m Swingaway - 360°

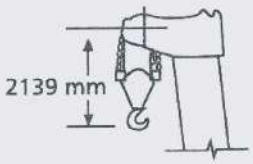
Radius in Meters (m)	0° Offset		15° Offset		30° Offset	
	Boom Angle (Deg.)	Cap Kg.	Boom Angle (Deg.)	Cap Kg.	Boom Angle (Deg.)	Cap Kg.
9	78.0	*4,030				
10	76.5	3,930	78.0	*3,350		
12	74.0	3,650	76.0	3,190	78.0	*2,805
14	71.0	3,350	73.0	2,950	75.5	2,610
16	68.0	3,045	70.5	2,715	72.5	2,335
18	65.0	2,720	67.5	2,500	69.5	2,185
20	62.0	2,345	64.0	2,300	66.5	2,090
22	58.5	2,000	61.0	2,000	63.5	2,000
24	55.5	1,715	58.0	1,715	60.0	1,715
26	52.0	1,325	54.5	1,325	56.5	1,325
28	48.0	985	50.5	985	53.0	985
30	44.5	690	47.0	690	49.0	690

* This capacity is based upon the maximum boom angle.

HEADACHE BALL



MULTIFALL HOOKBLOCK



Dimensions are for largest furnished hook block and headache ball with anti-two block activated.

9.8 m - 17.1 m Tele. Swingaway - 360°

Radius in Meters (m)	9.8m Length						13.4m Length						17.1m Length					
	0° Offset		15° Offset		30° Offset		0° Offset		15° Offset		30° Offset		0° Offset		15° Offset		30° Offset	
	Boom Angle (Deg.)	Cap Kg.	Boom Angle (Deg.)	Cap Kg.	Boom Angle (Deg.)	Cap Kg.	Boom Angle (Deg.)	Cap Kg.	Boom Angle (Deg.)	Cap Kg.	Boom Angle (Deg.)	Cap Kg.	Boom Angle (Deg.)	Cap Kg.	Boom Angle (Deg.)	Cap Kg.	Boom Angle (Deg.)	Cap Kg.
9	78.0	*3,855	9				78.0	*2,310										
10	76.5	3,755	78.0	*3,175			77.5	2,305										
12	74.0	3,475	76.0	3,015	78.0	*2,630	75.0	2,270	78.0	*1,950			76.5	1,810				
14	71.0	3,175	73.0	2,775	75.5	2,435	72.5	2,210	76.0	1,935	78.0	*1,495	74.5	1,770	78.0	*1,500		
16	68.0	2,870	70.5	2,540	72.5	2,160	70.0	2,110	73.5	1,820	76.0	1,470	72.5	1,725	76.0	1,450		
18	65.0	2,545	67.5	2,325	69.5	2,010	67.0	1,970	71.0	1,715	73.5	1,415	69.5	1,685	73.5	1,335	78.0	*1,040
20	62.0	2,170	64.0	2,125	66.5	1,915	64.5	1,805	68.0	1,610	70.5	1,355	67.5	1,635	71.5	1,240	75.0	990
22	58.5	1,825	61.0	1,825	63.5	1,825	61.5	1,620	65.5	1,500	68.0	1,295	65.0	1,555	69.0	1,160	72.5	935
24	55.5	1,540	58.0	1,540	60.0	1,540	58.5	1,435	62.5	1,380	65.0	1,235	62.5	1,405	66.5	1,095	70.0	890
26	52.0	1,150	54.5	1,150	56.5	1,150	55.5	1,260	59.5	1,260	62.0	1,175	60.0	1,125	63.5	1,040	67.0	850
28	48.0	810	50.5	810	53.0	810	52.5	1,045	56.5	1,045	58.5	1,045	57.0	850	61.0	850	64.5	810
30	44.5	515	47.0	515	49.0	515	49.0	755	53.5	755	55.5	755	54.5	615	58.0	615	61.5	615
37							46.0	500	50.0	500	51.5	500	51.5	385	55.0	385	58.5	385

* This capacity is based upon the maximum boom angle

Amalangshu Pal

TIL Limited
1, TARATOLLA ROAD
GARDEN REACH
KOLKATA-700 024

54/108
Pg (6/12)

Lifting Capacities on Rubber - 4 Section Boom

On Rubber 18.00 x 25-32 PR (Stationary Capacities - 360°)

Radius in Meters (m)	Tyre Inflation Pr. 8.1 kg/cm²							
	Main Boom Length in Meters							
	10.6	12.2	15.2	*18.2	21.3	24.4	27.4	30.5
3	14,900 (66)	14,100 (69.5)	10,050 (74)					
3.5	13,000 (63)	12,400 (67)	8,955 (72)	8,300 (75.5)				
4	11,250 (60)	10,950 (64.5)	8,010 (70)	7,800 (73.5)				
4.5	9,845 (56.5)	9,810 (61.5)	7,340 (68)	7,120 (72)				
5	8,670 (53)	8,670 (58.5)	6,795 (66)	6,555 (70.5)				
6	6,835 (45)	6,765 (52.5)	5,900 (61.6)	5,735 (67)	4,750 (70.5)	2,800 (73.5)		
7	5,235 (36)	5,045 (46)	4,840 (57)	4,525 (63.5)	3,990 (67.5)	2,800 (71)		
8	4,020 (23)	3,810 (38.5)	3,605 (52)	3,370 (59.5)	3,300 (64.5)	2,800 (68.5)	2,050 (71.5)	920 (73.5)
9		2,895 (29)	2,680 (47)	2,430 (56)	2,635 (61.5)	2,435 (66)	2,050 (69)	920 (71.5)
10		2,190 (11.5)	1,965 (41)	1,730 (51.5)	2,180 (58.5)	2,055 (63)	2,040 (66.5)	920 (69.5)
12			930 (26)	730 (42.5)	1,005 (51.5)	1,005 (57.5)	820 (62)	820 (65.5)

Note ( ) Boom angles are in degrees.
*18.2 m boom length is with inner-mid extended and outer-mid & fly retracted.

Amalangshu Pal

TIL Limited
1, TARATOLLA ROAD
GARDEN REACH
KOLKATA-700 024

RT 740B

55/108

Pg (7/12)

Lifting Capacities on Rubber - 4 Section Boom

On Rubber 18.00 x 25-32 PR (Stationary - Defined Arc Over Front)

Radius in Meters (m)	Tyre Inflation Pr. 8.1 kg/cm²							
	Main Boom Length in Meters							
	10.6	12.2	15.2	*18.2	21.3	24.4	27.4	30.5
3	16,925 (66)	14,100 (69.5)	10,050 (74)					
3.5	15,325 (63)	12,400 (67)	9,295 (72)	8,300 (75.5)				
4	13,850 (60)	11,125 (64.5)	8,695 (70)	8,005 (73.5)				
4.5	12,625 (56.5)	10,500 (61.5)	8,340 (68)	7,720 (72)				
5	11,600 (53)	10,075 (58.5)	8,090 (66)	7,215 (70.5)				
6	9,920 (45)	9,465 (52.5)	7,720 (61.6)	6,205 (67)	5,215 (70.5)	4,710 (73.5)		
7	8,630 (36)	8,360 (46)	6,735 (57)	5,460 (63.5)	4,835 (67.5)	4,360 (71)		
8	7,605 (23)	7,405 (38.5)	5,875 (52)	4,955 (59.5)	4,535 (64.5)	4,105 (68.5)	3,555 (71.5)	2,865 (73.5)
9		6,305 (29)	5,250 (47)	4,585 (56)	4,250 (61.5)	3,885 (66)	3,355 (69)	2,695 (71.5)
10		5,030 (11.5)	4,670 (41)	4,305 (51.5)	4,050 (58.5)	3,675 (63)	3,195 (66.5)	2,590 (69.5)
12			3,170 (26)	3,045 (42.5)	3,210 (51.5)	3,210 (57.5)	2,965 (62)	2,420 (65.5)
14				1,940 (31.5)	1,995 (44)	1,995 (51.5)	1,995 (57)	1,995 (61)
16				1,125 (31)	1,125 (35)	1,125 (45)	1,125 (51.5)	1,125 (56.5)
18					715 (22.5)	715 (37.5)	715 (46)	715 (51.5)

Note : Boom angles are in degrees.
*18.2 m boom length is with inner-mid extended and outer-mid & fly retracted.

Amalangshu Pal

TIL Limited
1, TARATOLLA ROAD
GARDEN REACH
KOLKATA-700 024

56/108
Pg (8/12)

Lifting Capacities on Rubber - 4 Section Boom

On Rubber 18.00 x 25-32 PR (Pick & Carry Capacities upto 4.0 KPH - Boom Centered Over Front)

Radius in Meters (m)	Tyre Inflation Pr. 8.1 kg/cm²						
	Main Boom Length in Meters						
	10.6	12.2	15.2	*18.2	21.3	24.4	27.4
3	17,350 (66)	14,250 (69.5)					
3.5	15,600 (63)	13,400 (67)	12,825 (72)				
4	13,950 (60)	12,750 (64.5)	12,075 (70)				
4.5	12,575 (56.5)	12,550 (61.5)	11,425 (68)	10,450 (72)			
5	11,425 (53)	11,425 (58.5)	10,850 (66)	9,545 (70.5)			
6	10,000 (45)	9,580 (52.5)	9,455 (61.6)	7,980 (67)	6,330 (70.5)		
7	8,000 (36)	8,000 (46)	7,890 (57)	6,730 (63.5)	5435 (67.5)		
8	6,820 (23)	6,770 (38.5)	6,740 (52)	5,710 (59.5)	4,755 (64.5)	4,755 (68.5)	4,485 (71.5)
9		5,780 (29)	5,705 (47)	4,900 (56)	4,275 (61.5)	4,275 (66)	4,250 (69)
10		4,900 (11.5)	4,785 (41)	4,400 (51.5)	3,920 (58.5)	3,920 (63)	3,920 (66.5)
12			3,170 (26)	3,045 (42.5)	3,210 (51.5)	3,210 (57.5)	3,210 (62)
14				2,000 (31.5)	1,995 (44)	1,995 (51.5)	1,995 (57)
16				1,125 (11)	1,125 (35)	1,125 (45)	1,125 (51.5)
18					715 (22.5)	715 (37.5)	715 (46)

Note : ( ) Boom angles are in degrees.
* 18.2 m boom length is with inner-mid extended and outer-mid & fly retracted

Amalangshu Pal

TIL Limited
1, TARATOLLA ROAD GARDEN REACH
KOLKATA-700 024

RT 740B

57/108

Pg (9/12)

Notes

Notes for Lifting Capacities

WARNING: THIS CHART IS ONLY A GUIDE. The Notes below are for illustration only and should not be relied upon to operate the crane. The individual crane's load chart, operating instructions and other Instruction plates must be read and understood prior to operating the crane.

1. All rated loads have been tested to and meet minimum requirements of IS 4573-1982 Specification for Power Driven Mobile Cranes and do not exceed 85% of the tipping load on outriggers (85% of the tipping load on rubber) as determined by SAE J765 OCT80 Crane Stability Test Code.
2. The weight of hookblock, slings and all similarly used load handling devices must be added to the weight of the load. When more than minimum required reeving is used, the additional rope weight shall be considered part of the load.
3. Capacities appearing above the bold line are based on structural strength and tipping should not be relied upon as a capacity limitation.
4. All capacities are for crane on firm, level surface. It may be necessary to have structural supports under the outrigger floats or tyres to spread the load, to a larger bearing surface.
5. When either boom length or radius or both are between values listed, the smallest load shown at either the next larger radius or boom length shall be used.
6. On rubber, lifting with boom extensions is not permitted.
7. Tyres shall be inflated to the recommended pressure before lifting on rubber. Capacities must be reduced for lower tyre inflation.
8. If machine is equipped with individually controlled powered boom sections, the boom sections must be extended equally at all times.
9. Defined Arc ± 6° on either side of longitudinal centerline of machine.
10. For Pick & Carry operation, boom must be centered over front of machine, mechanical swing lock engaged and load restrained from swinging. When handling loads in the structural range with capacities close to max. rating, travel should be reduced to creep speeds (not over 61m of movement in 30 min, not exceeding 1.6 KPH).
11. Axle lockouts must be functioning before lifting on rubber.
12. 9.8 m Fixed off settable boom extension warning: For main boom length greater than 24.4 m with 9.8 m tele, boom extension in working position, the boom angle must not be less than 40° since loss of stability will occur causing a tipping condition.
13. 9.8 m - 17.1 m tele, off settable boom extension warning: For main boom length greater than 24.4 m with 9.8 m - 17.1m tele, boom extension in working position, the boom angle must not be less than 40° since loss of stability will occur causing a tipping condition.
14. Radii listed are for a fully extended boom with the boom extension erected. For main boom length less than fully extended, the rated loads are determined by boom angle. Use only the column which corresponds to the boom extension length and offset for which the machine is configured. For boom angles not shown, use the rating of the next lower boom angle.

WARNING: Operation of the machine with heavier load than the capacities listed is strictly prohibited. Machine tipping occurs without advance warning.

No Load Stability on Rubber

	No load Stability Data	Main Boom 33.5m
Front (No load)	Min. boom angle (deg.) for indicated length Max. boom length (m) at 0° boom angle	40 21.3
360° (No load)	Min. boom angle (deg.) for indicated length Max. boom length (m) at 0° boom angle	55 15.2

Amalangshu Pal

TIL Limited
1, TAPATOLLA ROAD GARDEN REACH
KOLKATA-700 024

58/108
Pg (10/12)

Carrier Specification

FRAME
High strength alloy steel welded box section with integral outrigger housings and front/rear lifting, towing and tie down lugs.

OUTRIGGER SYSTEM
4 hydraulically telescoping beams with 'Inverted' jacks with integral holding valves positioned two nos. in each outrigger housing. Provides steel fabricated quick release type outrigger float for each jack.

OUTRIGGER CONTROLS
Independent control of each outrigger beam located in cab on front dash panel along with level indicator.

