ISG/DHC-001

2nd April 2010

ASSOCIATE`S ASSISTANCE FOR DOWN HILL CONVEYOR SYSTEM

1.SYNOPSIS:

BHEL, Industrial System Group, Bangalore proposes to do DOWNHILL CONVEYOR SYSTEM for Indian Mining Industries , having longstanding Experience in executing Coal Handling Plants of its Coal based Power Plant Projects ,Material Handling such as Automated Storage & Retrieval System (ASRS).

We are now interested to do a project of Down Hill Conveyor System for our Indian customer : A New , 7 MTPA Iron Ore Handling @2000MTPH design capacity after Secondary Crushing to connect and facilitate the existing Screening Plant which is already operating since 20 years .The New facility envisages a 4.5 km Down Hill Conveyor with 318 metre Vertical Drop and with VFD, regenerative drives and controls ,Reversible conveyor is with VFD drive , Self Propelled Mobile Maintenance Trolley carrying crew and tools along the Down Hill Conveyor Conveyor Path having vertical drop ,horizontal & vertical curvatures.

2.PRE QUALIFICATION CRITERIA TO BE MET:

1. **Should have Engineered and associated in commissioning of ,Min 02(Two) KM Long,1500TPH Long Distance Troughed Belt Conveyor.**
2. **At least one Down Hill Regenerative Troughed Belt Conveyor, Regenerative Power (-)800KW,with all the Drives together.**
3. **At least One Troughed Belt Conveyor with Horizontal Curvature/ s.**
4. **Should have engineered a Conveyor Gallery for carrying men and materials with Triangular or Rectangular cross section with Self Propelled Maintenance Trolley travelling along the Gantry.**
5. **All the above must have been Operating satisfactorily for minimum 2 Years prior to this bid submission date. Documents supporting the supply completion and satisfactory commissioning and commercial operation are required to be submitted project wise.**
6. **Projects Commissioned before 31st December 1994 are not eligible.**

3.SALIENT PROJECT DATA:

Customer: National Mineral Development Corporation (NMDC, India)

Project Consultant/s: MECON, India & CDI, USA.

Project Location: Kumaraswamy, Bellary ,Karnataka.

Reference Drawings & Documents of Customer enclosed for reference and Quoting : (These are Proprietary, Confidential & has IPR);

(1)Drg: MEC/01/Q6DH/KIOP/II/201/TS,R0,Dt06-01-10 (2) Drg:MEC/01/Q6DH/KIOP/II/203/TS,R0,Dt:Nil.(3) Vol –III of V ,Complete Technical Specification(mechanical, environmental, Preferred Makes of Customer, Scope of work with battery limits)(4) Vol - IV of V ,Complete Electrical, Automation & Controls,(5)Vol-II of V(Preamble, Summary of Prices, Price Formats) ,(6)Vol-I of V (GCC,SCC,ECC),Commercial conditions ,(Vol-V: Civil, Hydro, Structural,FDSS Specifications.

Site Access: Connected by Rail, Road from Bangalore & Chennai.

Site Data: On Seismic Zone –I, as per IS-1893-1984, αo=0.01,Fo=0.05 ,Table-2 value of the standard. Max Temp: 40 deg C, Min Temp:12 deg C,Max Wind Velocity: 98.2KM/Hr, Average Rainfall:75cm Annum. Site Re surveying for soil parameters , capability ,Contour &Profile Check ,post award of this bid is asked by the customer. Associate will be bound by this Condition back to back with BHEL and no cost Escalation on this account is Permitted.

Capacity: 7MTPA Iron Ore Handling @ Rated 1800MTPH,Haematitic (-)100mm from Scalping Screen of the new Secondary Crusher onwards to the Existing Screening Plant of Customer at Donimalai, co- located with Kumaraswamy .

Project Delivery: Completion by 21 months inclusive of Monsoon from Letter of Award and P.G Test , Handover 6 months thereafter.

