

	<p>(UNDER JURISDICTION OF SINGRAULI COURT ONLY)</p> <p><b>NORTHERN COALFIELDS LIMITED</b>                  (A Mini Ratna Company)  <b>(A Subsidiary of Coal India Limited/                  A Government of India Undertaking)</b></p> <p>Materials Management Department                  Regd. Office : PO: Singrauli Colliery,                  Dist. Singrauli (M.P.) INDIA                  Ph. No.07805-266606, Fax No.-266388,266640</p>	
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**SUPPLY ORDER**

Ref. No: 63614156/116A1031

Dated: 10.03.2017

**[TYPE OF VENDOR: SMALL ENTERPRISE]**

<b>M/s Capital Hydraulic Industries Pvt. Ltd.</b>	Fax no.(011)25981331, Ph.No. (011)25985889
NW-81, Vishnu Garden Ext., New Delhi - 110018	PCC: By Regd.Post VENDOR CODE:C0027

**Sub:** Formal Supply Order against our Open Tender No. NCL/SGR/MMD/SKA/116A1031/27 dtd 24.05.2016, Techno-Commercial Bid (Cover-I) & Price Bid (Cover-II) opened on 06.07.2016 for Procurement of Truck Mounted Crane cum Man Lifter Fully Built on LPT Truck Chassis full Forward Control.

**Ref:** i) Your offer no. CHI/TEN-NCL-CRN/2016-2017 dtd. 23.06.2016 with Bid No. 111663 & your subsequent letters No. Nil dtd 09.12.16, Nil dtd 13.12.16 & CHI/LET/VAL/2016-17 dtd 22.02.17 against Tender ID – 2016\_NCL\_38380\_1.

Dear Sirs,

With reference to the above, we hereby place our formal Supply Order on you for Design, Manufacture, Supply, Commissioning & Testing of Truck Mounted Crane cum Man Lifter Fully Built on LPT Truck Chassis full Forward Control at the following price, terms & conditions and also unless otherwise specified as per “General Terms & Conditions for supply of stores” enclosed with NIT:-

**Scope of Supply:-**

Description of Item	Order Qty. (No.)	Unit Basic Price (in Rs.)	Extended Value (in Rs.)
<b>Truck Mounted Crane cum Manlifter fabricated on Tata LPT 2518 Chassis</b>	<b>04</b>	<b>3756000.00</b>	<b>1,50,24,000.00</b>

**Total Extended Value: Rs. 1,50,24,000.00 (Rupees One Crore Fifty Lakh Twenty Four Thousand only).**

**TECHNICAL SPECIFICATIONS:** Detailed Technical Specification is enclosed at Annexure-I.

**Make:** ‘CAPITAL HYDRAULIC’

**Chassis Model:** “Tata LPT 2518”

**TERMS & CONDITIONS:**

- 1. BASIS OF PRICE:** Prices are on FOR destination basis inclusive of Packing, Forwarding, Freight, Transit Risk Insurance & Temporary registration charges and shall remain Firm till completion of supply.
- 2. EXCISE DUTY:** Exempted/Not applicable at present. If applicable in future, the same shall be borne by you. However you shall provide Cenvatable Invoices of M/s Tata Motors Ltd. or their Authorised Dealer for Truck Chassis for minimum Cenvatable amount of Rs.201000.00 per vehicle in favor of NCL to avail Cenvat credit on chassis. For availing CENVAT credit of Truck Chassis, NCL shall issue a letter to M/s Tata Motors Limited, Commercial Vehicle Division, Jeevan Tara Building, 5 Sansad Marg, New Delhi-110001 authorizing M/s Capital Hydraulic Industries Pvt. Ltd., New Delhi to place the supply order for Truck Chassis in NCL’s favor and the invoice, Form 21 & 22, Packing List, Guarantee Certificate should be addressed to various projects of NCL as permanent registration is to be done with respective RTOs in NCL’s name and for availing Cenvat credit by NCL. Respective consignees shall provide CST/TIN No. & PAN No. to M/s Tata Motors Ltd. for issuance of Invoice.