ENGINE
Cummins B5.9 173 C31, 173 HP @ 2500 RPM,
Max. Torque - 660 Nm @ 1500 RPM,
Emission : BS III CEV

FUEL TANK
Capacity 227 liters.

ELECTRICAL SYSTEM
Two 12 Volt-batteries, 24 Volt lighting equipment including two headlights, side, tail and stop lights and flashing direction indicators.

DRIVE
4x4 / 4x2

STEERING
Fully independent power steering:
Front: Full hydraulic controlled by steering wheel.
Rear: Full hydraulic selector switch controlled.
Provides infinite variations of 4 main steering modes - front only, rear only, crab and coordinated. Rear wheel steer indicator. Auto - reversal steering mechanism.

TRANSMISSION
Engine mounted full power shift with 6 forward and 3 reverse speeds. Provides front axle disconnect for 4 x 2 travel.

AXLES
Front: Drive-steer with differential and planetary reduction hubs rigidly mounted to the chassis frame.
Rear: Drive-steer with differential and planetary reduction hubs, pivot mounted at centre of the chassis frame.

RT 740B

OSCILLATION LOCKOUTS
Automatic full hydraulic lockouts on rear axle permit oscillation only with boom centered over front.

TYRES
18.00 X 25 - 32 PR earthmover tyres.

BRAKES
Fully hydraulic, split circuit operating on all wheels. Spring applied, hydraulically released front axle mounted parking brake.

INSTRUMENTATION
Engine oil pressure gauge, Fuel gauge, Water temperature gauge, Voltmeter, Tacho-Hourmeter, Indicators and Switches for control.

OIL COOLER
Remote mounted with thermostatically controlled, electric motor driven fan.

MAXIMUM SPEED
26 kmph.

GRADEABILITY
45% (Maximum) Unladen.

GROSS VEHICLE WEIGHT AND AXLE LOADS (approx)
Front: 16,015 kg
Rear: 14,062 kg
GVW: 30,077 kg

Optional Weights (approx.)
Fixed Lattice : 953 kg
Tele lattice : 1,278 kg
Auxiliary Hoist : 700 kg
Man Carrying Basket : 550 kg

MISCELLANEOUS STANDARD EQUIPMENT
Full width steel fenders, rear view mirror, back-up alarm, front stowage well, tool kit.

OPTIONAL EQUIPMENT
Fire suppression system
Fire extinguisher
Centralized Lubrication System
Tow hook on chassis frame
Man Carrying Basket
360° Beacon lights
Cab Spot Light

TIL Limited
1, TARATOLLA ROAD
GARDEN REACH
KOLKATA-700 024

Amalangshu Pal

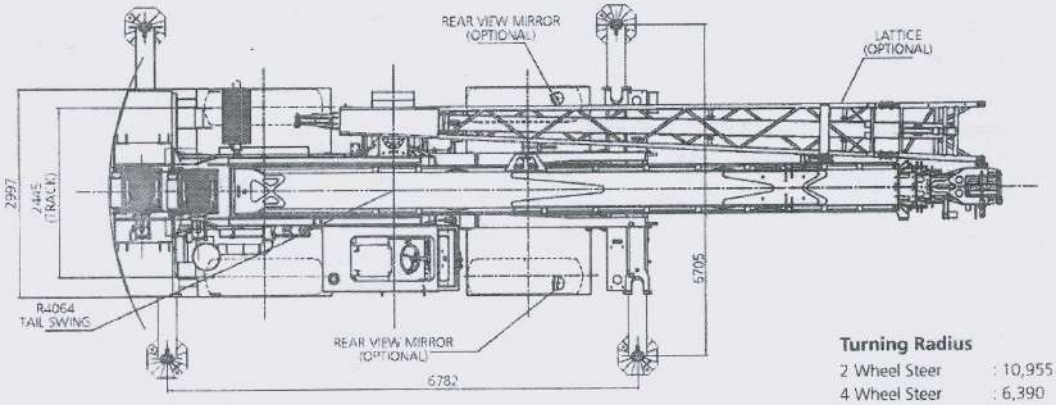
Okay

59/108

Pg(11/12)

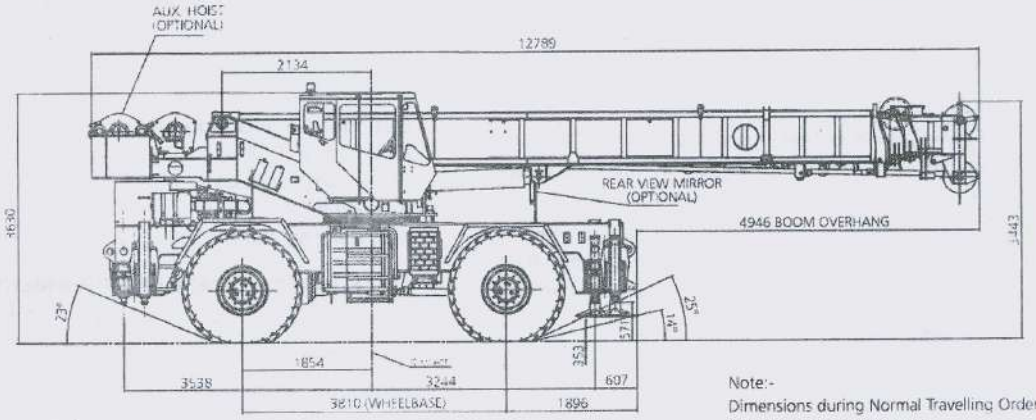
GA Drawing

DIMENSIONAL DRAWING



Turning Radius

2 Wheel Steer	: 10,955
4 Wheel Steer	: 6,390



Dimensions in mm

Note:-
Dimensions during Normal Travelling Order
Overall Length - 12710 mm
Overall Height - 4500 mm
Overall Width - 2997 mm

Constant improvement and engineering progress make it necessary that we reserve the right to make specification, equipment and price changes without notice. The photographs/drawings in this document are just for illustrative purpose which may include optional equipment and accessories, which can be provided at an additional cost on request.

Amalangshu Pal

TIL Limited
1, TARATOLLA ROAD GARDEN REACH
KOLKATA-700 024

60/108
Pg(12/12)

GROVE®
by Manitowoc

TIL Tractors India

TIL Limited
CIN: L74999WB1974PLC041725

Registered & Corporate Office:
1, Taratolla Road, Garden Reach, Kolkata - 700024
Phone: + 91 33 2469 3732-6 / 6497 | 6633 2000 / 2845
Fax: + 91 33 2469 2143 / 3731
Email: Mhg.Er@tilindia.com | mktg-til@tilindia.com

TIL Limited
Jhaver Plaza, 7th Floor 1-A
Nungambakkam High Road
Chennai 600 034, Tamil Nadu
Phone: +91 044 6670 3000 / 3010
Fax: +91 44 2827 9681
Email: chennai.til@tilindia.com

Plot 11, Site No.IV
Sahibabad Industrial Area
Ghaziabad 203 010 U.P.
Phone: +91 120 277 8735 / 8736 / 7468
Fax: +91 120 277 7467
Email: MHGMarketing.Sahibabad@tilindia.com | mhgcs.Sahibabad@tilindia.com

TIL Limited
302 Ansal Bhawan
16, Kasturba Gandhi Marg, New Delhi 110 001
Phone: +91 11 2331 1607 / 8046 / 9248 | 2335 0250 / 0255
Fax: +91 11 2331 3263
Email: til.delhi@tilindia.com

TIL Limited
517, Barrackpore Trunk Road
Kolkata 700 058
Phone: +91 33 2553 1352 / 1882 | 6633 4000
Fax: +91 33 2553 2546 / 5971
Email: MktDept.KMT@tilindia.com | til.kmt@tilindia.com

TIL Limited
Vill. & P.O. Changual, Kharagpur
Dist: Paschim Medinipur 721 301, West Bengal
Phone: +91 32 2266 1101

TIL Limited
502 - A, 5th Floor, Western Edge Tower No.1
Western Express Highway, Datta Pada Road
Borivali (East), Mumbai 400 066, Maharashtra
Tel: 91 022 6147 9159 / 9135 / 9143 / 9133 / 9137
Fax: 91 22 6147 9111
Email: Mumbai.TIL@tilindia.com | Mumbai.Custsupp@tilindia.com

TIL Limited
1, TARATOLLA ROAD GARDEN REACH
KOLKATA-700 024

Toll Free No: **1800 266 1535**
www.tilindia.in

Technical Specification TIL/RT740B/1218. This cancels Technical Specification TIL/RT740B/0818

Amalendu Pal

61/108

TIL Limited
1, TARATOLLA ROAD GARDEN REACH KOLKATA-700 024
Annexure-G Pg(1/3)

HYDRAULIC SYSTEM AND COMPONENTS (RT 740B)

The hydraulic system of the crane is designed to provide adequate pressure and volume (flow) for simultaneous operation of various crane functions

RESERVOIR

The hydraulic reservoir is a 378 liters steel tank located on the left side of the frame. A full flow Return line filter with bypass flow connection and a sight gauge is installed in the reservoir

HYDRAULIC OIL COOLER

Thermostatically controlled electrically driven motor (24V) attached to the hydraulic oil cooler

PUMPS

One hydraulic two section gear pump directly mounted on engine having priority flow control valve fitted on the output of pump. The flow of this pump is utilized for controlling steering, service brake, slew circuit and rear axle suspension

Another 2 section gear pump fitted with transmission PTO for feeding oil to derrick, tele, hoist as well as outrigger control and rear steer in chassis portion

DIRECTIONAL CONTROL VALVES

Control valve bank of slew, hoist, tele, lift are positioned on superstructure and integrated outrigger valve on chassis frame. 3 position pilot operated control valves are operated through joystick controller in operator's cab

Hydraulic system relief pressure for all control valves is maintained as 3500 PSI except slew system. Slew control valve pressure is 1500 PSI. Pilot control joystick valves are set as 450 PSI

OUTRIGGER SYSTEM

4 nos. out & down type outriggers are integral with the carrier frame but are controlled and operated from the superstructure. The outriggers are full hydraulic, double box type. They are positioned to provide a rigid four point platform (outriggers fully extended and set) capable of supporting the machine and its maximum load capacity. Integral holding valves on O/R Jacks and floats are standard equipment. A sight level bubble indicator is located on the front console to ensure crane leveling

Amalangsu Pal

TIL Limited 1, TARATOLLA ROAD GARDEN REACH KOLKATA-700 024

(63/108)

Annexure C1 Pg (3/3)

HOIST UNIT

The hoist provides power and speed for all load raising and lowering operations. A axial piston type hydraulic motor drives the hoist drum by means of a planetary gear reduction system suitable for ¾" diameter (19 mm) hoist rope. Spring applied multi-disc brake is an integral part of the hoist assembly. Hoist barrel fitted with 3rd Wrap indicator to ensure min. 3 turn hoist rope on the barrel in maximum pay-out condition

SWING MOTOR & GEARBOX

The hydraulic swing motor is a low speed, high torque type. The motor provides indirect drive power for turntable swing through the swing gearbox. The swing gearbox is a sun and planetary gear type, driven mechanically by the swing motor. The swing gearbox rotates the turntable at a reduced operational speed

SWIVELS

Electrical and hydraulic swivels are used to route the electrical and hydraulic circuits from the superstructure to the carrier frame. These swivels are mounted as a single assembly, and are installed at the center of rotation

HYDRAULIC CYLINDERS

Outriggers system consists of 4 nos. hydraulic extension rams and 4 nos. double acting inverted jack cylinders fitted with holding valves

Suspension rams with lockout on rear axle cradle and steering cylinder on axles are provided

Single double acting Lift cylinder with lock & counterbalance valve is located on to the superstructure and fitted with base boom section

Two nos. tele-cylinders are used for extension of 4 section boom. Single double acting tele-cylinder with lock and counterbalance valve is used for extension of outer-mid and fly section of the boom with respect to inner-mid section. Extension of inner-mid section with respect to base section is made through trombone cylinder to avoid use of any hose reel to supply hydraulic oil flow to first cylinder

Amalangshu Pal

TIL Limited
1, TARATOLLA ROAD
GARDEN REACH
KOLKATA-700 024

(64/108

INTERNATIONAL STANDARD

ISO 16625

First edition
2013-07-01

Cranes and hoists — Selection of wire ropes, drums and sheaves

Appareils de levage à charge suspendue — Choix des câbles, tambours et poulies

Reference number
ISO 16625:2013(E)

65/108

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

67/108

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2. www.iso.org/directives

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received. www.iso.org/patents

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

The committee responsible for this document is ISO/TC 96, *Cranes*, Subcommittee SC 3, *Selection of wire ropes*.

This first edition of ISO 16625 cancels and replaces ISO 4308-1:2003, ISO 4308-2:1988 and ISO 8087:1985, of which it constitutes a technical revision.

Cranes and hoists — Selection of wire ropes, drums and sheaves

1 Scope

This International Standard specifies the minimum practical design factors, Z_p, for the various classifications of mechanism, rope types, rope duties and types of spooling and demonstrates how these are used in the determination of the minimum breaking force of the wire rope.

It specifies the selection factors for drums and sheaves for the various classifications of mechanisms, rope types and rope duties and how these are used in the determination of the minimum practical diameters of drums and sheaves that work in association with the selected wire rope.

A list of types of cranes and hoists to which this standard applies is given in Annex A.

Annex B gives factors, additional to those mentioned above, which might need consideration when selecting the wire rope and associated equipment.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 2408, *Steel wire ropes for general purposes — Minimum requirements*

ISO 4301-1:1986, *Cranes and lifting appliances — Classification — Part 1: General*

ISO 4306-1, *Cranes — Vocabulary — Part 1: General*

ISO 4309, *Cranes — Wire ropes — Care and maintenance, inspection and discard*

ISO 10425, *Steel wire ropes for the petroleum and natural gas industries — Minimum requirements and terms of acceptance*

ISO 17893, *Steel wire ropes — Vocabulary, designation and classification*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 4306-1 and ISO 17893 apply.

