



WESTERN COALFIELDS LIMITED
(A SUBSIDIARY OF Coal India Limited)
CIN U10100MH1975GOI018626

MATERIALS MANAGEMENT WING, COAL ESTATE, CIVIL LINES,
NAGPUR - 440 001.

PHONE : PBX : 0712-2611381, 2510691 Extn : 5606, 5861, Fax : 0712-2510284

M/F

Supply Order no:12000110318189

Dated: 16.02.2019

SUPPLY ORDER

To
M/s BEML Limited
Vth Floor, Unity Building,
J C Road, Bangalore - 560002

Vendor Code : 416002
Vendor Category : Manufacturer
FAX : 0712-2249997

Dear Sir,

Sub : **Formal Order for supply of Hydraulic Excavators (Diesel powered Backhoe) with necessary spares & consumables for 7 years with Stores Cost Cap.**

- Ref: 1. WCL Tender Enquiry no: WCL-hq-Pur-yvr-ra-e074-2018-19 opened on 03.01.2019, (tender ID: 2018_WCL_121597_1), Price bid opened / reverse Auction held on 17.01.2019
2. Your offer / Bid ID: 360947 and subsequent submission of shortfall / confirmatory documents on portal

With reference to above, we are pleased to place FORMAL ORDER on you for the supply of Hydraulic Excavators 4.3 - 5.0 cu.mtr capacity (Backhoe) with necessary spares and consumables for 7 years with Stores Cost Cap, at the rates and as per terms and conditions stipulated below and general terms and conditions enclosed:-

Description	Ordered qty nos	Unit price Rs.	Extended value Rs.
Hyd Excavators 5.0 cu.mtr capacity Diesel powered (Back-hoe type) with Model BE1000-1 powered by BEML make Engine model BSA6D170-EG, Including 4 additional Buckets for 12 machines, with Guaranteed availability for a period of seven years from the date of successful commissioning as per scope of supply, detailed technical specifications enclosed as Annex "A"	12	3,34,10,000.00	40,09,20,000.00
Freight for 12 equipments @ Rs.4,86,450.00			58,37,400.00
Insurance for 12 equipments @ Rs.6400.00			76,800.00
Sub-Total of 12 equipments with freight & insurance			40,68,34,200.00
GST @ 18% on equipment + freight + Insurance			7,32,30,156.00
Sub total of 12 Equipments with freight & GST			48,00,64,356.00
Basic Price of Spares Cost Cap for 7 years (year-wise breakup is as under)	12	4,06,03,154.00	48,72,37,848.00
GST on spares cost cap for 7 years (year-wise breakup is as under)	12	73,49,016.00	8,81,88,192.00
Total Cost OF 12 eqpts before availing ITC on GST			1,05,54,90,396.00

Total Value: Rs.1,05,54,90,396.00(Rupees one hundred and five crores fifty four lakhs ninety thousand three hundred and ninety six only).

Year-wise break-up of value of "Spares Cost Cap" and GST for each equipment, is as under:-

Year	Spares Cost Cap / Excavator Rs.	GST value / Excavator at the present applicable rate Rs.
1 st year **	26,64,406.00	5,20,041.48
2 nd year	35,00,000.00	6,30,000.00
3 rd year	60,00,000.00	10,80,000.00
4 th year	1,30,00,000.00	23,40,000.00
5 th year	52,38,748.00	9,42,974.64
6 th year	52,00,000.00	9,36,000.00
7 th year	50,00,000.00	9,00,000.00
Total	4,06,03,154.00	73,49,016.12

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19/2/19*

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****:** 1st year spares required during initial 12 months operation to be supplied along with the equipment as per list enclosed.

Other Terms and conditions :

1. **Prices:** The prices are FIRM on F.O.R. destination basis inclusive of Packing, forwarding. However, for FOR Destination supply freight and insurance charges shall be paid extra at actuals subject maximum ceiling of @ Rs. 4,86,450.00 and Rs.6,400.00 per equipment respectively, as indicated above, against documentary evidence. Safe arrival of the consignment shall be responsibility of BEML.
2. **GST:** GST shall be paid extra at actuals against documentary evidence as applicable at the time of Dispatch within the stipulated delivery period. The current rate of GST on equipment is 18%. Input Tax Credit on GST shall be availed by the consignee, for which you shall submit GST compliant Invoice along with the supplies. In case of spares to be supplied for 7 years, GST shall be payable extra as applicable item-wise at the time of supply and Input Tax Credit on GST shall be availed by the consignee, for which you shall submit GST compliant Invoice along with the supplies.
3. **Security Deposit:** Exempted being PSU
4. **Delivery:** Delivery of the equipments to commence within four months (with minimum four machines) from the date of issue of order and to be completed @ 4 (four) machines per month, thereafter. Delivery period shall be reckoned from 7th day of order date. Early supplies will be accepted.
5. **Inspection:** Final Inspection shall be carried by consignee at destination site. However, WCL reserves its right to get the equipment inspected before despatch by CM(Excv), CIL, Bangalore or the representative of GM(Excv) I/c, WCL hrs or any other agency appointed by WCL. In case it is decided to carry out pre-despatch inspection by CIL / WCL's representative then equipment has to be delivered at consignee project within 15 days or earlier from the date of inspection and clearance by CIL / WCL's representative.
6. **Consignee & Allocation:-**

Qty	Project Allocation	Area	POSTAL ADDRESS OF THE CONSIGNEE
1 no	Gondegaon	Nagpur	The Depot Officer, Regional Stores, Western Coalfields Limited, PO: Silewara Colliery, Dist. Nagpur (M.S.) Pin:441 109
1 no	Junad OCM Extn	Wani North	The Depot Officer, Regional Stores, Western Coalfields Limited, Wani North Area, PO: UKNI, Tahsil: WANI, Dist : Yavatmal (MS) Pin : 445 304
2 nos	Pauni OCM - 1 no; Sasti Expn - 1no;	Ballarpur	The Depot Officer, Regional Stores, Western Coalfields Limited, Ballarpur Area PO : Sasti, Distt:-Chandrapur (M.S) Pin: - 442 701
3 nos	Durgapur Expn deep OCM- 1 no, Padmapur Deep OCM: 1 no; Bhatadi OCM: 1 no	Chandrapur	The Depot Officer, Regional Stores, Western Coalfields Limited, Chandrapur Area, PO : Durgapur colliery, Distt:-Chandrapur (M.S) Pin: - 442 403
2 nos	Umrer Expn Sch /AMB iv	Umrer	The Depot Officer, Regional Stores, Western Coalfields Limited, Umrer Area PO : Umrer, Distt:-Nagpur (M.S) Pin: - 441 204
3 nos	Mungoli Nirguda Extn deep - 2 nos; Neeljai deep OCM-1 no;	Wani	The Depot Officer, Regional Stores, Western Coalfields Limited, Wani Area PO : Ghugus colliery, Distt:-Chandrapur (M.S) Pin: - 442 505

7. a) **Payment terms :** 80% value of equipment and accessories and initial spares for 1st year of operation and 100% taxes and duties and other charges shall be made within 21 days after receipt and acceptance of material at site by the consignee or submission of bills whichever is later. Balance 20% payment shall be made after successful completion of erection, testing, commissioning and final acceptance of the equipment (along with the accessories) upon presentation of certificates from Area GM/ SO(Excv) of concerned Area to the effect that the equipment has been erected and commissioned to their entire satisfaction and free training imparted to the end users & performance testing at the allocated location.
b) **Payment terms for Spares and Consumables:** 100% Payment for spares and consumables for 2nd to 7th year of operation shall be paid on lot basis within 21 days, after receipt and acceptance of Spares and Consumables at site by the consignee or submission of bills whichever is later

8. **Paying Authority:** For the equipment along with Spares and consumables for 1st year of operation: General Manager (Fin.), Western Coalfields Limited, Coal Estate, Civil Lines, Nagpur-1
For spares and consumables for 2nd to 7th year of operation: AFM, WCL of the respective area.