**For availing CENVAT Credit by NCL, you shall submit copy of CENVATABLE EXCISE Invoice as per rule 11 of CENTRAL EXCISE Rule 2002 at the time of supply of material along with the final bill(s) indicating therein Northern Coalfields Limited’s ECC No, Range, Division and Commissionerate along with other details as detailed below:**

<b>Clean Energy Cess Regn. No./ Excise Regn.</b>	<b>Range</b>	<b>Division</b>	<b>Commissionerate</b>
<b>AABCN4884HEM011</b>	<b>Waidhan</b>	<b>Satna</b>	<b>Bhopal</b>

**You have to submit your auditor’s certificate along with the bill confirming that refund/ credit if any obtained against Excise Duty has been/ shall be passed on to Northern Coalfields Ltd.**

- 3. CST:** Concessional Central Sales Tax will be payable extra at actuals as legally applicable at the time of supply which is presently applicable @ 2% against Form C. For availing concessional rate of Sales Tax, requisite Sales Tax declaration form will be furnished by the Consignee(s).
- 4. Entry Tax:** Shall be paid extra at actuals by AFM, Nigahi directly to M.P. State Authority. Present rate of Entry Tax is @2% for supplies to the project situated in state of Madhya Pradesh only. However for supply to the Projects situated in the state of UP Entry

Tax is not applicable. However, necessary Way Bill, if required, should be obtained from the respective consignees.

**NOTE: If there be any increase in the rates of taxes and duties during the extended delivery period beyond the stipulated / scheduled delivery period, NCL shall not pay the increase in the Taxes & Duties and the increase will be to supplier's account and in case there is any decrease, the same shall be passed on to NCL.**

**5. SECURITY DEPOSIT:** You are advised to submit Security Deposit within 15 days for Rs.15,40,110.00 (Rupees Fifteen Lakh Forty Thousand One Hundred Ten only) in the form of Bank Draft payable at Morwa Branch, Dist, Singrauli (M.P.) of any Nationalized/Scheduled Bank or in the form of Bank Guarantee executed by any Nationalized / Scheduled Bank in the prescribed Format as per Annexure J of NIT in favor of Northern Coalfields Limited. In case you fail to deposit the Security Money, the order shall be cancelled & the case shall be processed to order elsewhere & your firm's performance shall be kept recorded for future dealings with you. Security Money will be refunded within 30 days of satisfactory execution of the supply order. Security money may be converted into performance Bank Guarantee. Whenever Security money shall be treated as performance coverage of the supply order the operation of security Money BG/ Performance BG shall be guided by the stipulated Performance Bank Guarantee & Guarantee/ Warranty clause of this supply order.

**6. Delivery:** Within 180 days from the date of this supply order.

**7. Consignee & Paying Authority:**

Sl. No.	Name of Consignee	Name of Paying Authority	Qty. (No.)
1	The Depot Officer, Regional Stores, Bina Project, PO Bina Colliery, Dist. Sonbhadra (UP)	The Area Finance Manager, Bina Project, PO Bina Colliery, Dist. Sonbhadra (UP)	01
2	The Depot Officer, Regional Stores, Khadia Project, PO Khadia Colliery, Dist. Sonebhadra (UP)	The Area Finance Manager, Khadia Project, PO Khadia Colliery, Dist. Sonebhadra (UP)	01
3	Depot Officer, Regional Stores, Krishnashila Project, PO- Krishnashila Colliery, NCL, Dist Sonebhadra (UP)	The Area Finance Manager, Krishnashila Project, PO- Krishnashila Colliery, NCL, Dist Sonebhadra (UP)	01
4	The Depot Officer, Regional Stores, Nigahi Project, PO Nigahi Colliery, Dist. Singrauli (MP)	The Area Finance Manager, Nigahi Project, PO Nigahi Colliery, Dist. Singrauli (MP)	01

**8. TERMS OF PAYMENTS:**

(a) 80% payment shall be released against submission of bills in triplicate along with receipted challans within 21 days of receipt & acceptance of Truck Mounted Crane

cum Manlifters at site by the consignee and receipt and acceptance of Performance Bank Guarantee by the consignee complete in all respects, whichever is later.