NOTE 1 In this document, "single-layer ropes" and "parallel-closed ropes", as defined in ISO 17893, are referred to as "standard ropes" to distinguish them from "rotation-resistant ropes".

NOTE 2 Single-layer ropes and parallel-closed ropes are also sometimes referred to as "*non*-rotation-resistant ropes".

4 Group classification of the mechanism as a whole

The resulting classification of mechanism (M4, M5, etc.) shall be taken into account when establishing the minimum design factor and the minimum drum and sheave sizes.

The group classification of the mechanism as a whole takes account of the state of loading (light, moderate, heavy, etc.) and the class of utilization of the mechanism (based on total duration of use) as a whole, as detailed in ISO 4301-1.

NOTE Other parts of ISO 4301 (such as ISO 4301-2, covering mobile cranes) specify the classification of a particular type of crane and related crane mechanisms taking account of the rope duty (hoisting, luffing, etc.) and crane operating conditions.

5 Selection of rope

5.1 Type and construction

The wire rope selected shall conform to either ISO 2408 or ISO 10425, according to the application and/or duty.

5.2 Design factor, Z_p

The minimum design factor shall be specified in accordance with Tables 1, 2 or 3, as applicable, taking into account the classification of mechanism and the rope duty or rope hoist and, in the case of stationary ropes, the crane classification.

NOTE The design factors listed in the tables are based on long experience in the field.

Table 1 — Minimum design factors for all cranes and hoists except mobile cranes

Group classification of mechanism in accordance with ISO 4301-1:1986	Hoisting				Boom hoisting or luffing	
	Single-layer spooling		Multi-layer spooling			
	Standard rope	Rotation-resistant rope	Standard rope	Rotation-resistant rope	Standard rope	Rotation-resistant rope
M1	3,15	3,15	3,55	3,55	3,55	4,5
M2	3,35	3,35	3,55	3,55	3,55	4,5
M3	3,55	3,55	3,55	3,55	3,55	4,5
M4	4,0	4,0	4,0	4,0	4,0	4,5
M5	4,5	4,5	4,5	4,5	4,5	4,5
M6	5,6	5,6	5,6	5,6	5,6	5,6
M7	7,1	7,1	—	—	7,1	—
M8	9,0	9,0	—	—	9,0	—

Table 2 — Minimum design factors for mobile cranes

Group classification of mechanism in accordance with ISO 4301-1:1986	Running rope						
	Hoisting		Boom hoisting				Telescoping
			Working		Erecting		
	Standard rope	Rotation-resistant rope	Standard rope	Rotation-resistant rope	Standard rope	Rotation-resistant rope	
M1	3,55	4,5	3,35	4,5	3,05	4,5	3,15
M2	3,55	4,5	3,35	4,5	3,05	4,5	3,35
M3	3,55	4,5	3,35	4,5	3,05	4,5	3,35
M4	4,0	4,5	3,35	4,5	3,05	4,5	3,35
M5	4,5	4,5	3,35	4,5	—	—	—
M6	5,6	5,6	3,35	5,6	—	—	—

Table 3 — Stationary working rope and erecting rope

Crane classification	All cranes	
	Stationary ropes	Erection ropes
A1	3,0	2,73
A2	3,0	2,73
A3	3,0	2,73
A4	3,5	2,73
A5	4,0	2,73
A6	4,5	—
A7	5,0	—
A8	5,0	—

5.3 Minimum breaking force

The minimum breaking force of the rope, F_{min}, shall be calculated using Formula (1):

$$F_{min} \geq S \times Z_p \quad (1)$$

where, for hoisting ropes, S is the maximum rope tension, in kN, obtained by taking into account

- rated working load of the appliance,
- mass of the sheave block and/or other lifting attachments,
- mechanical advantage of reeving,
- efficiency of reeving (e.g. bearing efficiency), and
- the increase in force in the rope caused by the rope inclination at the upper extreme position of the hook, if the inclination with respect to the drum axis exceeds 22,5°;

or, for stationary ropes, S is the maximum rope tension, in kN, obtained by taking account of both the static and dynamic forces;

and where Z_p is the minimum design factor.

71/108

For values of Z_p, see 5.2. Alternatively, in circumstances when rotation-resistant ropes are used for hoisting and the mass of the sheave block and other lifting attachments and the efficiency of the reeving are not required to be taken into account, the design factor shall be at least 5.

In the case of appliances with grabs, where the mass of the load is not always equally distributed between the closing ropes and the holding ropes during the whole of cycle, the value of S to be applied shall be determined as follows.

a) If the hoist mechanism automatically ensures an equal division of the hoisted load between the closing and holding ropes, and any difference between the loads carried by the ropes is limited to a short period at the end of the closing or the beginning of the opening:

   1) for closing ropes, S = 66 % of the mass of the loaded grab divided by the number of *closing* ropes;

   2) for holding ropes, S = 66 % of the mass of the loaded grab divided by the number of *holding* ropes.

b) If the hoist mechanism does *not* automatically ensure an equal division of load between the closing ropes and the holding ropes during the hoisting motion and, in practice, almost all the load is applied to the closing ropes:

   1) for closing ropes, S = total mass of the loaded grab divided by the number of closing ropes;

   2) for holding ropes, S = 66 % of the total mass of the loaded grab divided by the number of holding ropes.

NOTE For the more common wire rope classes and constructions and, where applicable, rope grade, minimum breaking force factors given in ISO 2408 and ISO 10425 enable the minimum breaking force value to be calculated for a given nominal rope diameter. It should be noted, however, that the minimum breaking force factor used by the rope manufacturer can be greater than that given in the above-mentioned International Standards, resulting in higher minimum breaking force values being specified.

5.4 Diameter

In the process of selecting a wire rope to satisfy the minimum breaking force requirement as given in 5.3, the situation can arise where, for practical reasons (e.g. availability, preferred sizes), the minimum breaking force exceeds the required minimum value, leading to a higher design factor than the minimum quoted in 5.2. In such cases, the selected nominal wire rope diameter, d, is to be used when calculating the diameter of sheaves and drums; see 6.2.

NOTE The nominal diameter of a given rope type, construction or class, minimum breaking force and, where applicable, grade, is established by the rope manufacturer.

6 Drums and sheaves

6.1 Sheave material

The manufacturer shall take account of the type of spooling when selecting the sheave material or sheave groove lining material.

Single-layer spooling

Where spooling at the drum is single-layer, the choice of sheave material can be critical, as deterioration of the wire rope is most likely to be through bending fatigue — particularly if the fleet angle is not excessive.

If all of the sheaves are made of a polymer material or have a polymer groove lining, there is a possibility of internal fatigue damage going largely unnoticed in service unless discard criteria and/or the frequency between inspections is/are significantly modified from that given in ISO 4309 and closely followed. Such an arrangement should generally be avoided; see B.3.1 for recommendation.

If the fleet angle is higher than recommended, then the most severe deterioration experienced in the reeving system can be in the form of increased wear/abrasion and scrubbing damage occurring between wraps on the drum as a result of higher-than-normal transverse loading at the extremity of travel.

Multi-layer spooling

Where spooling at the drum is multi-layer, it can be expected that deterioration of the wire rope will be at its greatest at those sections that coincide with the crossover zones at the drum rather than at those sections that simply run through sheaves. In such cases, polymer sheaves or sheaves having a polymer groove lining, as well as steel sheaves, may be used, provided other properties, such as limiting radial pressures, are not exceeded for the selected material.

6.2 Calculation of minimum drum and sheave diameters

The minimum pitch circle diameter of drums and sheaves for "hoisting" ropes shall be calculated using Formulae (2) or (3).

NOTE Any increase in pitch circle diameter from the calculated values will enhance the bending fatigue resistance of the rope.

$$D_1 \geq h_1 \times t \times d \tag{2}$$

or

$$D_2 \geq h_2 \times t \times d \tag{3}$$

where

D_1 is the minimum pitch circle diameter of the drum;

D_2 is the minimum pitch circle diameter of the sheave;

d is the nominal diameter of the selected rope;

h_1 is the selection factor for the drum (ratio of the pitch circle diameter of the drum to the nominal diameter of the rope) in accordance with Tables 4 and 5;

h_2 is the selection factor for the sheave (ratio of the pitch circle diameter of the sheave to the nominal diameter of the rope);

t is the rope type factor in accordance with Table 6.

Table 4 — Selection factors h_1, h_2 and h_3 — Hoisting and boom hoisting/luffing ropes — Cranes and hoists other than mobile cranes

Group classification of mechanism in accordance with ISO 4301-1:1986	Drums, h_1	Sheaves, h_2	Compensating sheaves, h_3	
	min.	min.	min.	preferred min.[a]
M1	11,2	12,5	11,2	12,5
M2	12,5	14,0	12,5	14,0
M3	14,0	16,0	14	16,0
M4	16,0	18,0	16,0	18,0
M5	18,0	20,0	18,0	20,0
M6	20,0	22,4	20,0	22,4
M7	22,4	25,0	22,4	25,0
M8	25,0	28,0	25,0	28,0

[a] These factors are particularly recommended to limit radial pressure at rope entry/exit zones when single-layer spooling where bending fatigue is usually the principal mode of deterioration.

Table 5 — Selection factors h_1, h_2 and h_3 — Mobile cranes

Rope duty and classification of mechanism in accordance with ISO 4301-1:1986		Drums, h_1			Sheaves, h_2			Compensating sheaves, h_3		
		Std. rope	R-R rope		Std. rope	R-R rope		Std. rope	R-R rope	
		min.	min.	preferred min.[a]	min.	min.	preferred min.[b]	min.	min.	preferred min.[c]
Hoisting	M1 to M6	16,0	18	20	18	18	20	14	18	20
Boom hoisting/ luffing	M1 to M6	14	16	20	16	16	20	12,5	16	20
Telescoping	M1 to M4	—	—	—	14	—	—	10	—	—

[a] These factors are particularly recommended for limiting radial pressure and attendant rope distortion effects at cross-over zones associated with multi-layer spooling.

[b] These factors are particularly recommended for limiting radial pressure and enhance bending fatigue performance on single-layer spooling mechanisms.

[c] These factors are particularly recommended for limiting radial pressure at rope entry/exit zones when single-layer spooling where bending fatigue is usually the principal mode of rope deterioration.

Table 6 — Rope type factor t for various rope types

Number of outer strands in rope	Rope type factor t
3	1,25
4 to 5	1,15
6 to 10	1,00
8 to 10 – plastic impregnation	0,95
10 and greater — rotation-resistant	1,00

7 Exceptional conditions

For exceptional conditions, such as the handling of molten metal, extremely dirty and/or corrosive environment,

a) no classification group lower than M5 shall be used, and

b) the Z_p value shall be increased by 25 % up to a maximum of 9,0.

8 Care and maintenance, inspection and discard

The selection of ropes, drums and sheaves according to this International Standard cannot alone ensure safe operation of the rope for indefinite periods.

For drums and sheaves, the instructions provided by the manufacturer on care and maintenance, inspection and discard shall be followed.

For wire ropes, ISO 4309 applies.

75/108

Point wise replies of Clarifications asked by M/s TIL on 12.06.20 of 40T Crane Tender no. BCCL/PUR/420026/40T Crane/20-21/15 dtd 05.06.20(Tender ID: 2020_BCCL_173844_1) are as under:

1. **Earnest Money Deposit**:- Earnest Money can be deposited by Online fund transfer through Net banking and NEFT/ RTGS as per EMD clause mentioned at page no.19 of NIT and No other mode for payment is acceptable for submission of EMD so your request of EMD in Bank Guarantee cannot be considered.
2. **Liquidated Damages:** LD clause of NIT cannot be changed as it is as per CIL Purchase manual.

3. **Pick & Carry Duty**: As per clause no.8.3.3f) [mentioned at page no.99 of NIT], Bidder has to submit the details of pick and carry capacity at 5 km/h: at 3 m, 4mand 5 m radius. These are performance details not a specification, required to just know the performance of machine at different parameters. Hence the bidder has to submit the details as required under this clause.

4. HEMM and DGMS applicability: In the clause no.5c) Ancillary Equipment and other safety requirements of equipment specification (mentioned at page no.97 of NIT), it has been clearly mentioned that the bidder has to give overall compliance against point no.1 general requirement of DGMS notification dated 01.10.18 (as applicable).

5.TCS: TCS may be filled in "Other charges" column of BOQ.

Note: This is informed to you that Due date of tender had been extended upto 18.07.20 through corrigendum at coalindiatender portal due Covid-19.

Amalangshu Pal

TIL Limited
1, TARATOLLA ROAD
GARDEN REACH
KOLKATA-700 024

TIL Response to Clause – 5 (Ancillary Equipment and Other safety Requirements)

Safety features and devices to be provided in Heavy Earth Moving Machinery (HEMM) including trucks and tippers

1.0 General Requirements:

The following Safety features and devices shall be provided in all Heavy Earth Moving Machinery (HEMM):

A. Access:

(i) Safe access to the Operator Station and to routine maintenance points of HEMM shall be provided. Proper placement of components of the access system shall permit and encourage a person to use three-point support while ascending, descending or moving about the access system, when more than 1m above the ground. Two-point support is acceptable for stairs, stairways, ramps, walkways and platforms. Three-point support should be used for all ladder systems. Track shoe and track pad surfaces are accepted as access steps if three-point support is provided when the HEMM is in 'OFF' condition.

TIL Response - While accessing the operator station, two-point support is provided which is more than sufficient because of the low height of the cabins and is widely accepted for rough terrain cranes worldwide.

(ii) On machines with articulated frames and in the fully articulated steering position, a minimum clearance of 150 mm shall be provided between firm structures and components with relative movement in the path of the access systems to the operator's station.

TIL Response - Rough terrain crane frames are rigid structures and not articulated and hence this clause is not applicable.

(iii) An alternative exit path shall be provided on a different location of the machine than the 'primary access path from the operator platform. If the alternative exit path is not obvious, it shall be identified. The alternative exit path is intended for emergency situations (e.g. machine tip-over) and therefore does not need to meet the primary access requirements.