9. **Your EFT Details as provided in your offer :-**

Name of the Bank, Branch & Location	State Bank of India, Kingsway, Nagpur
Account Number, Nature of Account	11172255258, Current Account
IFSC Code	SBIN0000932

Signature
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10. Mode of dispatch: All the stores surely packed are to be dispatched by road transport to the consignee on Freight paid basis.
11. Security Deposit : Exempted being a PSU.
12. Performance Bank Guarantee: You have to submit performance bank Guarantee equivalent for 10% value of the order, i.e. Rs. 10,55,49,040.00 (Rupees Ten crores fifty five lakh forty nine thousand and forty only) (You may submit BGs for individual machines). The performance Bank Guarantee shall cover the seven years of performance, valid for a period of 93 months of from the date of receipt and acceptance of materials to cover the guarantee period (1+6 years) and the same shall be released on receipt of satisfactory performance throughout the above given guarantee period.

The Performance Bank Guarantee shall be released after receipt of satisfactory performance and no claim certificate from the user department. In case any amount of PBG is en-cashed as penalty as per the effect and duration of Guarantee of the contract, M/s BEML Ltd shall replenish the same immediately so that the value of the PBG does not fall below the specified level (i.e. 10% of the landed value), at any point of time during entire contract period.

The Amount of PBG should be maintained by M/s BEML Ltd for 10% of order value throughout the performance period. In the event of failure to do so, WCL reserves the right to recover the required Amount from any amount payable to the supplier/ pending bills from WCL/ CIL or any subsidiary of CIL or to recover same from the balance Amount of Bank Guarantees for same/ any other Equipment(s), supplied by M/s BEML Ltd.

13. Guarantee - Warranty: M/s BEML Ltd shall warrant that the equipment supplied under this contract is:--
- a) In accordance with the contract specifications.
- b) The equipment shall have no defects arising out of design, material or workmanship & the Complete Equipment shall be warranted for 12 months from the accepted date of commissioning. The warranty shall cover for total equipment so that ultimate responsibility lies only with the Equipment supplied by M/s BEML Ltd although components may be supplied by different suppliers to M/s BEML Ltd."
- c) The Equipment will be warranted against any manufacturing defects / workmanship for a period of 12 months from date of commissioning. Any defect observed on this account shall be attended to immediately.

Special Guarantee: Complete Equipment consisting of All Assemblies/ sub Assemblies/ components eg. Engine, Under Special Guarantee: Carriage, Hyd Pumps, Motors & Cylinders, Chassis/ Structure, Boom & Arm, Ring Gear & Swing Pinion, Final Drive, Air conditioning System, AFDSS, Centralised Lubrication system, Chassis/ Structure, Engine Hour Meter & Auto Electricals etc shall be covered for suitable replacement/ Repairs (on merits of the case), free from all costs to the WCL, during total 7 years (84 months) from accepted date of commissioning. M/s BEML will be required to stock sufficient spares parts to take care of entire Performance period. Spares should be available immediately for replacement against the breakdowns.

14. Performance Guarantee Clause: M/s BEML shall guarantee that the availability of the equipment shall be not less than **85% (Eighty five percent)** during initial **3 years** of operation and **80%** availability during remaining **4 (four) years** of the performance period of the total 7 years / 84 months performance period from the accepted date of commissioning (to be calculated annually for each year).
15. Liquidated Damages clause :- In the event of failure to deliver or dispatch the stores within the stipulated date / period in accordance with the specification mentioned in the supply order, and in event of breach of any terms and conditions mentioned in the supply order, WCL shall have the right,
- a. To recover from M/s BEML Ltd as agreed liquidated damages, a sum not less than 0.5%(half percent) of the price of any stores which successful bidder has not been able to supply as aforesaid for each week or part of a week during which the delivery of such stores may be in arrears limited to 10% can be increased to 15% at the discretion of Head of MM division.
- b. To purchase elsewhere, after due notice to supplier i.e. M/s BEML Ltd on the account and at the risk of the defaulting supplier the stores not supplied or others of a similar description without canceling the supply order in respect of the consignment not yet due for supply, or

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- c. To cancel the supply order or a portion thereof, and if so desired to purchase the 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 full or in part.
- f. Whenever under this contract a sum of money is recoverable from any payable by the supplier, Coal India Limited and its subsidiary companies shall be entitled to recover such sum by appropriating, in part or in whole by deducting any sum from any other contract should this sum be not sufficient to cover the full amount recoverable. The successful bidder shall pay Coal India Limited and its subsidiary companies on demand the remaining balance. The supplier shall not be entitled to any gain on any such purchase.
16. **SUBMISSION OF BILLS:**
- a. **For claiming 80% payment**, following documents are to be submitted along with original bills as per terms of the supply order to the consignee.
- (i) Pre-receipted and stamped GST compliant Invoice as per GST rules and Act indicating HSN code
(ii) Packing list in original list giving details of bill of materials, if applicable. (Invoice should be strictly as per GST rule 2017).
(iii) Consignment note / RR/ LR in original.
(iv) Warranty / Guarantee certificate, if applicable.
(v) Manufacturer's test certificate, if applicable.
(vi) DGMS / BIS / Pre dispatch inspection certificates / any other document, if required as per the contract.
(vii). Any other document indicated elsewhere in the order
- b. For Claiming 20% payment**, the following documents are to be submitted
- (i) Pre-receipted and stamped bill for 20% payment.
(ii) Commissioning Certificate from the respective Area Manager / Staff Officer (Excv)
(iii) Any other document indicated elsewhere in the order
17. **Force Majeure Clause:** If the execution of the contract / supply order is delayed beyond the period stipulated in the contract / supply order as a result of outbreak of hostilities, declaration of an embargo or blockade, or fire, floods, acts of nature or other contingency beyond the supplier's control, due to act of God then Western Coalfields Limited may allow such additional time by extending the delivery period as it consider to be justified by the circumstances of the case and its decision shall be final. If and when additional time is granted by Western Coalfields Limited, the contract / supply order shall be read and understood as if it had contained from its inception the delivery date as extended.
18. **Manufacturing certificate:** As the order is being placed on the basis of consideration that you are a manufacturer of the ordered material, you will have to provide a certificate to the following effect on the body of each bill.
"Certified that the items supplied and included in this bill/ invoice are our own make and have been actually manufactured in our works situated at _____ (address of the factory)
19. **Price Certificate:** As undertaken by you in your offer that you have not supplied / are not supplying similar product systems or sub systems at a price lower than that ordered price in respect of any other ministry/department of the Govt. of India or a PSU and if it is found at any stage that similar product / Systems/ Sub -systems was supply by you to any other Ministry / Department of the Government of India or a PSU at a lower Price, then that very price with due allowance for elapsed time, will be applicable to the present case and the difference in the cost would be refunded by you to WCL, if the contract has already been concluded, you will furnish the certificate to this effect to the Consignee / Paying Authority along with bills.
Failure in submission of aforesaid certificate by you, may result in with holding of the payment of their bills against supply.
20. **Integrity Pact :** Integrity Pact as per format (Annexure F of the NIT) signed and furnished by you along with the offer shall remain valid and applicable for this contract. IEMs against the tender / Order are:
Shri A.K.BAJAJ, Ex-Chairman, CWC, A-167, Defence Colony, New Delhi 110024 &
Shri A.K.Mohapatra, Qrs no B-5/9, Unit - 9, Bhoi Nagar, Bhubaneswar 751022
21. **Arbitration Clause :** "In the event of any dispute or difference relating to the interpretation and application of the provisions of the contracts, such dispute or difference shall be referred by either party

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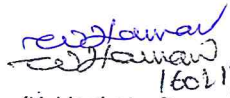
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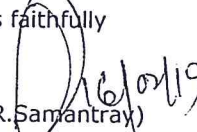
for Arbitration to the Sale Arbitrator in the Department of Public Enterprises to be nominated by Secretary to the Govt. of India in-charge of the Department of Public Enterprises. The Arbitration and Conciliation Act, 1996 shall not be applicable to arbitration under this clause.