(b) Balance 20% payment shall be released within 21 days after successful commissioning of the Truck Mounted Crane cum Manlifters to be certified by respective Staff Officer (E&M) of the respective Projects.

The payment will be made by “Electronic Fund Transfer” (EFT) or e-payment after receipt and acceptance of Performance Bank Guarantee.

**The full details of Bank Name, Bank Address & Account No. & other relevant details must be indicated.**

**9. Firm’s Bank Details:**

Name of Bank : Bank of India.  
Branch Address : Vishnu Garden Branch, New Delhi-110018  
Account No. : 604030110000015  
IFSC Code : BKID0006040

**10. SUBMISSION OF BILLS:**

A. Following documents may be submitted to the Consignee:

- i) Delivery Challan in original.
- ii) One copy of the Bill.
- iii) Guaranty/ Warranty Certificate
- iv) Price Fall Clause certificate
- v) Any other relevant dispatch documents specified in the Order.

B. Following documents should be submitted to the Paying Authority:

- i) Bills in triplicate duly pre-receipted and stamped.
- ii) Certificate for Price Fall Clause.
- iii) Copy of the Consignment Note/Warranty /Guarantee Certificate.
- iv) Any other relevant document specified in the Order.

**11. LOWEST PRICE CERTIFICATE:** You shall submit a certificate certifying that the prices charged by you against this Supply Order are the lowest and are same as applicable to other Government Departments/ Undertakings/ Other Organizations.

You shall also certify that the prices charged are not higher than rates quoted / prices charged by you for same / similar items to other Customers.

**12. INSPECTION:**

Pre-delivery inspection at the manufacturer’s works as well as Final inspection at the consignee’s end shall be carried out by the authorized representative of GM (E&M)/NCL Hqr in each case.

**13. RISK PURCHASE:** In the event of failure of supplier to deliver or dispatch the stores within the stipulated date/period of supply order, or in the event of breach of any of the terms and conditions mentioned in the supply order, Northern Coalfields Limited have the right to purchase the stores from elsewhere after due notice to the defaulting supplier at the risk and cost of the defaulting supplier. It is mentioned clearly that in the event of failure of supplier as detailed above, the cost of risk

purchase exercise may be recovered from the bills against any other supplies pending at NCL and also in any other Subsidiary Company/Coal India Limited.

**14. LIQUIDATED DAMAGE:** In the event of failure to deliver the stores within the stipulated date/period in accordance with 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, NCL shall have the right:-

a) To recover from the successful tenderer as agreed liquidated damages a sum not less than 0.5% of the price of any store which the successful tenderer 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 a ceiling of 10%. Where felt necessary, the limit of 10% can be increased to 15% at the desertion of GM (MM)/ NCL.

OR

b) To purchase from elsewhere after due notice to the successful tenderer on the account and at the risk of the defaulting supplier the stores not supplied or other of a similar description without cancelling the supply order in respect of consignment not yet due for supply.

OR

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 and payable by the supplier, NCL 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 cover the full amount recoverable, the successful tenderer shall pay NCL on demand the remaining balance. The supplier shall not be entitled to any gain on any such purchase.

**15. PRICE FALL CLAUSE:** If you, at any point of time during the period of execution of supply of the contract of NCL, supply equipment /store of identical description in India to any customer including CIL, Subsidiary Companies at a price lower than the price stipulated in the first contract, you shall forthwith notify such reduction of sale price and NCL shall amend its contract price to the lower price. In event of non-intimation by you to this effect, suitable penal action may be considered against you.

The price fall clause shall apply when the period of execution of supply against contract of NCL (first contract) is concurrent with supply of another contract by you to other organisation including CIL/Subsidiary Companies (other contract). The lower price of the two will be applicable against the supplies made against the first contract, during the concurrent period of execution of supplies of the said two contracts.