TIL Response - Crane cabins for Rough Terrain cranes are small compared to heavy earthmoving machinery , hence the entry and exit are the same . In case of an emergency situation , the operator can make use of the side window opening or by breaking the glass.This clause is not applicable for Rough Terrain cranes.

B. Operator's Station (Cabin):

(i) The cabin shall protect the operator against foreseeable adverse climatic conditions, heat, dust, noise etc. Air-conditioning system shall be provided in the Operator's Station. A ventilation system, an adjustable heating system and a system for defrosting windows shall be provided wherever required.

TIL Response - Indian climatic condition does not demand adjustable heating system and a system for defrosting windows. However Air Conditioning cabin can be provided.

(ii) Alternative opening (Emergency Exit): An alternative opening shall be provided on a side other than that of the primary opening. A window panel or another door is acceptable if they are easy to open or remove without the use of keys or tools. Latches may be used if they can be opened from the inside without the use of keys or tools. The breaking of a suitable size of glass pane is considered to represent a suitable alternative opening, provided that the necessary pane hammer, immediately accessible to the operator, is provided and stored in the cab. When the window panel is used as an emergency exit, it shall bear an appropriate marking.

TIL Response - Crane cabins for Rough Terrain cranes are small compared to heavy earthmoving machinery , hence the entry and exit are the same . In case of an emergency situation , the operator can make use of the side window opening or by breaking the glass.This clause is not applicable for Rough Terrain cranes.

Amalangshu Pal

TIL KOLKATA-700 024

77/108

(iii) Doors and Windows: Doors, Windows and flaps shall be securely held in their intended operating positions. Doors shall be retained at their intended operating positions by a positive engagement device. The front window shall be fitted with motorized windscreen wipers and washers. The tank of the window washers shall be easily accessible.

(iv) Pipes and hoses that contain fluids at pressures exceeding 5 MPa or temperatures above 60°C located inside the cab shall be suitably guarded.

C. Operator's protective Structures:

(i) All HEMM with a seated operator shall be equipped with a roll-over protective structure (ROPS). The ROPS shall comply with ISO 3471. Further, it shall also be fitted with FOPS, when they are intended for applications where there is a risk of falling objects. The fitted FOPS shall be in accordance with ISO 3449.

TIL Response - Please note that ISO 3471 is applicable for Earth-Moving Machinery and not applicable for Mobile Cranes .Rough Terrain cranes travel at very low speed on site, so situation of rolling over of the crane does not occur. We shall however provide adequate protection to the cab from falling objects (FOPS) to ensure full safety of the operator and prevent damage to the cab.

D. Seats:

(i) The Operator's Station shall be fitted with an ergonomically designed adjustable seat that supports the operator in a position that allows the operator to control the machine under the intended operating conditions. The seat and it's suspension shall be so designed to reduce vibration transmitted to the operator to the lowest level that can be reasonably achieved.

(ii) If an additional seat for a trainer is installed in the Operator's Station, it shall be padded and shall provide adequate space for the trainer. The trainer shall also have available a conveniently placed handhold.

TIL Response - There is no provision to provide an additional seat for the trainer due to lack of space in Rough Terrain Cranes.

(iii) Seat Belt for Operator with reminder shall be provided.

TIL Response - It will be provided

E. Operator's Controls and Indicators:

(i) The controls shall be of suitable design and construction and arranged so that they are able to be operated with ease from the operator's seat and within the operator's force limits. Controls shall be laid out and designed to allow easy and safe operation based on the principle that a given direction of movement of any control produces a consistent and expected effect. The surfaces of frequently used pedals shall be fitted with skid resistant type materials.

(ii) Controls that can cause a hazard due to inadvertent activation shall be so arranged, deactivated or guarded as to minimize the risk - particularly while the operator is getting into or out of the operator's station. The deactivation device shall either be self- acting or shall act by compulsory actuation of the relevant device.

TIL Response - Complied

(iii) A device/system shall be provided to release the residual pressure in each hydraulic and pneumatic circuits which can cause a risk.
TIL Response -Complied

Amalangshu Pal

TIL Limited
1, TARATOLLA ROAD
GARDEN REACH
KOLKATA-700 024

F. Starting and Stopping System:

(i) All HEMM shall be equipped with a starting and stopping device (e.g. key). The starting system shall have a provision for protection against unauthorized use.

TIL Response – Complied

(ii) The starting and Stopping system shall be designed such that movement of the machine, working equipment and attachment, shall not be possible, while starting of stopping the engine, without activating the controls. (E.g. Transmission Neutral-Engine Start safety arrangement).

TIL Response – Complied

(iii) In case of Remote control operated equipment, the Starting and Stopping system shall conform to any National/Intemationally accepted standard.

TIL Response – NA for Rough Terrain Crane

G. Steering System:

(i) The steering system shall be such that the movement of the steering control corresponds to the intended direction of steering.

(ii) Hydraulic Steering circuits shall, if used, incorporate the following features:
- (a) Pressure control devices as required to avoid excessive pressures in the hydraulic circuit;
- (b) Hydraulic hoses, fittings and tubing with test burst pressures at least four times the working circuit pressure control device(s) for normal and emergency steering systems;
- (c) Plumbing arrangements which avoid excessively tight hose bends, torsion in the installed hoses, or scrubbing and chafing of hoses.

(iii) An emergency steering system shall be provided which also function with reverse machine movement if the maximum rated speed in reverse exceeds 20 km/h.

TIL Response – Complied

(iv) A warning device indicating a normal steering power source shall be provided. This warning device shall be audible or visual, and shall be activated by failure of the normal steering power source.

TIL Response - Rough Terrain cranes travel only on site and at slow speed, so such a device is not necessary as the operator can actually feel the loss of steering power and take corrective action.This is not necessary for Rough Terain cranes.

(v) Articulation safety lock shall be provided in articulated steering equipment. All articulated equipment shall be equipped with a safety bar or a device, which can readily be fitted without special tools, to prevent movement of the articulation joint during maintenance work in the vicinity of this joint

TIL Response - Not Applicable.

H. Brake System:

All HEMM shall be equipped with the following brake systems and all these systems shall be effective under all conditions of service, load, speed, terrain and slope, according to the intended use of the machine:

(i) Service brake to be used as the primary braking system during normal operation of the equipment.
(ii) Emergency brake - to be applied by the operator in the event of a failure of the service brake.
(iii) Parking brake - used to prevent movement of stationary equipment.

Provided that at least one of the brakes shall be "fail safe", i.e. the spring applied-hydraulically released (SAHR) or any other means.

TIL Response – Complied.

Amalangshu Pal

TIL Limited
1, TARATOLLA ROAD
GARDEN REACH
KOLKATA-700 024

79/108

All HEMM shall have a brake system -in accordance with ISO 3450 except for crawler machines with a travel speed less than 20 km/h, which shall have a brake system in accordance with ISO 10265.

I. Visibility:

(i) All HEMM shall be designed so that the operator has sufficient visibility from the operator's station in relation to the travel and work areas of the machine necessary for its intended use. The performance criteria shall be in accordance with ISO 5006.

(ii) Rear Vision Camera shall be provided in all HEMM.

(iii) Blind Spot Mirrors / Camera apart from rear side view mirror to enable operator to have clear visibility of blind spot shall be provided in all HEMM.

TIL Response – Complied.

J. Stability:

(i) All HEMM with attachments, including optional equipment, shall be designed and constructed so that stability is provided under all intended operating conditions including maintenance, assembling, dismantling, and transportation, as specified by the manufacturer in the operation manual.

(ii) Devices (e.g. outriggers, oscillating axle locking) intended to increase the stability of HEMM in working mode shall be fitted with interlocking devices or check valves which keep them in position in case of hose failure or in case of oil leakage.

TIL Response –Complied.

K. Noise:

The operator and persons near to the HEMM shall not be exposed to noise level that exceeds an eight hour equivalent continuous sound pressure level of 85 dB(A) and wherever it exceeds 85 dB (A), Personnel Protection Equipment (PPE) of adequate strength shall be used by the operators and the persons.

TIL Response - Noise level inside the cabin shall be approx. 92 dB(A)

L. Warning devices and safety signs:

(i) All the HEMM shall be equipped with an audible warning device (horn) controlled from the operator's station

(ii) Warning system for Operator's fatigue shall be provided in all HEMM.

(iii) Audio Visual Alarm (AVA) system for reversing shall be provided in all HEMM.

(iv) Safety signs and hazard pictorials shall be displayed at conspicuous places.

(v) Retro- Reflective Reflectors shall be provided on 'all sides of the HEMM at suitable positions.

TIL Response – Complied.

M. Protective measures and devices:

(i) All dangerously exposed moving parts of the equipment shall be provided with suitable guards of substantial construction to prevent injury to person(s).

(ii) Guards or shields shall be provided in the vicinity of exhaust and turbocharger to prevent fuel or oil spraying on hot surfaces.

TIL Response – Complied

TIL Limited
1, TARATOLLA ROAD
GARDEN REACH
KOLKATA-700 024

Amalangshu Pal

89/108

N. Electrical and Electronic Systems:

(i) Electrical components and conductors shall be installed in such' a way as to avoid damage from exposure to environmental conditions (corresponding to the intended use of the machine) that can cause deterioration. Electrical component insulation shall have flame-retardant properties. ,

(ii) Degree of protection:
Depending on the location/installation of electrical and electronic components, the following degrees of protection are required:
(a) All components installed exterior to the machine or directly exposed to the environment shall have a minimum degree of protection corresponding to according IEC 60529, IP 55;
(b) All components installed in the operator's cab or protected against the environment, the protection shall be designed and executed to safeguard a correct function under expected and intended conditions.

(iii) Electronic controls, connectors in control circuits, multi-pin connectors and control switches external to the cab, shall have a minimum protection of IP 55

(iv) All HEMM powered by electrical power source shall be provided with tripping device in Operator's Cabin to cut off Electric supply at Principal Switch Gear (PSG) end.

TIL Response – Complied.

O. Fire Protection,

(i) All HEMM shall be equipped with suitable portable Fire Extinguisher(s) in addition to Automatically operated Fire Detection and Suppression device or System.

(ii) Hydraulic hoses, Electric Wires, sleeves and conduits (where cable/wire is passed) of fire resistant quality shall be provided in all HEMM.

TIL Response – Complied.

2.0 In addition to General requirement mentioned above, the following safety devices / Features specific to machines shall be provided:

2.1 Dumper:

a) Mechanical steering locking to prevent untoward movement of steering wheel and tyre during work persons working below the cabin while engine is running.
b) Mechanical type device to protect operator in case of head to tail collision of dumpers.
c) Limiting speed device to limit the speed as per working conditions.
d) Propeller shaft guard.
e) Proximity warning device:
f) Dump body raised position indicator with Warning.
g) Retarder System in addition to Service, Parking and Dump Brakes.
h) Rock ejectors for tandem tyres.
i) Body raised position mechanical locking arrangement
j) Engine cut off arrangement / Battery Cut-off switch on front lower portion of the Dumper.
k) Cabin Guard Extension / Canopy fully covering operator's cabin.
l) Load Indicator.
m) Auto dipping System.

2.2 Tippers/Trucks:

a) Cabin Guard Extension / Canopy fully covering operator's cabin.
b) Exhaust/Retard Brake.
c) Propeller shaft guard
d) Tail gate protection
e) Limiting speed device
f) Dump Body lifted position locking arrangement.
g) Dump Body raised position indicator with Warning.
h) Dumb body stabilisers.
i) Proximity warning device

TIL Limited TARATOLLA ROAD GARDEN REACH KOLKATA-700 024

Amalangshu Pal

8/108

j) Auto dipping System
k) Load Indicator.

2.3 Excavator:

2.3.1 Hydraulic Excavators:

a) All functions cut off switch
b) Swing Motor Brake and Swing lock
c) Parking Brake.
d) Vent valve on top of hydraulic tank (should be able to be removed without any tool)
e) Provision for limiting of hydraulic cylinders Stoppers.
f) Battery cut off switch outside cabin
g) Two-way communication system other than mobile phone in Operator's Cabin.

2.3.2 Rope Shovels & Draglines

a) All functions, such as Crowd, Hoist, Swing, Propel and Drag shall be provided with 'ON' type brake so as to automatically apply the brake in case of Electrical power failure.
b) Travel limit switches for crowd, hoist and Drag functions as applicable.
c) Limit switch for boom movement.
d) Two way communication system other than mobile phone in Operator's Cabin
e) Boom crack monitoring system in Draglines.

2.4 DRILLS:

(a) Dust prevention or suppression system provided in the Drills shall confirm to DGMS circular no. DGMS(S&T)I circular (Approval) No 1, dated 10.03.2017.
(b) Emergency 'Stop' push button in
  (i) Operator's cabin
  (ii) Main frame.
  (iii) Propeller pendent
  (iv) Rear end

(c) Over Temperature protection devices, in motor winding and other related parts.
(d) Explosive vent in transformer.
(e) Interlock between propel and drilling operations.
(f) High air discharge temperature trip switch
(g) Low lube oil pressure cut off switch (engine and compressor)
(h) Oil stop valve (electric solenoid valve in compressor lubrication line)
(i) No bump circuit
(j) Tower lock.
(k) Propel joystick-spring loaded type to return to neutral (dead man safety)
(l) Lock check valves for preventing creeping in drill
(m) Unloader valve
(n) Stabilizers
(0) Breakout wrench

3.0 All Heavy Earth Moving Machinery including dumpers and trucks shall be provided with Safety features and devices mentioned above before putting them into operation in a Mine.