The award of the Arbitrator shall be binding upon the parties to the dispute, provided, however, any party aggrieved by such award may take further reference for setting aside or revision of the award to the Law Secretary, Department of Legal Affairs, Ministry of Law & Justice, Govt. of India. Upon such reference the dispute shall be decided by the Law Secretary or the Special Secretary/Additional Secretary, when so authorized by the Law Secretary, whose decision shall bind the parties finally and conclusively. The Parties to the dispute shall share equally the cost of arbitration as intimated by the Arbitrator".

Unless otherwise specified above, the purchase order shall also be governed by the terms and conditions given in the General terms and conditions enclosed.

This order is issued with this acceptance. Kindly acknowledge the receipt of this order.


(Y. Venkata Ramana)
Sr. Manager (MM)

Yours faithfully

(C.R. Samantray)
Chief Manager (MM)

Enclosures: -

- Annexure-A** : Detailed Technical specifications, Scope of supply, General requirement & Stores Cost Cap
Annexure-B : Tentative list of Spares and consumables for 1st year of operation, Tentative list of spares and consumables for 2nd to 7th year of operation per equipment
Annexure-C : Maintenance schedule, Oil & Lubricant chart, Vehicle Health monitoring system/ Gauges & Indicators/ Audio- Visual Warning, Erection chart
Annexure-D : Standard & Special Tools
Annexure-E : General Terms & Conditions
Annexure-F : PBG format
Annexure-G : Details of nearest Depot / Warehouse & Service facilities available
Annexure-H : Major bought-out Assemblies / items

Copy to :

1. GM(Excv) HOD, GM(P&P)/ GM(Fin.)WCL(HQ), Nagpur
2. SO(Excv)/SO(MM)/AFM/Depot Officer, WCL, Umrer, Wani, Ballarpur, Chandrapur, Wani North& Nagpur.
3. AF (MM), MM Wing, WCL Hq., Nagpur
4. GM(MM), SECL, MCL, CCL, BCCL, ECL, NCL, CIL
5. RD, CMPDIL, RI IV, Nagpur / CM(Excv), CIL, Bangalore
6. TS to DT(P&P), WCL, Nagpur
7. Sr. Manager (MM/Admn.), WCL(HQ) – The Landed value of the order is Rs. **1,05,54,90,396.00**
8. IEM, Shri A.K.BAJAJ, Ex-Chairman, CWC, A-167, Defence Colony, New Delhi 110024
9. IEM, Shri A.K.Mohapatra, Qrs no B-5/9, Unit – 9, Bhoi Nagar, Bhubaneswar 751022
10. GM(Excv), EED, Coal India Ltd., "Coal Bhawan", Premises no 04 MAR, Plot No AF III Action Area 1A, New Town, Rajarhat, Kolkatta 700156, West Bengal
11. Chief Manager (Excv) EED, CIL, Regional Sales Officer, Geeta Mansion, 4th floor, KG Road, Bangalore

Indent details: Indent No. 1470 dated 28.01.2019 (on replacement basis)

BC Reference: Capital Budget : FA/CAP/BC/HEMM/394 dated 15.02.2019 for Rs.51,82,77,726.00

Advance Revenue Budget:

BC/WCL/Rev/GM(Excv)/2020-21/HEMM Spares/9/12/171 dt 15.02.2019 for Rs.4,95,60,000.00

BC/WCL/Rev/GM(Excv)/2021-22/HEMM Spares/9/12/171 dt 15.02.2019 for Rs.8,49,60,000.00

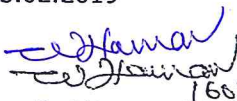
BC/WCL/Rev/GM(Excv)/2022-23/HEMM Spares/9/12/171 dt 15.02.2019 for Rs.18,40,80,000.00


BC/WCL/Rev/GM(Excv)/2023-24/HEMM Spares/9/12/171 dt 15.02.2019 for Rs.7,41,80,000.00

BC/WCL/Rev/GM(Excv)/2024-25/HEMM Spares/9/12/171 dt 15.02.2019 for Rs.7,36,32,000.00

BC/WCL/Rev/GM(Excv)/2025-26/HEMM Spares/9/12/171 dt 15.02.2019 for Rs.7,80,00,000.00

This issues with the approval of WCL's Board of Directors in their 308th meeting held on 02.02.2019, minutes of which are circulated vide Company Secretary's ref no: WCL/BD/Sectt/BM-308/2019/175 dt 13.02.2019


(Y. Venkata Ramana)
Sr. Manager (MM)


Chief Manager (MM)

TECHNICAL SPECIFICATION

1. SCHEDULE OF REQUIREMENT

Description	Qty
Hydraulic Excavator, 5.0 cu.mtr Capacity (Diesel Powered- Backhoe Type) including necessary Spares & Consumables under "Stores Cost Cap" for 7 years (84 months) from accepted date of commissioning	12 Nos.

2. Technical specification:

Introduction

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

The Technical Specifications are presented in four parts as follows:

A. Scope of Supply

B. General Requirements

- 1) Geography and Climatic Conditions
- 2) Goods (Equipment and Machinery)
- 3) Standards
- 4) Supplier's Responsibility
- 5) After Sales Service & Spares Parts supplied.
- 6) Composite Warranty / Guarantee
- 7) Performance Guarantee
- 8) Quality Assurance

C. Equipment Specifications

D. Conformity with Specifications

The Equipment to be provided shall conform with the requirements defined in these parts. The order, in which the specifications shall prevail, is as follows:

Part A

followed by **Part B**,

followed by **Part C**

PART A

A. Scope of Supply.

A.1 Equipment Package.

You are required to provide a complete package of Equipment for the supply of Diesel Powered Hydraulic Excavator with Backhoe (Standard Rock Bucket) attachment of capacity 5.0 Cu.Mtr rated capacity for material density of 1800 kg/m³, Accessories, Spare Parts; Consumables for 7 years (84 months) operation and Training, Installation, Testing & Commissioning at coal mining projects of WCL, Nagpur.

WCL will make available to you, at no cost, at project/site within the site(s) boundaries as may reasonably be required by you for the purposes of erecting the Equipment and for storage of Goods and Supplier's plant, tools etc. pending acceptance.