**16. COMPOSITE WARRANTY/GUARANTEE:**

The Vehicle shall be covered by Manufacturer's standard guarantee / warranty. However you shall give a Composite Warranty for satisfactory performance of the supplied Truck Mounted Crane cum Manlifter for a period of 12 months from the

date of commissioning or 18 months from the date of receipt and acceptance of Truck Mounted Crane cum Manlifter at consignee's end whichever is earlier.

You shall be responsible for any defect that may develop under the conditions provided for by the contract and under proper use, arising from faulty materials, design or workmanship and shall remedy such defect at your own cost when called upon to do so. If it becomes necessary for you to replace or renew any defective part, such replacement or renewal shall be made by you 100% free of cost without any extra cost to Northern Coalfields Limited. The new goods should be supplied on FOR destination basis free of cost.

Warranty Replacement should be completed within a reasonable period maximum within one month from the date of claim free of cost up to ultimate Consignee's end. All cases of warranty replacements to be decided on the basis of joint inspection of the failed goods held between the user's representative and the manufacturer's representative.

**17. PERFORMANCE BANK GUARANTEE:** You will submit Performance Guarantee for Rs.15,40,110.00 (Rupees Fifteen Lakh Forty Thousand One Hundred Ten only) to cover both satisfactory performance and warranty. The Performance Guarantee should be furnished in the form of Bank Guarantee executed by any Nationalized / Scheduled bank on a Non-Judicial Stamp Paper of required value in NCL's prescribed Format i.e. as per Annexure K of NIT. The stamp paper must be in the name of issuing Bank and the BG must be kept valid for minimum 21 months from the date of receipt & acceptance of materials at consignee's end which shall be either released after expiry of its validity period if no claim/dispute is pending or extended thereafter for proper coverage of Guarantee/Warranty of Truck Mounted Crane cum Manlifters or may be invoked/encashed by NCL against unsatisfactory/adverse performance of the Truck Mounted Crane cum Manlifters as the case may be. Security money may be converted into Performance Guarantee. In case Security money is submitted in the form of Bank Guarantee, the same may be converted into Performance Bank Guarantee provided the validity is 21 months from the date of receipt & acceptance of materials at consignee's end. Whenever Security money shall be treated as performance coverage of the contract, operation of security Money BG/ Performance BG shall be guided by Guarantee/ Warranty clause of this supply order.

**18. JURISDICTION OF COURT:** All disputes are subject to jurisdiction of "Singrauli Court" only.

**19. Technical Support & Services:** In addition to normal After Sales Service, you shall render Technical Support and Services to ensure Proper Usage, Maintenance and satisfactory Performance of the supplied Truck Mounted Crane cum Manlifters.

This order will also be governed by the "General Terms & Conditions of supply of Stores" enclosed with our NIT and all the terms & conditions thereof as well as Provisions of CIL Purchase Manual will be applicable unless otherwise specified in this order.

You are requested to kindly acknowledge receipt and acceptance of order within 10 (Ten) days from the date of issue of order. In case no reply is received, it will be presumed that the order has been accepted by you without any precondition.

Yours faithfully,  
For and on behalf of Northern Coalfields Limited, Singrauli

(V. K. Verma)  
Asst. Manager (MM)

(S. K. Agrawal)  
Chief Manager (MM)

**Encl:**

1. Details of Technical Specification – Annexure-I

**Copy to:-**

The Chief Vigilance Officer, NCL, Singrauli..  
The Director Technical (Operation), NCL, Singrauli  
The General Manager(E&M), NCL, Singrauli  
The General Manager(Finance), NCL, Singrauli  
GM/SO(E&M)/AFM/Depot Officer, Bina/Khadia/Krishnashila/Nigahi.  
The General Manager(MM), CCL/BCCL/ ECL/SECL/ WCL/ MCL/NEC.