Amalangshu Pal

TIL Limited
1, TARATOLLA ROAD
GARDEN REACH
KOLKATA-700 024

AMPL

A detailed schedule of all necessary oils, lubricants, fluids for the operation and maintenance of Equipment as per Sec-VI, Tech Specs, Part C,Clause-C.6.4

MODELS	RT 740B		
LUBRICANTS	**GRADE**	**QTY**	**HRS**
ENGINE OIL	Premium Blue 15W40 CH4 TIL P.No.Z2167800059	18	250
ENGINE COOLANT	Coolant Additive Concerntrate Cummins P.No.C317057	10	500
TRANSMISSION OIL / GEAR BOX OIL	TF-C4 SAE 30 TIL P.No.315093	19	1000
DIFFERNTIAL GEAR OIL	85 W 140 TIL P.No.C315092	14.1	1000
WHEEL HUB GEAR OIL	85 W 140 TIL P.No.C315092	4 x 3.3 = 13.2	1000
SLEW UNIT GEAR OIL	SAE-90 TIL P.No. 315041	5.5	1000
EXTENSION UNIT GEAR OIL	N/A	N/A	N/A
HOIST UNIT GEAR OIL	85 W 140	11.3	1000
HYDRAULIC OIL	HYD 68 TIL P.No.HOCR-1	390	2000
BRAKE	HYDRAULIC BRAKE		
THROTTLE	DOT 5 TIL P.No. C315122	1.9	1000
GREASE (BOOM & SPREADER)	LITHOXZ - EP 2 TIL P.No. C316252	AS REQ	AS PER MAINTENANCE
GREASE WHEEL HUBS	LITHOXZ - EP 2 TIL P.No. C316252	AS REQ	AS PER MAINTENANCE

ANNEXURE-F

Amalangshu Pal

TIL Limited 1, TARATOLLA ROAD GARDEN REACH KOLKATA-700 024

82/108

83/108

Annexure - B

TIL Limited
CIN : L74999WB1974PLC041725
Registered Office:
1, Taratolla Road, Garden Reach
Kolkata-700 024
Ph : 6633-2000, 6633-2845
Fax : 2469-3731/2143
Website : www.tilindia.in

DETAILS OF NEAREST MAJOR DEPOT/ WAREHOUSE AND SERVICE FACILITY

Major Depot / Wareshouse			Service Facility		
Location	Contact No.	Inventory Value (approx) Rs. in Lakhs)	Location	Type of facility available	No of Engineers
Kolkata	033-66332000 033-66332153	1800	Kolkata	Fully Equipped Crane Repairing Workshop	20
			Kolkata	Repairing/ Service Facility through Service Engineer	2
			Ranchi	Repairing/ Service Facility through Service Engineer	1
			Dhanbad	Repairing/ Service Facility through Service Engineer	2
			Ramgarh	Repairing/ Service Facility through Service Engineer	1
			Asansol	Repairing/ Service Facility through Service Engineer	1

List of Contact points are enclosed herewith

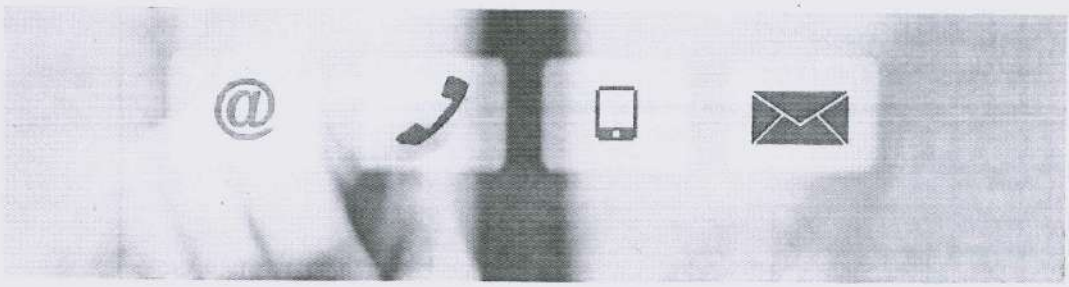
Amalangshu Pal

TIL Limited
1, TARATOLLA ROAD GARDEN REACH
KOLKATA-700 024

Tractors India

(https://www.tilindia.in/)

Search...



Home (https://www.tilindia.in/) » Contact Us » **Locations**

Locations

Corporate & Registered Office

Kolkata
TIL Limited.
CIN: L74999WB1974PLC041725

1 Taratolla Road, Garden Reach,
Kolkata 700024, West Bengal
Phone: +91 33 2469 3732-6 / 6497 / 3983 | 6633 2000
Fax: +91 33 2469 2143 / 3731

Toll Free Number: 1800 266 1535
Email: mktg-til@tilindia.com (mailto:mktg-til@tilindia.com)

Expand All | Collapse All

Regional and Branch Offices

Kolkata
Amalangshu Pal
(Cranes and Reach Stackers)

Amalangshu Pal

TIL Limited 1, TARATOLLA ROAD GARDEN REACH KOLKATA-700 024

85/108

1 Taratolla Road, Garden Reach,
Kolkata 700024, West Bengal
Phone: +91 33 2469 3732-6 / 6497 / 3983 | 6633 2000 / 2151
Mobile: +91 9831839025
Fax: +91 33 2469 2143 / 3731
Email: amalangshu.pal@tilindia.com (mailto:amalangshu.pal@tilindia.com)

Delhi
Rajiv Kapoor
302 Ansal Bhawan,
16, Kasturba Gandhi Marg, New Delhi 110 001
Phone: +91 11 2331 1607 / 8046 / 9248 | 2335 0250 / 0255
Mobile: +91 9971091610
Fax: +91 11 2331 3263
Email: rajiv.kapoor@tilindia.com (mailto:rajiv.kapoor@tilindia.com)

Mumbai
Ajay Shah
502 – A, 5th Floor, Western Edge Tower No.1
Western Express Highway, Datta Pada Road
Borivali (East), Mumbai 400 066, Maharashtra
Mobile: +91 8850971609
Fax: + 91 22 6147 9111
Email: ajay.shah@tilindia.com (mailto:ajay.shah@tilindia.com)

Chennai
Maruthi Prasad
Jhaver Plaza, 7th Floor 1-A, Nungambakkam
High Road, Chennai 600 034, Tamil Nadu
Phone: +91 44 6670 3000 / 3010
Mobile: +91 9618562333
Email: maruthi.prasad@tilindia.com (mailto:maruthi.prasad@tilindia.com)

Singrauli
Sailesh Pratap Singh
(Behind Shiv Mandir,Near Reliance Infrastructure, LIG Colony)
Singrauli 486 889, Dist Singrauli, M.P.
Mobile: +91 7879403811 / 7805267268
Email: shailesh.pratapsingh@tilindia.com (mailto:shailesh.pratapsingh@tilindia.com)

Amalangshu Pal

T.I.L. Limited
1, TARATOLLA ROAD GARDEN REACH
KOLKATA-700 024

Guwahati
Amalangshu Pal
Flat No. A-5,
Lakheswari Bhawan,
Padumbari, 37 NH Road,
P.S - Jalukbari, Dist.- Kamrup,
Guwahati - 781014, Assam,
Mobile: +91 9831839025
Email: amalangshu.pal@tilindia.com (mailto:amalangshu.pal@tilindia.com)

Factory / Works

Kamarhatty
517,Barrackpore Trunk Road,
Kolkata 700058, West Bengal
Phone:+91 33 2553 1352/1882/6633/4000
Fax:+91 33 2553 / 2546/5971

Sahibabad
Plot No. 11, Site No. 4,
Industrial Area, Ghaziabad,
Sahibabad 201 010, U.P.
Phone: +91 120 277 7945 | 665 9000
Fax: +91 120 277 0365

Kharagpur
Vill. & P.O. Changual, Kharagpur
Dist: Paschim Medinipur 721 301, West Bengal
Phone: +91 3222 661101

Pan India - Sales & Services

Cranes & Reach Stackers **Crushing & Screening**

Amalangshu Pal

TIL Limited
TARATOLLA ROAD GARDEN REACH
KOLKATA-700 024

87/108

East West North South

Expand All | Collapse All

West Bengal

Kolkata

Saheb Pal
(Sales)
Mobile: +91 7725935942
Email: saheb.pal@tilindia.com (mailto:saheb.pal@tilindia.com)

Avishek Roy
(Customer Support)
Mobile: +91 8926292652
Email: debasish.hazra@tilindia.com (mailto:debasish.hazra@tilindia.com)
sujay.sahoo@tilindia.com (mailto:sujay.sahoo@tilindia.com)

Asansol

Arun Singh
(Customer Support)
Mobile: +91 9932730770
Email: Arun.Singh@tilindia.com (mailto:Arun.Singh@tilindia.com)

Jharkhand

Ranchi

Chitrasen Nayak
(Customer Support)
Mobile: +91 8582006869 / 9853501935
Email: Chitra.Nayak@tilindia.com (mailto:Chitra.Nayak@tilindia.com)
anup.mondal@tilindia.com (mailto:anup.mondal@tilindia.com)

Dibyendu Nandi
(Customer Support)
Mobile: +91 7541029626 / 7278570323
Email: Anup.Mondal@tilindia.com (mailto:Anup.Mondal@tilindia.com)

Amalangshu Pal

TIL Limited 1, TARATOLLA ROAD GARDEN REACH KOLKATA-700 024

88/108

Dhanbad

Arun Singh
(Customer Support)
Mobile: +91 91 9932730770
Email: Arun.Singh@tilindia.com (mailto:Arun.Singh@tilindia.com)

Maloy Kumar Majhi
(Customer Support)
Mobile: +91 7872576951
Email: maloy.majhi@tilindia.com (mailto:maloy.majhi@tilindia.com)

Jamshedpur

Amar Kumar Singh
(Sales)
Mobile: +91 9680087880
Email: amar.singh@tilindia.com (mailto:amar.singh@tilindia.com)

Odisha

Assam

Bihar

Patna

Dinesh Raut
(Customer Support)
Mobile: +91 9661471531 / 8777894707
Email: arun.singh@tilindia.com (mailto:arun.singh@tilindia.com)

Amar Kumar Singh
(Sales)
Mobile: +91 9680087880
Email: amar.singh@tilindia.com (mailto:amar.singh@tilindia.com)

Tripura

Amalangshu Pal

89/108

Contact Us

TIL Limited

1, Taratolla Road,
Garden Reach,
Kolkata 700 024, West Bengal
Phone: +91 33 2469 3732-6
Fax: +91 33 2469 2143, 3731
CIN: L74999WB1974PLC041725

Toll Free Number:

1800 266 1535 (tel:18002661535)

Email:

mktg-til@tilindia.com (mailto:mktg-til@tilindia.com)

Follow Us:

in

(https://www.linkedin.com/company/til-limited-

(https://www.facebook.com/tilindia/) (https://www.youtube.com/user/tilmitedindia)

Digital Payment:

(/assets/pdf/tractorindia@sbi.pdf)

Inquiry Form

Organization

Organization

Full Name*

Name

Phone Number *

Phone no.

Amalangshu Pal

TIL Limited 1, TARATOLLA ROAD GARDEN REACH KATA-700 024

90/108

Annexure D

TIL Limited
CIN : L74999WB1974PLC041725
Registered Office:
1, Taratolla Road, Garden Reach
Kolkata-700 024
Ph : 6633-2000, 6633-2845
Fax : 2469-3731/2143
Website : www.tilindia.in

DETAILS OF ERECTION / COMMISSIONING PROGRAMME

AFTER CRANE REACHES YOUR SITE, OUR SERVICE ENGINEER WILL BE DEPUTED FOR AN ADEQUATE PERIOD FOR COMMISSIONING OF THE CRANE AT YOUR SITE, ON FREE OF CHARGE BASIS.

A SET OF TOOL KIT AS PER THE LIST WILL BE SUPPLIED ALONG WITH EACH MACHINE FOR MAINTENANCE OF THE CRANE. NO EXTRA SPARES ARE REQUIRED FOR COMMISSIONING OF THE CRANE.

DURING THE COMMISSIONING, OUR SERVICE ENGINEER WILL ALSO IMPART TRAINING TO YOUR OPERATIONAL STAFF ON OPERATION & MAINTENANCE OF THE CRANE.

ALL NECESSARY ARRANGEMENTS INCLUDING UNSKILLED LABOUR, POL, LIFTING TOOLS & TACKLES ETC. SHOULD BE PROVIDED BY YOU AT YOUR COST.

FOR **TIL LIMITED**

Amalangshu Pal

AUTHORISED SIGNATORY

TIL Limited
1, TARATOLLA ROAD GARDEN REACH
KOLKATA-700 024

91/108

ANNEXURE-G

QUALITY ASSURANCE PLAN

Tractors India	TIL Crane Model – RT 740B	Manufacturer's Works – TIL LIMITED 517 , B T Road , Kolkata – 700058	QAP No – Crane/06/2020 Rev - 00 DATE – 19-Jun-2020 PAGE - 2 of 2

SL	COMPONENT/ OPERATION	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORM	FORMAT OF RECORD	AGENCY		REMARKS
									T	C	
1	2	3	4	5	6	7	8	9	10		11
4	Load Testing	Verification of Lifting Capacities and crane performance	Critical	Performance Test	100%	IS 4573 : 1982 & Technical Specification	As per Standard	Test Certificate	P	W	

LEGENDS :	MANUFACTURER SEAL & SIGN:	NAME & SIGN OF APPROVING AUTHORITY & SEAL
T: TIL C: CUSTOMER OR NOMINATED INSPECTION AGENCY P: PERFORM R: REVIEW OF DOCUMENTS W: WITNESS	UMASHANKAR CHAKRABORTTY DGM – QUALITY ASSURANCE TIL LIMITED	Amalangshu Pal TIL Limited 1, TARATOLLA ROAD GARDEN REACH KOLKATA-700 024

92/108

QUALITY ASSURANCE PLAN

Tractors India	TIL Crane Model – RT 740B	Manufacturer's Works – TIL LIMITED 517 , B T Road , Kolkata – 700058	QAP No – Crane/06/2020 Rev - 00 DATE – 19-Jun-2020 PAGE - 1 of 2

SL	COMPONENT/ OPERATION	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORM	FORMAT OF RECORD	AGENCY		REMARKS
									T	C	
1	2	3	4	5	6	7	8	9	10		11
1	Diesel Engine	Review of Manufacturer's Test Certificate	Major	Review of Documents	100%	Technical Specification Sheet	As per Technical Specification Sheet	Test Certificate	R	R	
2	Hook Block Assy	Review of Manufacturer's Test Certificate	Major	Review of Documents	100%	Hook Testing Regulation	As per Regulation	Test Certificate	R	R	
3	Steel wire rope	Review of Manufacturer's Test Certificate	Major	Review of Documents	100%	Technical Specification Sheet	As per Technical Specification Sheet	Test Certificate	R	R	