A.2 Supplementary Items

All Spares, for Operational, Maintenance and standby/ contingency including Filters, O-rings/ Gaskets etc, pertaining to all the systems of Equipment (including standard Engine filters etc), and Consumables including Battery, Auto Electricals, Coolant, Wear Materials eg Bucket, Tooth Points, Adaptors & Ground Engaging Tools etc (herein after collectively referred to as "**Spare Parts and Consumables**") unless the context specifies otherwise, shall be supplied by the supplier as per the terms of the NIT. The Consumables for operation shall not include Diesel/ Fuel, Oils & Lubricants (POL).

(I) Following items shall be supplied, along with each Equipment :-

- i. Spare Parts and Consumables, required for initial 12 Months operation.
- ii. Float Bucket Assy. - FOUR Nos. shall be supplied and maintained by the supplier, (i.e. One additional bucket for every three machines and must be quoted in multiple of three machines) for effective Bucket Management of Hyd. Backhoe 4.3 cu.mtr. - 5.0 cu.mtr fleet of 12 nos. machines, which shall be maintained and kept ready by the supplier. The Bucket assy shall be made available by the supplier to the projects, for direct replacement against exchange of the working bucket.
- iii. First fill of all Oils, Grease and Lubricants needed for tests and commissioning of each equipment.
- iv. Tool kit, which shall include any special tools required for erection, commissioning and for the maintenance & repair of the Equipment. The following Special Tools, generally required for repair,

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In general all items shall be -

New, unused and of the current design (incorporating latest proven features) and not likely to be discontinued or become obsolete in near future.

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 Equipments and accessories shall be physically robust and where necessary capable of dismantling for transportation and ready re-assembly using simple tools. All equipments items provided shall be designed to be compatible within the proposed overall Scope of Supply.

All workmanship and materials shall be of first class quality in every respect.

All parts and surfaces which are exposed to corrosive environments shall be suitably protected to prevent any effects of corrosion or erosion.

B.3 Standard:

(a) Beside conforming to the standards specified in the equipment specifications in Part- 'C', the equipment shall also has to meet 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 International Units (S.I.).

B.4 Suppliers Responsibility.

You shall accept responsibility for the provision of complete operable and compatible Equipment and systems within the Scope of Supply. This documents identifies only the major items required for the installation and the Supplier shall ensure that the total supply includes all necessary equipments for it to function effectively and safely. Any additional items, you consider necessary to ensure compliance with such requirements shall be identified and included.

If You observe that this specification documents contains any anomalies, ambiguities, flaws, errors or omissions, you shall immediately bring these to the attention of WCL.

You shall be responsible for the testing and commissioning of the equipments and ensure that it meets the requirements as specified. The commissioning and setting to work of the whole equipments supply package shall be carried out under your supervision in conjunction with the WCL's nominated personnel.

B.5 AFTER SALES SERVICE & SPARE PARTS SUPPORT

B.5.1 After Sales Support :-

The necessary after sales service & Support Net work for the offered Equipment should be available in India, to support the product. You shall ensure proper support for the Equipment by ensuring availability of sufficient skilled service personnel, suitable stock of spares parts in the spare parts depot/ ware house and necessary servicing facilities, preferably in or around the mining area of WCL, to take care of any emergency/ unforeseen breakdowns and to ensure maximum availability of the Equipments, throughout its life/ performance period.

Sufficient Semi skilled/ un-skilled man power for the maintenance shall be provided by the project while you shall exclusively depute minimum One qualified Service personnel for every 3 machines or part thereof. Hence FOUR Nos (Min) qualified Service personnel shall be exclusively posted by you to ensure proper service support to the fleet of Hyd Excavators (Backhoe) Machines, throughout the warranty/ performance period.

B.5.2 Provisions of Spare Parts.

B.5.2.1 Within the Contract Price, WCL will agree to purchase all Operational, Maintenance and standby/ contingency Spare Parts, Filters, O-rings/Gaskets etc, pertaining to all the systems of Equipment (including standard Engine filters etc) and Consumables including Battery, Auto Electricals, Coolant, Wear Materials eg Bucket, Tooth Points, Adaptors & Ground Engaging Tools etc (herein after collectively referred to as "Spare Parts and Consumables" unless the context specifies otherwise), in accordance with your recommendations for 84 (eighty four) Months from the accepted date of Commissioning. Necessary Oil & Lubricant, required for Commissioning & Testing shall be supplied by you, within the contract.

The Consumables for operation shall not include Diesel/ Fuel, Oils, Lubricants (POL).

You shall stock & maintain sufficient inventory of Spares & Consumables, required for all maintenance & repairs of Equipment during complete contract period. Management and storage of Spares & Consumables (for EACH project/ Unit) will be under scope of the firm. The Spares & Consumables shall be supplied by you, to the concerned Engineer In-charge, on as and when required basis and records of the same shall be maintained under **SPARES COST CAP** on yearly basis, during entire contract period.

The Stores operated by firm should be GST registered storage facility, or else You will have to get the Stores registered with GST authorities immediately or latest within two months from the commissioning of first Equipment, for the respective project/ unit. Spares & Consumables for Equipment shall be drawn by

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Maintenance & Trouble-shooting/ Testing of Major sub-Assemblies, shall be provided, in addition to any other special Tools required for the offered Equipments :-

- a). Hydraulic pressure gauges of different ranges with Hyd hoses & necessary adopters, required for Hydraulic pressure setting and trouble-shooting.
- b). Socket set with torque wrench of reputed make, covering all sizes of high torque bolts used on the offered Equipment
- c). Digital Multimeter of reputed make & quality, for trouble shooting and setting of parameters.
- d). Dial Indicator Gauge with Magnetic base.
- e). Cartridge filter opening tool, if required.
- f). Accumulator charging kit (if accumulator is provided in the Hydraulic System).
- g). Air conditioner Charging Kit (including Vacuum Pump)

v. A separate Hydraulic Pump of suitable capacity shall be installed on the Equipment for filling/ Transfer of Hydraulic Oil of different grades, from standard 200 Litre Barrel to the respective Hydraulic Tanks on the Equipment. The Pump shall operate on 24 Volts DC, through power supply from the Equipment.

(II) List of Spare parts & Consumables for initial 12 months period per Equipment, to be supplied with each Equipment is enclosed as Annexure.

(III) **Year-wise Spare Parts & Consumables for subsequent 6 years** operation, out of total 7 years, in accordance with the supplier's recommendations shall be delivered, as and when required, throughout the balance period of **72 (Seventy two) Months**, of the total Guaranteed period of 7 years (84 months) from the accepted date of commissioning.

A.3 Information & Drawings & Manuals

The supplier shall provide :-

(a) **FOUR** suitable illustrated SETS of Operating, Repair, and Maintenance instructions for the Equipment, written in the English language, substantially bound in book form, with Each Equipment.

One SET of the Manuals shall be supplied to the office of GM(ExcV)HOD, Excavation deptt WCL(HQ) Nagpur.

(b) **FOUR** suitably illustrated SETS of detailed **Spare Parts Manuals** covering all plant, equipment and accessories, substantially bound in book form as well as soft copy (in pen drive/ CD), with Each Equipment. **ONE** SET of Manuals (Hard & soft copies) shall be supplied to the office of GM (ExcV) HOD, Excavation deptt, WCL(HQ) Nagpur.

The supplier shall also submit the data identified in the specifications for each item of Equipment proposed. In addition to the Equipment drawings, 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 (wherever applicable).

A.4 Erection/Assembly, commissioning and Performance Testing :

You shall provide the service of Specialist Technicians/ Service Engineers to supervise the installation/ erection/ assembly, commissioning and any performance testing of the plant, equipment and accessories supplied.