This supply order is issued against Indents of Bina, Khadia, Krishnashila & Nigahi Projects as detailed below for procurement against replacement of Surveyed off Truck Mounted Crane / PR Provisions (PRP):

Sl. No	Project	Indent No. & Date	Sanction No. & Date / Survey Off Sanction No. & Date	Against Surveyed off / PRP
2	Khadia	KHD/E&M/LV/20 13-14/1640 dtd 24.11.13	NCL/SGR/E&M/Sanction/14/29 93 dtd 27/28.03.14: NCL/SGR/E&M/Sanction/13/10 23 dtd10.07.13	DIL-7652
3	Bina	128 dtd 06.03.09	NCL/SGR/LV/Sanc./2008/177 dtd 11.09.09 : NCL/SGR/LV/Sanc./2008/466 dtd 29.10.08	UP64A3088
4	Krishnashila	KSL/E dtd 09.05.13	NCL/SGR/E&M/Sanction/14/23 60 dtd 01/04-01-14	Against PRP
6	Nigahi	NGH/E&M dtd 04.02.13	NCL/SGR/E&M/Sanction/2013/ 1594 dtd 18.09.13	Against PRP

**NOTE:** As per office Memorandum of Ministry of Finance Govt of India, Purchase of vehicles is banned except against condemned vehicles. This Supply Order for the procurement of 01 No. of Truck Mounted Crane for Bina Project & 01 No. for Khadia Project are made against Surveyed off Truck Mounted Cranes as per FD's following

decision taken in its 456<sup>th</sup> meeting received vide letter no- NCL/Board/11(456)/421 dtd. 19.05.2014 of Company Secretary:

**Quote:**

*FDs approved the proposal, as submitted, for procurement of vehicles against the initial surveyed off vehicles with the condition that immediately after receipt of new vehicles it is ensured that the corresponding vehicle against which new vehicle is received is grounded for disposal.*

**Unquote**

This instruction must be strictly complied by GM(E&M) NCL and GMs of the respective Projects.

This Supply Order for the procurement of remaining 02 Nos. of Truck Mounted Cranes against PR Provision and approved Scheme are made as per FD's following decision taken in its 465<sup>th</sup> meeting received vide letter no- NCL/Board/11(465)/ 974 dtd 08.11.2014 of Company Secretary:

**Quote:**

*FDs agreed to the proposal for considering Diesel Bowser, Explosive Vans, Fire Tender, Hydraulic Ladder, Mobile Service Van, Truck Mounted Crane, Water Tanker as supporting equipment for operation and maintenance of mining activities and not barely a vehicle and directed that procurement of new equipment be processed accordingly."*

**Unquote**

This Supply Order is issued against Indent Registration No. 116A1031 dtd 20.05.2016 for procurement of 04 Nos. of Truck Mounted Crane cum Manlifters with the concurrence of Dir(Fin), NCL and approval of CMD, NCL having Finance Concurrence No. NCL/HQ/FC/2017-18/Capital/Other P&M E&M/03 dtd 04.03.17 for Rs.1,54,01,102.40 (Rupees One Crore Fifty Four Lakh One Thousand One Hundred Two and Paise Forty only) and Budget Certified vide ref. no. NCL/HQ/C&B/Capital/Other P&M E&M/2017-18/03 dtd 04.03.2017 for Rs.1,54,01,102.40 (Rupees One Crore Fifty Four Lakh One Thousand One Hundred Two and Paise Forty only) of GM (Fin) C&B.

**Asst. Manager (MM)**

**Chief Manager (MM)**



**ANNEXURE-I**

**BROAD TECHNICAL SPECIFICATION AND OTHER REQUIREMENT FOR  
TRUCK MOUNTED CRANE CUM MANLIFTER**

**1. Scope of Supply:-**

Design, manufacture, supply, commissioning and testing of Truck Mounted Crane cum Man lifter fully built on LPT Truck Chassis Full Forward Control (TATA LPT 2518) having the Specification given as follows. The scope of work includes procurement of truck chassis, fabrication of body and Crew Cabin having seating arrangement for minimum 5 to 6 persons in cabin. The Truck Mounted Crane shall be heavy duty type and suitable for plying in haul road of opencast mines in NCL. The crane shall have hydraulically controlled telescopic boom and balanced compact hydraulic winch. The hydraulic winch shall consist of reduction gear box, wire rope, lifting hook and hydraulic motor, etc.