LEGENDS :	MANUFACTURER SEAL & SIGN:	NAME & SIGN OF APPROVING AUTHORITY & SEAL
T: TIL C: CUSTOMER OR NOMINATED INSPECTION AGENCY P: PERFORM R: REVIEW OF DOCUMENTS W: WITNESS	UMASHANKAR CHAKRABORTTY DGM – QUALITY ASSURANCE TIL LIMITED	TIL Limited 1, TARATOLLA ROAD GARDEN REACH KOLKATA-700 024

Annexure-H

Tender Inviting Authority: GM (MM) BCCL HQ

Name of Work: SUPPLY OF 40T Crane

NIT No:BCCL/PUR/420026/40T Crane/20-21/15 Dated 05.06.2020

Name: TIL LIMITED

TECHNICAL PARAMETER SHEET

S. No *	Item Code *	Description of Item *	Bidder's Eligibility Status	Specification Parameter *	Unit of Measure *	Evaluation Criteria (To be selected from drop down box in each cell) *	Required Value *	Bidder's value *	Eligibility		Remarks by bidder, if any
									Specification wise	Overall	
1	item1	40T Crane	0	Whether quoted or not quoted for this item?	NA	NOT NULL	NOT NULL	QUOTED	TRUE		
				As per Scope of supply of Annexure-A of NIT.	NA	AGREED or DISAGREED	AGREE	AGREE	TRUE		
				"Schedule of Requirements" as per Annexure-A of NIT	NA	AGREED or DISAGREED	AGREE	AGREE	TRUE		
				"Schedule of Requirements of Services" as per Annexure-A of NIT	NA	AGREED or DISAGREED	AGREE	AGREE	TRUE		
				"Instructions to Bidders" as per Annexure-A of NIT	NA	AGREED or DISAGREED	AGREE	AGREE	TRUE		
				"General Requirements" as per Annexure-A of NIT	NA	AGREED or DISAGREED	AGREE	AGREE	TRUE		
				"Scope of specification "PART E:- Equipment Specification" of Annexure-A of NIT(Clause-1)	NA	AGREED or DISAGREED	AGREE	AGREE	TRUE		
				"Design criteria" as per "PART E:- Equipment Specification" of Annexure-A of NIT(clause-3)	NA	AGREED or DISAGREED	AGREE	AGREE	TRUE		
				"Technical Specification "PART E- Diesel Engine" as per "Equipment Specification" of Annexure-A of NIT(clause 4.1)	NA	AGREED or DISAGREED	AGREE	AGREE	TRUE		
				"Technical Specification "PART E- Transmission" as per "Equipment Specification" of Annexure-A of NIT(clause-4.2)	NA	AGREED or DISAGREED	AGREE	AGREE	TRUE		
				"Technical Specification "PART E - Drive system" as per "Equipment Specification" of Annexure-A of NIT(clause-4.3)	NA	AGREED or DISAGREED	AGREE	AGREE	TRUE		
				"Technical Specification "PART E- Steering" as per "Equipment Specification" of Annexure-A of NIT(Clause-4.4)	NA	AGREED or DISAGREED	AGREE	AGREE	TRUE		
				"Technical Specification "PART E -Hoses" as per "Equipment Specification" of Annexure-A of NIT(Clause-4.5)	NA	AGREED or DISAGREED	AGREE	AGREE	TRUE		
				"Technical Specification "PART E - Brakes" as per "Equipment Specification" of Annexure-A of NIT(Clause-4.6)	NA	AGREED or DISAGREED	AGREE	AGREE	TRUE		
				"Technical Specification "PART E- Tyres" as per "Equipment Specification" of Annexure-A of NIT(Clause-4.7)	NA	AGREED or DISAGREED	AGREE	AGREE	TRUE		
				"Technical Specification "PART E- Frames" as per "Equipment Specification" of Annexure-A of NIT(Clause-4.8)	NA	AGREED or DISAGREED	AGREE	AGREE	TRUE		
				"Technical Specification "PART E- Outriggers" as per "Equipment Specification" of Annexure-A of NIT(Clause-4.9)	NA	AGREED or DISAGREED	AGREE	AGREE	TRUE		
				"Technical Specification "PART E - Boom as per "Equipment Specification" of Annexure-A of NIT(Clause-	NA	AGREED or DISAGREED	AGREE	AGREE	TRUE		
				"Technical Specification "PART E - Lifting block" as per "Equipment Specification" of Annexure-A of NIT(Clause-4.11)	NA	AGREED or DISAGREED	AGREE	AGREE	TRUE		
				"Technical Specification "PART E - Hoist system " as per "Equipment Specification" of Annexure-A of NIT(Clause-4.12)	NA	AGREED or DISAGREED	AGREE	AGREE	TRUE		

94/108

"Technical Specification "PART E -Safe load indicator as per "Equipment Specification" of Annexure-A of NIT(Clause-4.13)	NA	AGREED or DISAGREED	AGREE	AGREE	TRUE		
"Technical Specification "PART E Derricking and Slewing " as per "Equipment Specification" of Annexure-A of NIT(Clause-4.14)	NA	AGREED or DISAGREED	AGREE	AGREE	TRUE		Derricking system is controlled by the stroke of the cylinder
"Technical Specification "PART E - Drums and sheaves " as per "Equipment Specification" of Annexure-A of NIT(Clause-4.15)	NA	AGREED or DISAGREED	AGREE	AGREE	TRUE	COMPLIED	ISO 8087 : 1985 is withdrawn and replaced with new ISO 16625 : 2013. Document is attached in Tech Doc 1 folder
"Technical Specification "PART E - Fuel tank" as per "Equipment Specification" of Annexure-A of NIT(Clause-4.16)	NA	AGREED or DISAGREED	AGREE	AGREE	TRUE		
"Technical Specification "PART E - Operators Cab" as per "Equipment Specification" of Annexure-A of NIT(Clause-4.17)	NA	AGREED or DISAGREED	AGREE	AGREE	TRUE		
"Technical Specification "PART E - Warning alarms/lights" as per "Equipment Specification" of Annexure-A of NIT(Clause-4.18)	NA	AGREED or DISAGREED	AGREE	AGREE	TRUE		a) Parking brake actuation. - OK b) High torque converter oil temperature - OK c) Low engine oil pressure- OK d) High coolant temperature- OK e) Low air pressure (if applicable) – NA f) Hoist drum rotation indicator.- NA g) Low coolant level - NA
"Technical Specification "PART E - Guages and indicator" and as per "Equipment Specification" of Annexure-A of NIT(Clause-4.19)	NA	AGREED or DISAGREED	AGREE	AGREE	TRUE		
"Technical Specification "PART E - Electrical equipments" as per "Equipment Specification" of Annexure-A of NIT(Clause-4.20)	NA	AGREED or DISAGREED	AGREE	AGREE	TRUE		
"Technical Specification "PART E - "Lighting" and other requirements" as per "Equipment Specification" of Annexure-A of NIT(Clause-4.21)	NA	AGREED or DISAGREED	AGREE	AGREE	TRUE		
"Technical Specification "PART E - Guards and shields" as per "Equipment Specification" of Annexure-A of NIT(Clause-4.22)	NA	AGREED or DISAGREED	AGREE	AGREE	TRUE		
"Technical Specification "PART E- Fire extinguisher" as per "Equipment Specification" of Annexure-A of NIT(Clause-4.23)	NA	AGREED or DISAGREED	AGREE	AGREE	TRUE		
"Technical Specification "PART E - Ancillary equipments" and other requirements" as per "Equipment Specification" of Annexure-A of NIT(Clause-5)	NA	AGREED or DISAGREED	AGREE	AGREE	TRUE		Please find the detailed description attached in the folder Tech Doc 2
"PART E -Special Guarantee" as per "Equipment Specification" of Annexure-A of NIT(Clause-6)	NA	AGREED or DISAGREED	AGREE	AGREE	TRUE		
"PART E -Performance Guarantee" as per "Equipment Specification" of Annexure-A of NIT(clause-7)	NA	AGREED or DISAGREED	AGREE	AGREE	TRUE		
"Technical Specification- 8.1 General" as per Annexure-A NIT (details to be uploaded separetly in relevent upload section)	NA	AGREED or DISAGREED	AGREE	AGREE	TRUE		
"Technical Specification- 8.2 Technical Details" as per Annexure-A NIT(details to be uploaded separetly in relevent upload section)	NA	AGREED or DISAGREED	AGREE	AGREE	TRUE		

AMPL

	"Technical Specification-8.3 Dimensions, weights and performance details" as per Annexure-A NIT(details to be uploaded separetly in relevent upload section)	NA	AGREED or DISAGREED	AGREE	AGREE	TRUE		
	Supplementary Items, Information and drawing, Erection, Assembly, Commissioning, Performance testing, and Training as per Scope of Supply of Annexure-A	NA	AGREED or DISAGREED	AGREE	AGREE	TRUE		
	Do you have MSME status certificate for this item?	NA	YES or NO		NO	TRUE		
	Do you have Ancillary status of BCCL certificate for this item?	NA	YES or NO		NO	TRUE		
	Specify make and model:	NA	NOT NULL	NOT NULL	TIL make RT740B	TRUE		
	Specify Offered Quantity	NA	NOT NULL	NOT NULL	One	TRUE		

***TECHNICAL PARAMETER SHEET

***PLEASE ENTER THE DETAILS AS PER THE INFORMATION AND DOCUMENTS YOU HAVE W.R.T. YOUR OFFERED ITEM/S

BY TENDER INVITING AUTHORITY

Annexure-I

General Conditions of Contract

1. Definitions In this Contract,

The following terms shall be interpreted as indicated:

a) "The Contract" means the agreement entered into between the Purchaser and the Supplier, as recorded in the Contract Form signed by the Parties, including all attachments and appendices thereto and all documents incorporated by reference therein;

b) "The Contract Price" means the price payable to the Supplier under the Contract for the full and proper performance of its contractual obligations;

c) "The Goods" means all of the equipment, machinery, and/or other materials which the Supplier is required to supply to the Purchaser under the Contract;

d) "The Services" means those Services ancillary to the supply of the Goods, such as transportation and insurance, and any other incidental Services, such as installation, commissioning, provision of technical assistance, training and other such obligations of the Supplier covered under the Contract;

e) "GCC" means the General Conditions of Contract contained in this section;

f) "SCC" means the Special Conditions of Contract;

g) "The Purchaser" means the organisation purchasing goods and services, i.e., Coal India Limited;

h) "The Purchaser's country" is India;

i) "The Supplier" means the individual or firm supplying the Goods and Services under this Contract;

j) "CIL" means Coal India Limited or the Subsidiary Company of CIL where equipment is deployed; k) " Year" means the Calendar Year

2. Application

These General Conditions shall apply to the extent that they are not superseded by provisions in other parts of the Contract.

3. Standards

The Goods supplied under this Contract shall conform to the standards mentioned in theTechnicalSpecifications.Suchstandardsshallbethelatestissuedbytheconcerned institution.

4. Use of Contract Documents and Information

4.1 The Supplier shall not, without the Purchaser's prior written consent, disclose the Contract, or any provision thereof, or any specification, plan, drawing, pattern, sample or information furnished by or on behalf of the Purchaser in connection therewith, to any person other than a person employed by the Supplier in the performance of the Contract. Disclosure to any such employed person shall be made in confidence and shall extend only as far as may be necessary for purposes of such performance.

4.2 The Supplier shall not, without the Purchaser's prior written consent, make use of any document or information enumerated in GCC Clause 4.1 except for purposes of performing the Contract.

4.3 Any document, other than the Contract itself, enumerated in GCC Clause 4.1 shall remain the property of the Purchaser and shall be returned (in all copies) to the Purchaser on completion of the Supplier's performance under the Contract if so required by the Purchaser.

5. Patent Rights

The Supplier shall indemnify the Purchaser against all third-party claims of infringement of patent, trademark or industrial design rights arising from use of the Goods or any part thereof in the Purchaser's country.

6. Security Deposit

The successful tenderers will have to submit security deposit as detailed in SCC, clause- 1.

7. Performance Bank Guarantee

The successful bidders will have to furnish Performance Bank Guarantee as detailed in SCC, clause-2.

AMPL

97/108

8. Inspections and Tests

8.1 The Purchaser or its representative shall have the right to inspect and/or to test the Goods to confirm their conformity to the Contract Specifications at no extra cost to the Purchaser. SCC and the Technical Specifications shall specify what inspections and tests the Purchaser requires and where they are to be conducted. The Purchaser shall notify the Supplier in writing, in a timely manner, of the identity of any representatives retained for these purposes. Sufficient time, at least 30 days in advance should be given for inspection.

8.2 The inspections and tests may be conducted on the premises of the Supplier, at point of delivery and/or at the Goods' final destination. If conducted on the premises of the Supplier, all reasonable facilities and assistance, including access to drawings and production data, shall be furnished to the inspectors at no charge to the Purchaser. However, any drawing and proprietary information provided for this purpose shall remain in control of the supplier.

8.3 Should any inspected or tested Goods fail to conform to the Specifications, the Purchaser may reject the Goods, and the Supplier shall either replace the rejected Goods or make alterations necessary to meet specification requirements free of cost to the Purchaser.

8.4 The Purchaser's right to inspect, test and, where necessary, reject the Goods after the Goods'arrivalinthePurchaser'scountryshallinnowaybelimitedorwaivedbyreason of the Goods having previously been inspected, tested and passed by the Purchaser or its representative prior to the Goods' shipment from the country oforigin.

8.5 Nothing in GCC Clause 8 shall in anyway relieve the Supplier of any warranty or other obligations under this Contract.