The Service Engineers/ Technicians shall remain at site for the commissioning until all necessary personnel are fully conversant with the maintenance and operation of the equipment, and shall be available throughout the warranty/ performance period.

A-5 Training

You shall give a comprehensive training to the WCL Employees regarding Hydraulic Systems, Circuits & Trouble shootings. The basic training shall include Audio Visual presentation at WCL's site/ project/ Training Institute. The training shall be for a duration of 2 days at maximum 4 locations. You shall also be responsible for the provision and delivery content of any suitable training program necessary for operation and maintenance of the equipment, for safe & efficient operation.

PART- 'B'

B. GENERAL REQUIREMENTS.

B.1 Geography and Climatic Conditions.

Elevation : The natural surface varies from 100m to 1000m 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 to Maximum 55° C

Rainfall : The mean annual rainfall is 1000 mm. 90 to 95% of which may fall in rainy season from June to October.

Wind : Generally April to September - South to South Westernly & October to March - North Westernly

Speed - 8 Km per hr average and 100 Km per hour (max.).

Under foot Slushy and highly abrasive -

B.2 Goods (Equipment & Machinery)

Detailed specifications of the equipments to be supplied are given in **Part "C"** of this section.

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the authorised representative of Project Engineer as and when required. The materials shall be routed through Regional /unit stores of concern project.

You shall submit the certified PRICE LIST, covering all Spares & Consumables and Recon Assemblies etc, on yearly basis well in advance, which shall remain valid atleast for a period of one year from the date of applicability. The payments during the year shall be made as per the prevailing Price list only (on monthly basis). The price list approved by WCL shall be made applicable for the items covered in the Price list.

For items, which are not covered in the price list, You shall submit certified copy of their supplementary price list valid atleast for a period of one year from the date of applicability, which are subject to Price fall clause You shall stock & maintain sufficient inventory of Spares & Consumables, required for all maintenance & repairs of Equipment during complete contract period. Management and storage of Spares & Consumables (for EACH project/ Unit) will be under scope of the firm.

Statement of Spares consumption with Value for EACH Month, shall be signed by the project authorities. Equipment-wise record of supply of Spares & Consumables and balance provision for the Year & Contract period, duly signed by You jointly with project authorities, shall be maintained by the Area. In case, value of Spares & Consumables required during any particular year exceeds the Spares CAP Value for the year, you shall continue to supply the required Spares & Consumables FREE OF COST to maintain the level of Guaranteed Availability for that year.

B.5.2.2 The assessment of the bidder of the Spare parts & Consumable requirements shall be based upon the expected 4500 ± 500 (four thousand five hundred plus or minus five hundred) working hours per year, on average basis. Any shortfall in quantity of these spares, during the period of 84 months or upto 35,000 working hours shall have to be supplied by you free of cost. Any shortfall in quantity of above items during the period of 84 months, if required beyond 35,000 working hours, shall have to be supplied by you at extra cost.

B.5.2.3 You shall maintain sufficient inventory of spare parts & consumables for normal operation to ensure optimum availability & proper maintenance of the Equipment.

In the event that the Spare Parts and Consumables, as maintained by you, in any way fall short of actual requirements during the period for which they are said to be adequate, You shall immediately arrange and supply all such additional Spare Parts and Consumables, at the final destination. In case of non availability of any of the required item, such additional Spare Parts/ Consumables shall be arranged & provided by you to the WCL, free of all costs and shall be transported to Site by air freight internationally and by air/ rail/ fastest road transport within India.

B.5.2.4 You shall not be liable for the supply of additional Spare parts and Consumable, if these are required by reasons of unforeseen accidents, negligence or misuse on the part of the WCL.

B.5.2.5 In the event that the operation of the plant is inhibited or frustrated as a direct result of lack of Spare parts and Consumables pursuant to clause B.5.2.2 & B.5.2.3 hereof, then the period referred to in clause 'B.5.2.1' hereof shall be extended by a period of not less than the period during which operation as aforesaid was inhibited or frustrated.

B.5.3 Emergency Spare Parts

You shall ensure that spare parts required urgently for repair of break-down equipments, are supplied at over riding priority.

In case the required spares, for breakdown equipment, are not available in the inventory maintained in the local depot, the same should be immediately made available from nearest available stock or diverted from the production line in the factory. Arrangements will be made by you to air lift the required spares and supply the same immediately to facilitate early re-commissioning of the breakdown equipment.

B.5.4 Lifetime Spare Parts.

You undertake and guarantee to produce and maintain stocks, to be available for purchase by the WCL under separate agreements 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 you wish to terminate production of such Spare Parts, you shall:

- give not less than six months notice in writing of it's intention to terminate production in order to permit the WCL reasonable time in which to procure needed requirements and
- immediately following termination, provide to the WCL at no cost, manufacturing drawings material specifications and all necessary permissions to facilitate manufacture of the spare parts elsewhere. In any event, you shall not seek to terminate manufacture of spare parts for a period of not less than 10 (ten) Years from taking over.

B.5.5. Oil, Lubricants and Fluids :

You shall provide to the WCL a detailed List with standard grades of Oils/ Lubricants & fluids with the replacement schedules, for operation and maintenance of the equipment. The schedule shall indicate the standard grades, equivalent reference number(s) available in India, (approved/ acceptable by the Supplier) appropriate international standards grades/ number(s) and estimated annual consumption etc.

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B. 5.6 General

Nothing in this clause B.5 shall relieve You of any guarantee, Availability, performance or other obligations or liabilities under the contract.

B.6 Composite Warranty/Guarantee

You shall warrant that the equipment supplied under this contract is:--

a) In accordance with the contract specifications.
b) The equipment shall have no defects arising out of design, material or workmanship & the Complete Equipment shall be warranted for 12 months from the accepted date of commissioning.

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) The Equipment will be warranted against any manufacturing defects / workmanship for a period of 12 months from date of commissioning. Any defect observed on this account shall be attended to immediately.

In the event of any breakdown or failure of performance due to defects in materials, design, workmanship, spare parts etc., WCL shall promptly notify you in writing of any claims arising under this warranty. The repairs, replacement or rectification work shall be carried out by you immediately, at site at no cost to the WCL, or latest within 21 days of settlement of warranty claims. "At no cost to the WCL" means, you will have to bear all the expenses upto the destination site i.e. Ex- works prices, GST, Insurance, Inland transportation charges etc. as applicable to ensure free delivery of warranty replacement at WCL sites.

In the event that the operation of the plant is inhibited or frustrated as a result of any design defect or a flaw in the workmanship, materials in the Equipment/ component then the period referred in the clauses for Composite Warranty/ Guarantee & Performance Guarantee shall be extended for a suitable period and supplier will be have to undertake appropriate action for suitable rectification/ modification on the Equipment on topmost priority basis.

B.7 Performance Guarantee:

B.7.1 Introduction.

B.7.1.1 You shall guarantee that the equipment supplied pursuant to this contract shall be available for use by the WCL and shall meet the performance criteria specifications at the level and in accordance with the terms and conditions of the Availability Guarantee herein contained.

B.7.1.2 Where equipment supplied under the Contract fails to meet the criteria of the Availability Guarantee, You shall, at its own cost, provide suitably qualified and experienced personnel at site to demonstrate to the WCL's satisfaction that the required level of availability can be achieved and maintained.

B 7.2 Guarantee

B7.2.1 You shall guarantee that the equipment supplied pursuant to the Contract shall be available to the WCL at the level hereinafter defined to perform to criteria of not less than that defined in the Technical Specifications incorporated in the Contract.