An arrangement to attach and supply workman's cage at the boom end for man lifting work is included in the scope of work. The scope of supply also includes the supply, commissioning, testing and training at site for operation & maintenance.

**2. Service Condition:-**

The Truck Mounted Crane shall be capable of operating in dusty atmosphere laden with coal dust, +3 to +50 degree Celsius Temperature, 95 % humidity and other service conditions prevalent in the coal mining area. The Crane shall be designed for heavy duty application and pick & carry the load on rough terrain area of open cast coal mines in the above operating conditions.

The design, manufacture, supply, testing, and commissioning of all the work under the supply contract of crane shall in all respect comply with requirement of this specification and as per the appropriate current Indian Standards, codes of practices, statutory rules & regulations, safety codes & practices, DGMS rules & regulation, RTO rules & regulation, environment protection acts / rules, etc.

**3. Specification of Chassis**

- a. Gross vehicle weight : Not less than 25000 Kgs.
- b. Wheel base : Not less than 4800 mm
- c. Min Ground clearance : not less than 245mm
- d. Number of wheels : 10 Nos.
- e. Number of axles : 3 Nos.
- f. Engine : Turbo charged Diesel Engine  
confirming BS-III/BS-IV
- g. Steering : Power Steering
- h. Power : Not less than 150 HP @ 2400RPM.
- i. Torque : Not less than 540 NM @ 1400 - 1600 rpm
- j. Gearbox : Synchromesh on all forward gear
- k. Fuel Tank capacity : Min 200 Lit.

#### 4. Other Technical Specifications –

	DESCRIPTION	DETAILS
A	Maximum lifting load	7000 Kg (min) at 2.2 m approx.
B	Maximum lifting height from Truck chassis	9.00 metre
C	Lifting Capacity (at the farthest end)	2500 Kg (min)
D	Intermediate lifting capacity	3500 Kg (min) at 4.3 m approx, 5500 Kg (min) at 2.6 m approx.
E	Maximum width across stabilizers (transport position)-(mm)	2490 approx
F	Maximum width of stabilizing centres (operation position) (mm)	4600 approx
G	Men carrying basket / Workman's cage	Steel fabricated, fibre glass coated, does not heat over 50 Deg Celsius temp & 95 % humidity level.
H	Load capacity of men carrying basket	150 Kg. (minimum)
I	Instruments & gauges	Level Indicator, stop bolt & gauge
J	Emergency item	Emergency Hand Pump

**5. Technical Requirement:** The Truck Mounted crane shall be supplied with all accessories / standard fittings and shall also include the following -

- a) Mounting of crane on offered chassis and fabrication of crew cabin and truck body at the supplier's works and testing commissioning of crane.
- b) First fill of oil and grease,
- c) One set of standard tools and tackles required for operation and maintenance of the crane,
- d) Filter element and set of hoses for one year of working of the crane.
- e) The equipment shall meet the requirement of relevant BIS standards.
- f) Easy and compact folding for transportation.
- g) All hydraulic cylinders to be double acting type with full protection against corrosion, wear and tear.
- h) Telescopic boom extension to be operated on double rollers for easy operation and longer life.

#### 5.1 Construction features –

- a) Maximum horizontal outreach measured from the centre of slew – 6300 mm (min.)
- b) Crane should be foldable type with co-linear boom geometry (offset boom construction).

**5.2 Power source** – is to be taken from the truck diesel engine through PTO for hydraulic pump (gear type). The pump should be suitable for continuous and heavy duty operation.

#### 5.3. Slewing range and system –

The crane should have a full circle slew of 360 degree and should be able to locate loads anywhere in the operating radius of the equipment. Derricking and slewing system should be sensitive and fast with suitable controls. The brake should be fail safe type.