4.SPECIFIC ASSISTANCE REQUIRED FROM ASSOCIATE+ Quote Sought as per NMDC_DHC_BOQ1 attached Document:

Pre Bid: Assist in tender Design, preliminary engineering and guaranteed technical parameters of Down Hill Conveyor #723 and Reversible conveyor # 727 ,02 numbers Self Propelled Maintenance Trolleys ,finalizing BOQs and reviewing the Process flow diagram to meet the Performance guarantees of the P.G & Acceptance Test.

During Bid Evaluation: Enabling Clarification of Customer / Consultant`s technical questions for their best satisfaction towards a Responsive Bid.

After Award: **Prepare Detailed Equipment drawings, Layouts, Checking integration with other connected processes of the DHC System, Safety aspects ,Quality Assurance Plans with Inspection Check Points , Recommending Technical Specifications, BOQ of Critical items of Import while maximizing Indian manufacturing Content ,Enabling Approvals of Drawings, Specifications, QAPs from Customer/ Consultant ,Supervision of Erection& Commissioning & Trouble shooting , Joint participation in demonstrating applicable Performance Guarantee (P.G) Test at Site.**

For Mechanicals ,Structurals & Civil Works: Shall assist BHEL`s civil & structural consultant while Resurveying of the DHC and Reversible Conveyor Profiles and their Actual implementation Path(routing) with the Finalized Contour . Shall Furnish Actual Load Data on Tressles by Computation and Confirm by Static & Dynamic Forces analysis software, enable approval from customer , of Integrated Conveyor Structure with Conveyor system , Fire Protection Water Pipe Lines , Pipes & Nozzles of Dry Fog Dust Suppression system, Self Propelled maintenance trolleys . To prepare the Complete Layout drawing , specifying the number of conveyor/s support structures in the drawing, typical OGA & Cross Sections of associated equipments so as to enable the Civil Consultant to

Prepare Foundation & Grout Drawings. The integrated Triangular or Rectangular Gantry profile with the self propelled maintenance trolleys shall be given in an integrated Final As –to-be-Built approved drawing (Design+ Fabrication)form to enable manufacturing. BHEL`/its vendors will manufacture the gantries and joint inspection, dispatch clearance shall be done with associate. The Trolleys manufacturing and interfacing drawings with profile`s tolerances shall be given by associate , but the complete trolleys are to be manufactured ,supplied and commissioned by the associate. . The required approval from DGMS for all the Safety related points of Gantry mounted maintenance trolleys system shall be done by the Associate .

The associate shall also recommend unit /modular weight handling crane/earthmover to facilitate erection at Kumarasway & Donimalai site right from Tail end of the conveyor at Kumaraswamy Hill top to the valley , Reversible conveyor from Head end of DHC and through Reversible conveyor to the final connection to the existing screening plant at Donimalai for safe and efficient erection of the above mentioned structures, trolleys etc.

5.Performance Guarantee & Warrantee:

NOISE LEVEL : The equivalent "A" weighed sound level measured at a distance of 1.5 meters above floor level in elevation and one meter horizontally from the base of any equipment furnished and installed under these specifications, expressed in decibels to a reference of 0.0002 microbar, shall not exceed

85 dBA.

Dry Fog Dust Suppression System: **The respirable dust at 1m to 10m from source shall be within a threshold limit value of 3mg per cubic meter.**

Air Conditioning Systems: **Temprature-23+/-2deg C, Relative humidity:55+-/5%, Filtration: Min 90% to 10 Microns.**

Pressurised Ventilation System:

Temp: Inside temperature not to exceed more than 5 deg C over and above the prevailing ambient temp.

Pressure: Positive pressure of minimum 3mm WC shall be maintained inside the premises.

Pre Filtration: Minimum 90% down to 10 microns.

Exhaust Ventilation System:

Temperature: Not more than 2deg C rise above ambient temperature (maximum) shall be maintained.