B 7.2.2 You 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 as the Attachment to 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

$$\% \text{ Availability} = \frac{\text{Scheduled Available time} - \text{Down time}}{\text{Scheduled Available time}} \times 100$$

Scheduled Available time shall equate to 24 hours.

Down time 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 .
- b) planned preventive maintenance programmes,

It shall not however include :

- i. damage due to abusive use or incorrect operation methods by the WCL.
- ii. accidents.
- iii. Strikes or stoppage of work by the WCL's personnel
- iv. Natural disaster.

v. Lack of spare parts not attributable to a failure of the supplier; it's Agents or representatives.

Down time shall also specifically include all hours lost due to failures determined to be failures within guarantee period.

You shall state the number of hours per day required to carry out (a) and (b) above.

The WCL will assist the Supplier, without relieving you of any other obligations under the Contract, to achieve the guaranteed availability by :

- i. Providing suitable semi-skilled & un-skilled manpower for repair & maintenance.

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- ii. Providing normal and proper maintenance, including preventive maintenance in accordance with your standard/published recommendations, and making all necessary repairs using only genuine manufacturer's spares.
- iii. Providing cooperation to all Supplier's authorized representatives, complying with all reasonable procedural suggestions to improve efficiency of machine operation or reduce downtime.
- iv. Where appropriate, providing and maintaining such conditions as :-
 - a) proper electrical supply
 - b) Terrain area
 - c) Bench preparation.
 - d) Reasonable floor conditions.
- v. Providing your authorized representatives access at all reasonable times to the machines service and repair facilities.
- vi. Maintaining of log book for each shift wherein the working hours, breakdown time, maintenance hours, idle time, etc. shall be recorded. This record will be available for examination and signature by the Supplier's representative.
- vii. In order to ensure the optimum availability and achievement of the guaranteed availability during the performance period, you shall plan & undertake complete major repairs/ overhaul of the Equipment, suitably after completion of 3 years. The required spares & assemblies/ sub-assemblies for the repairs shall be supplied/ arranged by you before taking the Equipment for planned repairs. The period of this planned repairs (maximum 15 days- one time) shall not be counted as down time for computation of the Availability, against the performance guarantee clause.

B.7.2.3 Waiting time for maintenance shall not be taken as downtime

B.7.2.4 The average routine maintenance hours shall not be more than two hours per day. In case the site personnel of WCL are unable to carry-out the daily maintenance in two hours in such case you shall carry out the maintenance within two hours and train the project personnel to enable them to carry out the normal routine maintenance within two hours every day. In the event the project personnel are unable to carry out the routine maintenance in two hours time every day even after the demonstration & training by the supplier, the time taken over & above two hours by the project personnel will not be counted as downtime.

B. 7.2.5 You will promptly report any breakdown in any major sub assembly/ assembly to the concerned Head of Excavation Department of the subsidiary company.

B 7.3 Effect and Duration of the Performance Guarantee :

B.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 WCL's Acceptance Certificate.

B.7.3.2 In accordance with the provision under clauses No '6' (part- 'C') of Technical Specifications, the guarantee shall remain effective for 7 years (84 months) from the date of commissioning irrespective of the hours operated by the Equipment during the period of the guarantee.

B.7.3.3 In the event that the Equipment, wherever fails to achieve the Availability specified for the Equipment, at any stage during entire 7 years (84 months) period (on annual basis), You shall be liable to pay as Penalty to the WCL, as indicated hereunder for each Equipment:

- a) 1 % of the contract price of the equipment for every percentage reduction from the Guarantee Availability, for reduction upto 10% (per year).
- b) Maximum Penalty (per year) for non achievement of the Guaranteed Availability shall be 10% of the contract price of the Equipment.

c. Maximum Penalty for non achievement of the Guaranteed Availability shall be 70% (per Equipment for entire Seven years period) of the contract price of the Equipment.

B7.3.4 When You are 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 spares from the stock of the project the period (after 21 days) till you replace the part under warranty, shall be treated as "Deemed Breakdown"(the credit for keeping machine available shall not be given to the supplier).

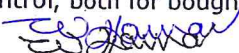
B 7.3.5 SPECIAL CONDITION :

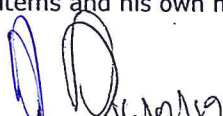
For close monitoring of the performance of equipment under warranty, the Project authority must furnish the following information as per specified proforma on monthly basis to the Area Staff Officer (Excv). On completion of the Performance Guarantee period, a consolidated statement in the said proforma must be sent to GM(Excv)/HOD of the subsidiary company for judgment regarding performance of the equipment. The project authority must not give any performance certificate directly to the equipment supplier.

B.8 QUALITY ASSURANCE

B 8.1 You should furnish in detail its quality assurance plan for various stages of manufacture. The Quality Assurance Plan shall comply with an internationally recognized quality assurance standard such as ISO 9000.

B.8.2 You shall provide facilities to WCL or their authorized representatives, when so required by them, 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.





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B.8.3 The WCL or his agent, when so required by him, shall also be provided with samples of "bought-out" materials for the purpose of undertaking independent tests which independent tests shall be at the expense of the WCL.

PART - 'C'

EQUIPMENT SPECIFICATION

HYDRAULIC EXCAVATOR, 4.3 - 5.0 M³ CAPACITY, (BACKHOE).

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 self-propelled, crawler mounted diesel powered Hydraulic Excavator with 4.3 - 5.0 Cu Mtr Backhoe bucket.

2. References

The following International Standards are referred to in, and form part of, the Specification. Up-dation against the same (where ever applicable) shall be accepted:-

ISO 2867 Earth-moving machinery - Access systems

ISO 3457 Earth-moving machinery - Guards and shields - Definitions and specifications

ISO 4557 Earth-moving machinery - Excavators - Operator's controls

ISO 6014 Earth-moving machinery - Determination of ground speed

ISO 6015 Earth-moving machinery - Hydraulic excavators - Methods of measuring tool forces

ISO 6405-1 Earth-moving machinery- Symbols for operator controls and other displays Part 1: Common symbols

ISO 6405-2 Earth-moving machinery-Part 2 : Specific symbols for machines, Equipment and accessories

ISO 6750 Earth-moving machinery - Operation and maintenance - Format and content of manuals

ISO 7135 Earth-moving machinery - Hydraulic excavators - Terminology and commercial specifications

ISO 8643 Earth-moving machinery - Hydraulic excavator and back-hoe loader boom lowering control device - Requirements and tests

ISO 9249 Earth-moving Machinery - Engine test code - Net Power

ISO 7451 Earth-moving Machinery - Volumetric ratings for hydraulic excavator buckets and backhoe loader buckets.

3. Design Criteria

The Excavator shall be capable of continuous digging for protracted periods on a system of 3 shifts each of 8 hours duration per day throughout the year in hard, slushy, highly abrasive, blasted sandstone/ rock having a density 1,800 kg/m³ after blasting or in coal having a density 1,150 kg/m³ after blasting.

The Excavator shall be suitable for 3:1 heaped loading of 50Ton to 85Ton capacity Rear Dumpers and suitable for operation in an ambient temperature from 0°C to 55°C and relative humidity of 98%.

The Excavator shall have the following working ranges:

- i. Maximum Digging/ Cutting Height Not Less Than 12.25 Mtrs.
- ii. Maximum Digging Reach Not Less Than 13.75 Mtrs.
- iii. Maximum Digging Depth Not Less Than 7.80 Mtrs.
- iv. Maximum Dumping Height Not Less Than 8.00 Mtrs.