9. Packing

9.1 The Supplier shall provide such packing of the Goods as is required to prevent their damage or deterioration during transit to their final destination, as indicated in Contract. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit and open storage. Packing case size and weights shall take in to consideration, where appropriate, the remoteness of the Goods' final destination and the absence of heavy handling facilities at all points in transit.

9.2 The packing, marking and documentation within and outside the packages shall comply strictly with such special requirements as shall be expressly provided for in the Contract, including additional requirements, if any, specified in SCC, and in any subsequent instructions ordered by the Purchaser.

9.3 Packing instructions: The Supplier will be required to make separate packages for each consignee. Each package will be marked on three sides with proper paint with the following:

i. Project;
ii. Contract No;
iii. Country of origin of Goods;
iv. Supplier's name;
v. Packing list ref. Number;
vi. The gross weight, net weight and cubic measurement;
vii. Consignee Name and Address;

NB: One copy of the packing list shall be inserted inside the package.

10. Delivery and Documents

10.1 Delivery of the Goods shall be made by the Supplier in accordance with the terms specified in the Schedule of Requirements. The details of shipping and/or other documents to be furnished by the Supplier are specified in SCC.

10.2 For purposes of the Contract, "EXW", "FOB", "FCA", "CFR", "CIF", "CIP" and other trade terms used to describe the obligations of the Parties shall have the meanings assigned to them by the prevailing edition of Incoterms on the date of tender opening, published by the International Chamber of Commerce, Paris.

11. Insurance

11.1 The Goods supplied under the Contract shall be fully insured by the supplier in a freely convertible currency against loss or damage incidental to manufacture or acquisition, transportation, storage and delivery up to Final destination site. The insurance cover should be available for a period of not less than three (3) months after the completion of supply, installation and commissioning at the final destination.

11.2 Where the delivery of the Goods is required by the Purchaser on CIP Basis, the supplier shall deliver the goods at the named place of destination at its own risks and costs. BCCL has no obligation to the supplier for arranging insurance. However, BCCL will provide the supplier upon request, with necessary information for obtaining insurance.

11.3 Where the delivery of the Goods is required by the Purchaser on FOR destination Basis, the supplier shall deliver the goods at the FOR destination site at its own risks and costs. BCCL has no obligation to the supplier for arranging insurance. However, BCCL will provide the supplier upon request, with necessary information for obtaining insurance".

11.4 Insurance should be 110% of the total landed value inclusive of taxes for equipment or spares & consumables, as the case maybe.

12. Transportation

12.1 (a)Where the Supplier is required under the Contract to deliver the Goods on CIP (Final Place of Destination) basis, transport of the goods to the port of destination or such other named place of Destination in the Purchaser's country, as shall be specified in the contract, shall be arranged and paid for by the Supplier, and the cost thereof shall be included in the Contract Price. In quoting the price on CIP basis, there shall be no restriction on the choice of the carrier or Insurance Agency. In case of inland transportation of goods, the same is to be done through registered common carriers only. (b)Marine Freight and Insurance Charges shall be paid at actuals subject to the ceiling of quoted amount. Inland Freight and Insurance charges shall be paid at actuals but not beyond the composite rate/ price quoted under thishead.

12.2 In case of FOR Destination contracts, transport of goods to the Destination site shall be arranged and paid for by the supplier and the cost thereof shall be included in the contract price. Inland Freight and Insurance charges shall be paid at actuals but not beyond the composite rate/prices quoted under this head. Transportation of goods is to be done through registered common carriers only.

13. Incidental Services

The Supplier may be required to provide any or all of the following Services, including additional Services, if any, specified in SCC:

a) Performance or supervision of on-site assembly and/or start-up of the supplied Goods;

b) Furnishing of tools required for assembly and/or maintenance of the supplied Goods;

c) Furnishing of a detailed operations and maintenance manual for each appropriate unit of the supplied Goods;

d) Performance or supervision or maintenance and/or repair of the supplied Goods, for a period of time agreed by the Parties, provided that this service shall not relieve the Supplier of any warranty obligations under this Contract.

e) Training of the Purchaser's personnel, at project site and manufacturer's training facility available in India.

14. Spare Parts

The Supplier may be required to provide any or all of the following materials, notifications, and information pertaining to spare parts manufactured or distributed by the Supplier:

a) Such spare parts as the Purchaser may elect to purchase from the Supplier, provided that this election shall not relieve the Supplier of any warranty obligations under the Contract; and

b) In the event of termination of production of the spare parts;

i. advance notification to the Purchaser of the pending termination, in sufficient time to permit the Purchaser to procure needed requirements and

ii. following such termination, furnishing at no cost to the Purchaser, the manufacturing drawings, material specifications and all necessary permissions to facilitate manufacture of the Spare Parts elsewhere.

c) Supplier shall carry sufficient inventories to assure ex-stock supply of consumable and fast moving spares. The provision of Spare Parts by the Supplier to the Purchaser shall be governed by Part C.6 of Section VI (Technical Specifications).

15. Warranty

15.1 The Supplier warrants that the Goods supplied under the Contract are new, unused, of the most recent or current models and that they incorporate all recent improvements in design and materials unless provided otherwise in the Contract. The Supplier further warrants that all Goods supplied under this Contract shall have no defect arising from design, materials or workmanship or from any act or omission of the Supplier that may develop under normal use of the supplied Goods in the conditions prevailing in the purchaser's country.

15.2 The warranty for equipment shall remain valid for 12 months form the date of Commissioning of the equipment, unless specified otherwise in the SCC. The warranty for spares and consumables shall be 12 months from the date of their fitment unless specified otherwise in the SCC. However in case of those spares and consumables whose life is less than 12 months the warranty will be limited to their respective life. The Special guarantee for different components supplied as spares will be applicable as defined in Equipment specification of the NIT.

15.3 The Purchaser shall promptly notify the Supplier in writing of any claims arising under this warranty.

15.4 Upon receipt of such notice, the Supplier shall, within the period specified in SCC and with all reasonable speed, repair or replace the defective Goods or parts thereof, without costs to the Purchaser at the final destination.

15.5 If the Supplier, having been notified, fails to remedy the defect(s) within the period specified in SCC, within a reasonable period, the Purchaser may proceed to take such remedial action as may be necessary, at the Supplier's risk and expense and without prejudice to any other rights which the Purchaser may have against the Supplier under the Contract.

16. Payment

16.1 The method and conditions of payment to be made to the Supplier under this Contract shall be specified in theSCC.

16.2 The Supplier's request(s) for payment shall be made to the Purchaser in writing, accompanied by an invoice describing, as appropriate, the Goods delivered and Services performed, and by documents, submitted pursuant to GCC Clause 10, and upon fulfillment of other obligations stipulated in the Contract.

16.3 Payments shall be made by the Purchaser within 21 days after submission of an invoice or claim along with the requisite documents, by the supplier.

16.4 The currency or currencies in which payment is made to the Supplier under this Contract shall be specified in the SCC subject to the following general principle: payment will be made in the currency or currencies in which the payment has been requested in the Supplier's Bid and accepted by the Purchaser.

17. Prices

Prices charged by the Supplier for Goods delivered and Services performed under the Contract shall not vary from the prices quoted by the Supplier in its bid.

18. Changes in Order

The Purchaser may at any time, by a written order given to the Supplier, make changes within the general scope of the Contract in any one or more of the following:

a) Drawings, designs or specifications, where Goods to be furnished under the Contract are to be specifically manufactured for the Purchaser;

b) The method of shipment or packing;

c) The place of delivery; and/or

d) The place of Services to be provided by the Supplier.

19. Contract Amendments

Subject to GCC Clause 18, no variation in or modification of the terms of the Contract shall be made except by written amendment signed by the Parties.

20. Assignment

The Supplier shall not assign, in whole or in part, its obligations to perform under this Contract, except with the Purchaser's prior written consent.

21. Subcontracts

The Supplier shall notify the Purchaser in writing of all subcontracts awarded by them to discharge the works under this Contract. Such notification, in the original bid or later, shall not relieve the Supplier of any liability or obligation under the Contract and the supplier will be solely responsible for all obligations under the contract.

22. Delays in the Supplier's Performance

22.1 Delivery of the Goods and performance of Services shall be made by the Supplier in accordance with the time schedule prescribed by the Purchaser in the Schedule of Requirements.

22.2 If at any time during performance of the Contract, the Supplier or its Subcontractor(s) should encounter conditions impeding timely delivery of the Goods and performance of Services, the Supplier shall promptly notify the Purchaser in writing of the fact of the delay, its likely duration and its cause(s). As soon as practicable after receipt of the Supplier's notice the Purchaser shall evaluate the situation and may at its discretion extend the Supplier's time for performance, with or without liquidated damages, in which case the extension shall be ratified by the Parties by amendment of the Contract.

22.3 Except as provided under GCC Clause 25, a delay by the Supplier in the performance of its delivery obligations shall render the Supplier liable to the imposition of liquidated damages pursuant to GCC Clause 23, unless an extension of time is agreed upon pursuant to GCC Clause 22.2 without the application of liquidated damages.

23. Liquidated Damages

23.1. In the event of failure to deliver/dispatch the equipment/store including erection and commissioning with in the stipulated date/ period to effect supply in accordance with the terms and conditions and the specifications mentioned in the supply order and in the event of breach of any of the terms and conditions mentioned in the supply order, Coal India Ltd., shall have the right:

(a) To recover from the successful bidder as agreed liquidated damages, a sum not less than 0.5% (Half Percent) of the price of any equipment/stores along with accessories including erection and commissioning charges which the successful tenderer has not been able to supply, erect & commission as aforesaid for each week or part of a week during which the delivery of such stores may be in arrears limited to 10% (Ten Percent), or

(b) To purchase elsewhere after due notice to the successful tenderer on the account and at the risk of the defaulting supplier, the equipment/stores not supplied or others of similar description without cancelling the supply order in respect of the consignment not yet due for supply, or

(c) To cancel the supply order or a portion there of, and if so desired to purchase the equipment/ stores at the risk and cost of the defaulting supplier and also,

(d) To extend the period of delivery with or without penalty as may be considered fit and proper. The penalty, if imposed, shall not be more than the agreed liquidated damages referred to in clause – (a) above.

(e) To forfeit the security deposit fully or in part. (f) Whenever under this contract any sum of money is recoverable from and payable by the supplier, Bharat Coking Coal Ltd., shall be entitled to recover such sum by appropriating in part or in whole by deducting any sum or which at any time thereafter may become due to the successful tenderer in this or any other contract, should this sum be not sufficient to recover the full amount recoverable, the successful tenderer shall pay Bharat Coking Coal Ltd, the balance amount on demand. The supplier shall not be entitled to any gain on any such purchase.

23.2. For the purpose of the calculation of the liquidated damages amount, the basic FOR Destination price shall be considered. For direct imports, the CIP price at Final Place of destination will be considered. Taxes and duties shall not be taken into account for calculation of LD. However, when prices indicated in the order are inclusive of taxes and duties, such prices will be taken for calculation of LD.

24. Termination for Default.

24.1 The Purchaser, without prejudice to any other remedy for breach of Contract, by written notice of default sent to the Supplier, may terminate the Contract in whole or in part:

(a) if the Supplier fails to deliver any or all of the Goods within the period(s)specified in the Contract, or within any extension thereof granted by the Purchaser pursuant to GCC Clause 22;or

(b) if the Supplier fails to perform any other obligations(s) under the Contractor

(c) if the Supplier, in the judgment of the Purchaser, has engaged in corrupt or Fraudulent practices in competing for or in executing the Contract. For the purpose of this Clause:

(i) "corrupt practice" means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution; and

(ii) "fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Purchaser, and includes collusive practice among Bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the Purchaser of the benefits of free and open competition.

24.2 In the event the Purchaser terminates the Contract in whole or in part, pursuant to GCC Clause 24.1, the Purchaser may procure, upon such terms and in such manner as it deems appropriate, Goods or Services similar to those undelivered, and the Supplier shall be liable to the Purchaser for any excess costs for such similar Goods or Services. However, the Supplier shall continue performance of the Contract to the extent not terminated.

25. Force Majeure

25.1 Notwithstanding the provisions of GCC Clauses 22, 23 and 24, the Supplier shall not be liable for forfeiture of its Security Deposit, liquidated damages or termination for default, if and to the extent that it's delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.

25.2 For purpose of this Clause, "Force Majeure" means an event beyond the control of the Supplier and not involving the Supplier's fault or negligence. Such events may include, but are not restricted to, acts of the Purchaser in its sovereign capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes.

25.3 If a Force Majeure situation arises, the Supplier shall promptly notify the Purchaser in writing of such condition and the cause thereof. Unless otherwise directed by the Purchaser in writing, the Supplier shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.

26. Termination for Insolvency

The Purchaser may at any time terminate the Contract by giving written notice to the Supplier if the Supplier becomes bankrupt or otherwise insolvent. In this event, termination will be without compensation to the Supplier, provided that such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to the Purchaser.

27. Termination for Convenience

27.1 The Purchaser, by written notice sent to the Supplier, may terminate the Contract, in whole or in part, at any time for its convenience. The notice of termination shall specify that termination is for the Purchaser's convenience, the extent to which performance of the Supplier under the Contract is terminated, and the date upon which such termination becomes effective.

27.2 The Goods that are complete and ready for shipment within thirty (30) days after the Supplier's receipt of notice of termination shall be accepted by the Purchaser at the Contract terms and prices. For the remaining Goods, the Purchaser may elect: a) to have any portion completed and delivered at the Contract terms and prices; and/or b) to cancel the remainder and pay to the Supplier an agreed amount for partially completed Goods and Services and for materials and parts previously procured by the Supplier.

28. Governing Language

The Contract shall be written in the English language. Subject to GCC Clause-29, the version of the Contract written in the specified language shall govern its interpretation. All correspondence and other documents pertaining to the Contract which are exchanged by the Parties shall be written in the same language.

29. Applicable Law

The Contract shall be interpreted in accordance with the laws of the Republic of India, unless otherwise specified in SCC. Any dispute arising out of this enquiry shall come under the sole jurisdiction of the Dhanbad/Jharkhand High Court, (INDIA).