**5.4 Out riggers** – Four nos. Hydraulic, independently operated out riggers so designed that cylinders are not exposed to swinging loads. The equipment shall be provided with two nos.

heavy-duty stabilizers. The stabilizers shall provide stability to the equipment during operation. The hydraulic jacks of the stabilizers shall have locking valves so as to provide a solid base for the unit to stand upon independent of the chassis suspension. When retracted, the stabilizers shall not extend beyond the vehicles' sides. The stabilizers shall be provided with swivel pads to disperse the imposed load.

**5.5 Self-loading capability** – The crane should occupy less space on the chassis for mounting, as the balance space left to the chassis shall be used for self loading and unloading of the material.

**5.6 Truck body** –The truck body shall be made of suitable MS Sheet with foldable side flaps, etc.

**5.7 Hydraulic system** - All motions like derricking, hoisting, slewing, telescoping, etc. should be through hydraulic power. Hydraulic pressure to operate the Boom shall be developed by a hydraulic pump run off the vehicle's gear box through a power take-off unit. The hydraulic circuit shall be protected against over load by incorporation of a relief valve, which bypasses pressurised oil back to the tank in the event of safe working limits being exceeded. A large hydraulic reservoir with a built-in-suction strainer and return-line filter element and rigid steel piping shall be used throughout with flexible hoses at joints.

**5.8 Emergency System** -A stand-by manually operated hydraulic pump shall be built into the system to retract the boom and stabilizer cylinders in the event of failure of the truck engine, power take off or the hydraulic pump.

**5.9 Controls:** Controls for operation of the booms shall be provided both on the deck of the vehicle as well as in workman's cage. The controls for stabilizers are provided on the deck only. All the controls are dead man type. The control system shall have Special Directional Control Valves with Part Relief System to avoid extra heating of the hydraulic system for longer life of all Hydraulic Components and Hose pipes.

**5.10 Workman's Cage:** A workman's cage of not less than 150 Kgs. load capacity made of FRP moulding shall be provided. The cage shall have openings on three sides for entrance and exit. Dual leveling rods made from steel tubes shall be provided in order to give positive leveling and to avoid swinging and frequent adjustments of the cage.

**5.11 General –**

All parts and surface which are prone to corrosion should be made of such material and provided with such finishes as to cover and protect the equipment from injurious effect of climatic conditions. All electrical and auxiliary equipment should be treated for existing mining conditions. The truck deck shall be of chequered plate with the safety railings and shall also include a box-cum-seat for storage of tools, spares, etc. Leveling rod system shall pass through both the booms to keep the platform vertical in all positions.

**6. Safety features –**

- a) Over load protection,
- b) Hose failure protection, over hoist protection and pneumatic circuit current warning.
- c) Audio and visual warning device for safe loading of the crane,
- d) Fail-safe devices shall be provided to prevent the unit from free falling

- e) Inter-locking shall be provided between stabilizers and booms whereby it will not be possible:
  - i)to raise the booms when the stabilizers are not extended;
  - ii)to drive the vehicle when the stabilizers are extended;
  - iii)to retract the stabilizers, until the booms have been lowered.
- f) Any other features required for safe working of crane.
- g) Design as per BIS / Indian Standard.

**7. The vehicle chassis in all respect shall Conform to**

- a. Central Motor Vehicle Rules 1989(amended up-to-date)
- b. Central Motor Vehicle Rules 1997(amended up-to-date)  
for mass emission Standards (Diesel Engine).

**8. Standard accessories to be provided with the each vehicle -**

- a. Spare wheel including tyre and tube : 1 No
- b. Tool Kit : 1 Set
- c. Jack : 1 No.
- d. Spare parts catalogue and Maintenance manual. : 1 Set

**9. After Sales Service –**

After sales service shall form part of the purchase contract. The manufacturer / supplier shall enclose a card bearing his company's name and address with each of the consignment. This shall be used to call individual manufacturer / supplier as and when his services are required.

**Asst. Manager (MM)**

**Chief Manager (MM)**