The bucket digging force measured in accordance with ISO 6015 should be not less than 15,000 kg/m of bucket width. The ratio of arm or bucket digging force to operating weight should preferably be equal to or less than 0.65.

4. Mechanical Specification

4.1 Bucket

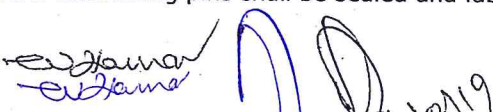
The excavator shall be supplied with a Hard Faced, HEAVY DUTY ROCK BUCKET of 4.3-5.0 Cu Mtr. capacity, rated according to ISO 7451 PCSA/SAE, suitable for BACK HOE application. The specific weight of bucket material shall not less than 7800 kg/m³. The tooth points supplied with the bucket shall also be hard faced and should have proper, durable, easily removable and shock absorbing type attachment with the bucket.

4.2 Boom & Arm

The boom and arm should be a rugged durable construction of high strength steel and free from any stress concentrations. The design must take care of all forces i.e. bending, torsion, compression, etc. encountered during operation of the equipment. Sealed bearings should be provided at pivot points. The bucket attachment connecting pins shall be sealed and lubricated.

4.3 Engine

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The Excavator shall be powered by a direct injection 4-stroke turbo charged diesel Engine (Electronically controlled) of not less than 400 KW / 537 HP (British) net power, measured at the rated RPM according to ISO 9249. The Engine shall be provided with 24V electric starting, dry type 2-stage air-cleaner with dust level indicator and 2-stages 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 re-circulated through a heavy duty radiator. The system shall be capable of providing sufficient cooling to allow the Excavator to continuously operate at the full rated output at the specified 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 and all safety appliances.

4.4 Operating Weight

Operating weight of the machine should not be less than 95,000 Kg, for the definite boom, arm and bucket combination offered in the bid.

4.5 Hydraulic Drive System

The Excavator hydraulic system should preferably be directly powered by the prime mover for efficient operation of slew and travel motors and the front end applications. The hydraulic pumps, motors and cylinders should be field proven large heavy duty type and have suitable in-built protection from surge, cavitations, loss of oil due to hose leakage or burst, etc. As far as practicable, reputable single make pumps, motors, cylinders and valves, etc. shall be used in the machine.

Adequate filtration of hydraulic oil with provision of warning alarm in case of blockage of filter shall be provided. An adequate and effective hydraulic oil cooling system shall also be provided.

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

A boom lowering control system which complies with ISO 8643 shall be provided.

4.6 Swing System

An independent hydraulic system should be provided for the swing motion. An upper structure swing lock system shall be provided.

4.7 Propel and Steering

Independent crawler drive with independent fail-safe braking system and hydraulically operated emergency and parking brakes shall be provided.

4.8 Undercarriage

The undercarriage shall be heavy duty and of sufficient strength to withstand the high loads which may occur due to uneven ground conditions. It shall be of welded construction and stress relieved as required.

The sprocket should be a single piece type. Life time lubricated idler and rollers, and a reliable track tensioning arrangement should be provided.

Crawler shoes shall be heavy duty and designed for ease of replacement whenever necessary.

4.9 Machinery House

The Excavator shall be provided with a dust proof machinery house made of steel sheet supported by a steel structure and shall cover the Engine & Drive system. It shall be designed to give ready and safe access to personnel & equipment for maintenance.

Non-slip type walkways and catwalks with handrails shall be provided suitably, the operator's cab and service platforms and shall comply with ISO 2867.

4.10 Lubrication System

A centralised automatic lubrication system of positive pressure type should be provided with warning alarms for identification of failed points. The system shall be maintained by you during entire contract period.

4.11 Operator's Cab:

A fully insulated, sound suppressed, Air conditioned operator's cab with cooling fan, FOPS, front guard, tinted safety glass, wind shield wiper and washer should be mounted on rubber shock absorbers and elevated to facilitate a clear and unrestricted view of the operating area. The operator's seat shall be a fully adjustable bucket type with foam rubber cushion and best quality upholstery. A cooling fan shall also be provided. The cabin should have sufficient space to enable operator to work with ease and comfort.

All operating controls, monitoring and working signals should be conveniently located in consoles within easy reach of the operator and shall comply with ISO 4557, ISO 6405-1 and ISO 6405-2. Air Conditioning system shall be maintained by you during entire contract period.

4.12 Guards and Shields

Adequate guards and shields which comply with ISO 3457 shall be provided throughout the Excavator.

4.13 Gauges and Indicators

Following Gauges and Indicators, or alternative display mechanism, shall be provided as minimum.

- i. Water temperature gauge

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- ii. Engine oil pressure gauge/indicator
- iii. Fuel capacity gauge
- iv. Engine tachometer
- v. Engine hour-meter
- vi. Hydraulic Oil Level Gauge

The Gauges/ Indicators/ Display mechanism shall preferably be Electronic Sensor Type.

4.14 Warning Alarms

The audio/visual Warning Alarms systems shall be provided for the following.

- i. Low engine oil pressure
- ii. High coolant temperature
- iii. Travel Motion Alarm

4.15 Electrical Systems

The Excavator shall be provided with the following.

1. 24V DC electrical system with suitably rated alternator of reputable make
2. Electric start
3. Reputable make high capacity batteries
4. Battery isolation switch
5. Battery should be located away from the operator's cabin.

All electrical circuits shall be protected by adequately rated fuses, which shall be easily accessible for maintenance. At least two spare fuses of each size shall be provided in each fuse box. Suitable Lighting for Night shift operation to be provided.

4.16 Automatic Fire Detection & Suppression System (AFDSS)

Suitable Multi-Point Automatic fire detection & Suppression system (DGMS approved type) of reputed & proven make / model and sufficient capacity will be installed on the machine, for protection from fire hazards.

The system should be capable for detection of fire and to extinguish the machine from all type of fires and ensure the protection from fire hazards in all ambient conditions / season in the mines in the mines in the extreme mining conditions with dust, dirt, water & vibrations.

The system shall conform to the relevant IS/ BS standards and shall be suitably mounted to cover all major points on the equipments. The system shall be DGMS approved type. The system shall be maintained by you during entire contract period.

4.17 Fire Extinguishers

Two numbers of fire extinguishers shall be provided at strategic points on the excavator, suitably mounted in heavy duty brackets for ease of removal. The extinguishers shall be dry power (cartridge type) with a minimum capacity of 5 kg and shall comply with Indian Standard IS:2171.

5. Ancillary Equipment / Additional Safety Features and Other Requirements

The following are to be provided on the excavator:

- i. Horn
- ii. Air filter clogging indicators
- iii. Fire proof Exhaust pipe blanket on exhaust side of engine, if applicable
- iv. Turbo charger guard / Baffle plate (on Turbo side and hydraulic pump/ between hot zone & cold Zone)
- v. All function cut off switch to be provided.
- vi. Swing Motor Brake to be provided.
- vii. Fire/Heat Resistant/Retarder Hydraulic Hoses in place of ordinary hoses to decrease chances of fire.
- viii. All sleeves and conduits where cables/wires are passed shall be fire/heat resistant.
- ix. Seat Belt for operator
- x. Vent valve on top of Hydraulic tank should be able to be removed without any tool.
- xi. Automatic Fire Detection & Suppression system (DGMS Approved) shall be provided.
- xii. Provision / suitable device for limiting of hydraulic cylinder during end stroke.
- xiii. Emergency Push button for immediate Shut-off in (i) Operator's Cabin **and**
(ii) Rear End of the Main Frame
- xiv. Provision for operator's fatigue sensor in operators' cabin as per DGMS requirement.