DOWNHILL CONVEYOR SYSTEM

After the system is completely erected at Owner's site, each item/equipment shall be thoroughly inspected for correctness and completeness of the installation and they shall be subjected to final tests as to performance and guarantee to be carried out in the presence of Tenderer or his representative and OWNER or his representative to demonstrate that the performance of the equipment conforms to relevant standards and specification and meet the requirements as given in this specification. The tests / checks to be conducted shall be generally as under:

For conveyors and belt feeders, the load test shall be conducted in stages. The equipment shall be run for 8 to 10 hours continuously at no load, 25%, 50%, 75% & 100% of the rated capacities or at a rate mutually agreed upon between Tenderer and OWNER / their representative. The intervening period shall be available for making adjustments and arrangements by the Tenderer as may be required.

All the specified speeds of the equipment shall be measured under full load conditions.

Proper operation of the limit switches, safety switches, speed sensors etc., shall be demonstrated by the Tenderer in the presence of OWNER or his representative.

For the Down hill conveyor no. 723, proper functioning of the braking system during normal braking and emergency braking situations in all loading conditions shall be demonstrated by the Tenderer in presence of OWNER or his representative.

For the Down hill conveyor 723, proper training of the belt specially in the zone of horizontal curvatures with no spillage shall be demonstrated by the Tenderer for all loading conditions, including at the designed capacity in the presence of OWNER or his representative.

For the Reversible conveyor no. 727, proper functioning of the braking system during normal braking and emergency braking situations in all operating conditions shall be demonstrated by the Tenderer in presence of OWNER or his representative.

During operation of the equipment at no load and at full load, performance of all the drives shall be checked in respect of current drawn by the motors, temperature rise, vibrations, gear box noise and its heating, bearing heating etc. Consumption of power shall be measured and compared with the respective rated values.

Any other observations/tests felt necessary for judging the performance of the equipment and as mutually agreed between Tenderer and OWNER /Consultant shall be carried out.

If during the test runs, there is an interruption exceeding 2 hours due to any cause other than power failure or shortage of input materials for which the owner is responsible, the test run shall be discontinued and fresh date shall be decided mutually by both the parties.

For all auxiliary equipment/systems like hoisting / handling equipment, dust suppression system, pumps etc., the PG test shall be conducted for checking their functional requirements as per specification.

The equipment / system shall be considered to have performed satisfactorily when:
i) Material is delivered to the existing tripper conveyor no. 122 at Donimalai, at the rated capacity of 1800 tph as indicated in this specification with all drives and accessories functioning properly.
ii) Material is tapped from the existing tripper conveyor no. 122 and conveyed to the proposed conveyor at TH-3 feeding material to new screening plant at the rated capacity of 1800 tph through system of

conveyors including the reversible conveyor no. 727 (running in reverse direction) with all drives and accessories functioning properly.

iii) The system runs successfully for a continuous period of 03 days working in 3 shifts at the rated capacity with in a test period of 1 week.
iv) The system availability in the PG test period is minimum 95%.
v) The Tenderer successfully demonstrates a system design capacity of 2000 tph with the starting/ running/ braking systems working satisfactorily for a period mutually decided between the Tenderer and the Owner.
Performance guarantee tests shall be conducted within 6 months from the date of commissioning.

In case of non-fulfillment of the performance values, LD shall be levied on the Tenderer. The LD to be levied for the various guarantee parameters shall be as follows:

In the event of performance not meeting the guaranteed parameters, (Clause 1.11(i) above) the OWNER shall levy LD at the rate of 1% of the total contract price for every 1% shortfall in the performance or part thereof subject to a maximum of 5% of the total contract price. The system having shortfall in performance beyond 5% shall be rejected.

The equipment availability shall be minimum 95% during the Warranty period. For every 1% drop in availability, 1% of the total contract price will be levied as LD, subject to a maximum 5% of total contract price.

<u>WARRANTY</u>

The system as well as equipment / components supplied shall be guaranteed for a period of 12 months from the date of successful commissioning during which the Tenderer shall repair / replace any defective parts of the works performed by him.

In case of non-availability, the Owner shall have the right to encash the performance bank guarantee submitted by the contractor .

All the Commercial conditions as stipulated by Customer shall be applicable to the associate on back-to-back basis. The Price Format as per Vol-II of Customer Document shall be used while quoting the Price. Prices are to be FIRM ,FOR Destination , Kumaraswamy, For the Period of Contract.

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