30. Notices

30.1 Any notice given by one Party to the other pursuant to this Contract shall be sent to the other Party in writing. For the purpose of all notices, the following shall be the address of the Purchaser:
General Manager (MM)-HOD, Materials Management Department Level-III, Commercial Block, KoylaBhawan, Dhanbad-826005 Phone: 0326-2230181 Fax No.: 0326-2230183 Website: www.bcclweb.in Email address: gmmm.bccl@coalindia.in

30.2 A notice shall be effective when delivered or on the notice's effective date, whichever is later.

31. Taxes and Duties

31.1 A foreign Supplier shall be entirely responsible for all taxes, duties, license fees and other such levies imposed outside the Purchaser's country. The foreign supplier shall also be responsible for all taxes & duties in Purchaser's country legally applicable during execution of the contract other than those which are to be paid by purchaser, as specified in clause-29 of Sec.-II,ITB.

31.2 A Domestic Supplier shall be entirely responsible for all taxes, duties, and license fees etc., incurred until the execution of the contract, other than those which are to be paid by purchaser, as specified in clause-29 of Sec.-II,ITB.

32. Limitation of Liabilities

32.1 Notwithstanding anything herein to the contrary, no party shall be liable for any indirect, special, punitive, consequential or exemplary damages, whether foreseeable or not, arising out of or in relation to this contract, loss of goodwill or profits, lost business however characterised, any/ or from any other remote causewhatsoever.

32.2 The supplier shall not be liable to the purchaser for any losses, claims, damages, costs or expenses whatsoever arising out of or in connection with this contract in excess of the contract value of the equipment supplied hereunder which caused such losses, claims, damages, costs or expenses.

32.3 However, the limitation of liability of the supplier indicated in clause 32.2 above shall not apply to Liquidated damages, sub clause 23.1 (c), GCC, Sec-III.

33. Provisions of CIL's Purchase Manual

The provisions of CIL Purchase Manual 2020 and its subsequent amendments (Available on CIL website, www.coalindia.in) shall also be applicable, if not specified otherwise in this Bid document.

34. Settlement of commercial disputes in case of contracts with Public Sector Enterprises/Govt. Deptt.(s)

34.1 In case of disputes arising out of the commercial contracts between Public Sector Enterprises (CPSEs) inter se and also between CPSEs and Government Departments/ Organisations (excluding disputes concerning Railways, Income Tax, Customs and Excise Departments), the procedure for settling of disputes shall be through Administrative Mechanism for Resolution of CPSEs disputes (AMRCD) in the Deptt. of Public Enterprises, as per the guidelines stipulated in the Office Memorandum No. 4(1)/2013-DPE(GM)/FTS-1835 dated 22.05.2018 of Department of Public Enterprises, Ministry of Heavy Industries and Public Enterprises, Govt. ofIndia.

34.2 In case of contract with a Public Sector Enterprise or Govt. Deptt., the following Arbitration Clause shall be incorporated in the contract:- "In the event of any dispute or difference relating to the interpretation and application of the provisions of commercial contract(s) between Central Public Sector Enterprises (CPSEs)/ Port Trusts inter se and also between CPSEs and Government Departments/ Organisations (excluding disputes concerning Railways, Income Tax, Customs and Excise Departments), such disputes or difference shall be taken up by either party for resolution through AMRCD as mentioned in DPE OM No. 4(1)/2013-DPE(GM)/FTS1835 dated 22.05.2018."

35. Applicability of GST on Penalties

In case of imposition of any penalty like forfeiture of EMD, Liquidated Damages (LD) etc., GST will be charged extra on the amount of penalty.

ANNEXURE-J

104/108

TIL Limited
CIN : L74999WB1974PLC041725
Registered Office:
1, Taratolla Road, Garden Reach
Kolkata-700 024
Ph : 6633-2000, 6633-2845
Fax : 2469-3731/2143
Website : www.tilindia.in

Annexure – 10

Format for Bank Details for Electronic Payment

To
Bharat Coking Coal Limited
A Mini Ratna Company
(A Subsidiary of Coal India Limited- A Maharatna Company)
Regt. Off: KoylaBhawan, Koyla Nagar
Dhanbad-826005

Dear Sir,

Sub: Authorization of all our payments through Electronic Fund Transfer System/RTGS/NEFT/ LC.

We here by authorize Bharat Coking Coal Ltd. To disburse all our payments through Electronic Fund Transfer system/ RTGS/ NEFT/ LC. The details for facilitating the payment are given below:

1	Name of the Beneficiary, address with Telephone No.	TIL LIMITED 1, TARATOLLA ROAD, GARDEN REACH, KOLKATA-700024 Phone No.03366332152
2	Bank name, address with Telephone No.	STATE BANK OF INDIA 11, Dr. U.N. Brahmachari Street, Kolkata – 700 017 Phone No. 0332287764
3	Branch name & code	Industrial Finance Branch (Branch Code- 01936)
4	Bank account numberwith style of account (Savings/Current)	10284003014 / CASH CREDIT
5	IFSC Code No./Swift Code of the Bank	SBIN0001936
6	PAN No. of the Beneficiary	AABCT0704G
7	E-Mail No. and Mobile No. of the Beneficiary for intimation of release of payment.	amalangshu.pal@tilindia.com Mobile No. 98318 39025

I/We hereby declare that particulars given above are correct and complete and if the transaction is delayed or credit is not affected due to incorrect information, I/we will not hold Bharat Coking Coal India Ltd. responsible.

For TIL Limited

Authorised Signatory

Authorised Signatories

Name:

Official Stamp with date

Annexure-K

(Security Deposit Bank Guarantee Proforma)

.....(Name & address of the Purchaser) .....Company)

Re: Bank Guarantee in respect of Agreement dated.....Day of.....20...between.. (Name Of Purchaser Company) and ..... (Name of Supplier Company)

Messers.....acompany/Firm having its office at No. .....herein after called the Contractor as entered in to the said agreement dated.....(herein after called 'the said agreement') with..... (Name of the Purchaser Company) hereinafter called (the company) to supply.....stores/materials amounting to Rs. .....on the terms and conditions contained in the said agreement.

It has been agreed that .....(.... percent) payment of the value of the stores/materials will be made to the Contractor in terms of the said agreement on the contractors furnishing to the company a bank guarantee for the sum of Rs. ..... as security for due repayment of the said sum in terms of the said agreement, and also interest as therein provided.

The..... (Name of the Bank) having its office at. ..... has at the request of the Contractor agreed to give the guarantee as herein after contained.

We.....(Name of the Bank)(hereinafter called' the Bank) do here by unconditionally agree with the Company that if the Contractor shall in anyway fail to observe or perform the terms and conditions of the said agreement regarding repayment of the said sum of Rs ..... or any of them including the term for payment of interest for Delay in deliveries or shall commit any breach of its obligations there under, the Bank shall on demand and without any objection or demur pay to the Company the said sum of Rs... ..... or such portion as shall then remain unpaid with interest without requiring the company to have recourse to any legal remedy that may be available to it to compel the Bank to pay the same, or calling on the company to compel such payment by the contractor.

Any such demand shall be conclusive as regards the liability of the Contractor to the Company and as regards the amount payable by the Bank under this guarantee. The Bank shall not be entitled to withhold payment on the ground that the contractor has disputed its liability to pay or has disputed the quantum of the amount or that any arbitration proceeding or legal proceeding is pending between the Company and the contractor regarding the claim.

We, the Bank- further agree that the guarantee shall come into force from the date hereof and shall remain in full force and effect till the period that will be taken for the performance of Section VII- Sample Forms the said agreement which is likely to be the.....day of ... ... but if the period of agreement is extended either pursuant to the provisions in the said agreement or by mutual agreement between the contractor and the Company the Bank shall renew the period of the guarantee failing which it shall pay to the Company the said sum of Rs , or such lesser amount out of the said sum of Rs as maybe due to the Company and as The Company may demand. This guarantee shall remain in force until the dues of the Company in respect of the said sum of Rs..... and interest are fully satisfied and the company certifies that the agreement regarding re-payment of the said sum of Rs. ..... has been fully carried out by the contractor and discharges the guarantee.

106/108

The Bank further agrees with the Company that the Company shall have the fullest liberty without the consent of the Bank and without affecting in anyway the obligations hereunder to vary any of the terms and conditions of the said agreement or to extend the time for performance of the said agreement from time to time or to postpone for any time or from time to time any of the powers exercisable by the Company against the contractor and to forbear to enforce any of the terms and conditions relating to the said agreement and the Bank shall not be relieved from its liability by reason of such failure or extension being granted to the contractor or through any forbearance, act or omission on the part of the Company or any indulgence by the Company to the contractor or any other matter or thing whatsoever which under the law relating to sureties would but for this provisions have the effect of relieving or discharging the Guarantor.

The Bank further agrees that in case this guarantee is required for a longer period and it is not extended by the Bank beyond the period specified above the Bank shall pay to the Company the said sum of Rs..... or such lesser sum as may then be due to the Company out of the said advance of Rs... ..... and as the Company may require.

Notwithstanding anything herein contained the liability of the Bank under this guarantee is restricted to Rs.....only. The guarantee shall remain in force till the..... Day of and unless the guarantee is renewed or a claim is preferred against the Bank within 3 months from the said date all rights of the company under this guarantee shall cease and the Bank shall be released and discharged from all liability hereunder except as provided in the preceding clause.

The Bank has under its constitution power to give this guarantee and ..... (Name of the person) who has signed it on behalf of the Bank has authority to do so.

The details of beneficiary bank for sending details of BG under SFMS Platform is furnished below:

Name of the Bank: - .....
Branch: - .....
IFSC: - .....
A/c No: - . .....
Customer ID : .....

Dated this.....day of .....20.....

Place.....

Signature of the authorized person
For and on behalf of the Bank.

Annexure-L

(Performance Bank Guarantee Format)

..... (Name & address of the Purchaser) ..... Company)

Re : Bank Guarantee in respect of Agreement dated ..... Day of.....20...between.... .....(Name of Purchaser Company) and.....(Name of Supplier Company)

Messers.....acompany/Firm having its office at No. .....hereinafter called the Contractor has entered into the said agreement dated... ..... (here in after called' the said agreement') ..... with .....(Name of the Purchaser Company) hereinafter called (the ..... company) to ..... supply stores/ materials amounting to Rs. .....on the terms and conditions contained in the said agreement.

It has been agreed that .....(.....percent) payment of the value of the stores /materials will be made to the Contractor in terms of the said agreement on the contractors furnishing to the company a bank guarantee for the sum of Rs.....as security for due repayment of the said sum in terms of the said agreement, and also interest as therein provided.

The.....(Name of the Bank) having its office at. .....has at the request of the Contractor agreed to give the guarantee as herein after contained. We. ..... (Name of the Bank)(herein after called' the Bank) do hereby unconditionally agree with the Company that if the Contractor shall in any way fail to observe or perform the terms and conditions of the said agreement regarding repayment of the said sum of Rs .....or any of them including the term for payment of interest for delay in deliveries or shall commit any breach of its obligations there under, the Bank shall on demand and without any objection or demur pay to the Company the said sum of Rs.....or such portion as shall then remain unpaid with interest without requiring the company to have recourse to any legal remedy that may be available to it to compel the Bank to pay the same, or calling on the company to compel such payment by the contractor.

Any such demand shall be conclusive as regards the liability of the Contractor to the Company and as regards the amount payable by the Bank under this guarantee. The Bank shall not be entitled to withhold payment on the ground that the contractor has disputed its liability to pay or has disputed the quantum of the amount or that any Section VII- Sample Forms arbitration proceeding or legal proceeding is pending between the Company and the contractor regarding the claim.

We, the Bank- further agree that the guarantee shall come into force from the date hereof and shall remain in full force and effect till the period that will be taken for the performance of the said agreement which is likely to be the.....day of... ..... but if The period of agreement is extended either pursuant to the provisions in the said agreement or by mutual agreement between the contractor and the Company the Bank shall renew the period of the guarantee failing which it shall pay to the Company the said sum of Rs....., or such lesser amount out of the said sum of Rs... as may be due to the Company and as the Company may demand. This guarantee shall remain in force until the dues of the Company in respect of the said sum of Rs... ..... and interest are fully satisfied and the company certifies that the agreement regarding re- payment of the said sum of Rs.....has been fully carried out by the contractor and discharges the guarantee.

108/108

The Bank further agrees with the Company that the Company shall have the fullest liberty without the consent of the Bank and without affecting in any way the obligations hereunder to vary any of the terms and conditions of the said agreement or to extend the time for performance of the said agreement from time to time or to postpone for any time or from time to time any of the powers exercisable by the Company against the contractor and to forbear to enforce any of the terms and conditions relating to the said agreement and the Bank shall not be relieved from its liability by reason of such failure or extension being granted to the contractor or through any forbearance, act or omission on the part of the Company or any indulgence by the Company to the contractor or any other matter or thing whatsoever which under the law relating to sureties would but for this provisions have the effect of relieving or discharging the Guarantor. The Bank further agrees that in case this guarantee is required for a longer period and it is not extended by the Bank beyond the period specified above the Bank shall pay to the Company the said sum of Rs... ..... or such lesser sum as may then be due to the Company out of the said advance of Rs .. and as the Company may require.

Notwithstanding anything herein contained the liability of the Bank under this guarantee is restricted to Rs.....only. The guarantee shall remain in force till the.....day of ..... and unless the guarantee is renewed or a claim is preferred against the Bank within 3 months from the said date all rights of the company under this guarantee shall cease and the Bank shall be released and discharged from all liability hereunder except as provided in the preceding clause.

The Bank has under its constitution power to give this guarantee and ..... (Name of the person) who has signed it on behalf of the Bank has authority to do so.

The details of beneficiary bank for sending details of BG under SFMS Platform is furnished below:

Name of the Bank: - .....
Branch: - .....
IFSC: - .....
A/c No: - . .....
Customer ID : .....

Dated this.....day of .....20.....

Place.....

Signature of the authorized person
For and on behalf of the Bank.