6. Performance guarantee

In accordance with the provisions of clauses B.7.2.2 and B.7.3.2 of the Technical Specifications, you shall guarantee that the availability of the equipment shall be not less than 85% (eighty five percent) during initial 3 (three) years operation and 80% availability during remaining 4 (four) years of the performance period of the total 7 years/ 84 months performance period, (to be calculated annually) from the accepted date of commissioning.

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7. Technical parameters:

7.3 Dimensions, Weights and Performance Details:

7.3.1 Dimensions of Basic machine with working ranges -	
a) Maximum digging / cutting height	12.7 m
b) Maximum dumping height	8.4 m
c) Maximum digging depth	7.9 m
d) Maximum digging reach at ground level	13.5 m
e) Maximum digging reach	13.9 m
f) Digging force (Bucket)	37000 kgf
g) Digging force (Arm)	34000 kgf
7.3.2.1 Dimensions- Basic machine -	
a) Upper structure overall width	3.59 m
b) Upper structure overall width, with catwalks	5.108 m
c) Upper structure rear end swing radius	4.65 m
d) Height to top of FOPS	5.144 m
e) Clearance under upper structure	1.637 m
f) Undercarriage overall width	4.61 m
g) Crawler overall length	6.36 m
h) Crawler tracks height	1.53 m
7.3.2.2 Front end – Back hoe -	
a) Bucket CAPACITY (Cu Mtr)	5.0 Cum
b) Bucket width	1.985 m (without cutters); 2.255 m (with cutters)
c) Boom length with specified bucket	7.9 m
d) Arm length with specified bucket	3.4 m
7.3.3 Weights : (Shipping weight of separate components)	
a). Bucket total weight	4111 Kg
b). Bucket specific weight (of the material of Bucket)	77 kN/cum
c). Weight of undercarriage	39350 kg
d). Total OPERATING WEIGHT	95000 kg
7.3.4 Performance details -	
a) Swing speed	4.5 rpm
b) Travel speed	High 0.94 m/sec Low 0.67 m/sec
c) Gradeability	70 percent
7.3.5 Hydraulic System -	
a) Make, model, number, flow rates and operating pressures of PUMPS	Annexure enclosed
b) Make, model, number and ratings of MOTORS	Annexure enclosed
c) Make, model, number, piston diameters and stroke lengths of Cylinders	Annexure enclosed
d) Relief valve operating pressures	Annexure enclosed
7.3.6 Undercarriage-	

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Supply Order no 12000110318189 Dt 16.02.2019; M/s BEML Ltd

a) Crawler width	710 mm
b) Crawler shoes, total number	Double grouser shoes. Total : 102 nos. (51 each side)
c) Centre to centre of idler roller and sprocket	5.03 m
d) Ground contact area	7.81 sq.m
e) Ground bearing pressure	120.00 kPa (1.22 kg/ sq cm)
f) Load rollers, diameter and number per crawler	270 mm per crawler, 8 nos. each side
g) Driving sprocket, diameter	1.046 m(PCD)
h) Idler roller, diameter	0.88 m
7.3.7 Lighting Details - Adequate flood lighting and illumination at strategic points both outside and inside of the Excavator shall be provided for visual observation and proper & safe night shift operation.	
7.3.8 Engine	
a) Make (Manufacturer), type & model	Make : BEML, Model : BSA6D170EG
b) No. of cylinders	6 nos.
c) Bore Dia & Stroke Length (in mm)	170 mm x 170 mm
d) Displacement volume	23.15 ltrs
e) ISO net power at rated Rpm (Power & rated RPM)	404 kW(542 hp) @ 1700 rpm
f) Maximum Torque at rated RPM (Torque & rated RPM)	2550 Nm @ 1300 rpm
7.3.9 Details of Auxiliary Hydraulic Pump (24Volts), being installed on the Equipment as per clause no.A2 I(d)	
a) Make and model of Motor and Hydraulic pump	Kamal Industries / Reputed Make, Gear Type
b) discharge rate/ Oil transfer capacity	55 - 60 lpm

8. SPECIAL GUARANTEE: The complete Equipment consisting of All Assemblies/ sub Assemblies/ components eg. Engine, Under Carriage, Hyd Pumps, Motors & Cylinders, Chassis/ Structure, Boom & Arm, Ring Gear & Swing Pinion, Final Drive, Air conditioning System, AFDSS, Centralised Lubrication system, Chassis/ Structure, Engine Hour Meter & Auto Electricals etc shall be covered for suitable replacement/ Repairs (on merits of the case), free from all costs to the WCL, during total 7 years (84 months) from accepted date of commissioning.

You will be required to stock sufficient spares parts to take care of entire Performance period. Spares should be available immediately for replacement against the breakdowns.

9. PERFORMANCE BANK GUARANTEE: The Performance Bank Guarantee for 10% of Order value in the specified/ standard format shall remain valid and shall be maintained for total 93 months (84 + 9 months) from the date of commissioning of Equipment, as a coverage towards non performance towards the Guaranteed availability as per the contract.

In case any amount of PBG is en-cashed as penalty as per the effect and duration of Guarantee of the contract, you shall replenish the same immediately so that the value of the PBG does not fall below the specified level (i.e. 10% of the landed value), at any point of time during entire contract period.

The Amount of PBG should be maintained by you for 10% of order value throughout the performance period. In the event of failure to do so, WCL reserves the right to recover the required Amount from any amount payable to the supplier/ pending bills from WCL/ CIL or any subsidiary of CIL or to recover same from the balance Amount of Bank Guarantees for same/ any other Equipment(s), supplied by the firm.

10. ERECTION & SUPERVISION : You shall be responsible for the erection and commissioning within 30 days of the receipt of complete equipment at site. However, the WCL will assist in providing necessary erection tools & tackles etc. and unskilled manpower for this purpose.

K. J. Jagan
K. J. Jagan

[Signature]

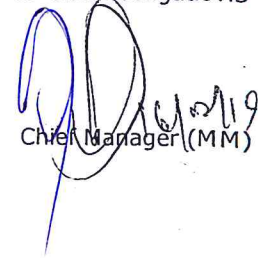
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11. INSPECTION AND TESTS

- i. The WCL or its authorized representative shall have the right to inspect and/or to test the goods to confirm their conformity to the contract. The WCL shall notify you in writing of the identity of a ny representative retained for these purposes.
- ii. The inspections and tests may be conducted at the premises of you or its subcontractor(s), at point of delivery and/or at the goods final destination when conducted on the premises of you or its subcontractor(s), all reasonable facilities and assistance, including access to drawings and production data, shall be furnished to the inspectors at no charge to the WCL.
- iii. Should any inspected or tested Goods fail to conform to the specifications, the WCL may reject them and you shall either replace the rejected goods and make all alternatives necessary to meet specification requirements free of cost to the WCL.
- iv. The materials will be inspected on arrival at site by the consignee, which will be considered as final. This shall in no way be limited or waived by reason of the Goods having previously been inspected, tested and passed by the WCL or its representatives prior to the dispatch of the Goods. Nothing in these documents shall in any way release you from any warranty or other obligations under this contract.



Sr. Manager (MM)


Chief Manager (MM)

