The Singareni Collieries Company Limited

(A Government Company)

Registered Office: Kothagudem– 507 101

Ref.No: CRP/ **Date: 19. 03.2009.**

INVITATION FOR "EXPRESSION OF INTEREST" (EOI) FOR SUPPLY, INSTALATION & COMMISSIONING OF MAN WINDER AND ACCESSORIES FOR SHANTHI KHANI LONGWALL PROJECT, MANDAMARRI AREA

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1.0 ABOUT SCCL:

The Singareni Collieries Company (SCCL) is a Government company with equity participation of 51% by Government of Andhra Pradesh and 49% by Government of India. The Company's mining operations in Godavari Valley Coalfield extend from Chintalapudi in the South, to Antargaon in the North, in four major districts of Andhra Pradesh state (A.P.), INDIA.

Godavari Valley Coalfield is having a strike length of 350 km and covers an area of 17,000 square km. The coal reserves are of non-coking and bituminous type.

SCCL with a work force of 70,976 as on 28-02-2009 is committed to customer satisfaction and is redefining excellence in mining operations. The company with a history of over 119 years in coal mining is moving ahead to retain its leadership by taking proactive measures to meet the emerging challenges in the coal industry both in technical and financial terms.

SCCL supplies coal to a diverse customer base ranging from power utilities, cement plants, captive power plants, sponge iron, drugs, and pharmaceutical companies to small sector units like brick kilns etc. About 71% of its coal production is linked to power plants situated in the states of A.P., Maharashtra and Karnataka.

SCCL is a profit making company and is paying dividend to its share holders for the last 6 years.

SCCL had planned an increase in the production capacity from the level of 43.5 Mtpa in 2008-09 to 50.00 Mtpa for the year 2009-10..

SCCL formulated the following strategies to increase the coal production.

i) Reconstruction of existing underground Mines for safe and optimum production by introduction of intermediate and high technology.
ii) Intensive and sustainable introduction of efficient, economic and safe mining systems with a high degree of automation,
iii) Opening of new Mines in the new geological blocks - opencast or underground.
iv) Adopting opencast technology for deeper depths with high stripping ratios, wherever feasible for high rate of production and conservation.
v) Reconstruction of shallow underground workings for extraction of remnant coal/by opencast method.
vi) Mining of deep shaft blocks for large-scale production and to exploit deeper deposits ranging from 300m to 600m.

For coal extraction in these shaft blocks deep shafts are under construction and winding engines are to be installed and commissioned.

SCCL is already working with 4 nos of Man winders in their existing mines. And it is proposed to introduce one Man winder in one of their new Shaft block.

For this an Invitation for “EXPRESSION OF INTEREST” (EOI) for “SUPPLY, INSTALATION & COMMISSIONING OF MAN WINDER AND ACCESSORIES INCLUDING HEAD GEAR AND OTHER SHAFT FITTINGS” FOR SHANTHI KHANI LONGWALL PROJECT, MANDAMARRI AREA is under proposal.

The concept of EOI has been clearly brought out in this document. Interested bidders may submit their queries before 15.04.2009.

2.0 LOCATION & COMMUNICATION

The "Shantikhani Longwall Project" is located in Bellampalli Mandal of Adilabad district of Andhra Pradesh. The Hyderabad – Nagpur Highway is located about 4.5 km west of the block and is approachable by asphalt road from Shantikhani mine.

Bellampalli is well connected by road to Adilabad, the District headquarters (160 Kms) and Hyderabad, the State Capital (285 Kms.). Bellampalli and Mandamarri are the nearest Rail heads about 4.5 kms and 10 kms away respectively from the project, which is located on the Kazipet-Balharshah section of South Central Railway (Kazipet - Bellampalli – 130 Kms. and Balharshah - Bellampalli – 155 Kms.).

The Nearest Airport to Shantikhani Longwall Project, Mandamarri Area where the proposed works are to be undertaken is Shamashabad Airport in Hyderabad which is approximately 300 kms.

3.0 GEOLOGY

The Dorli - Bellampalli coal belt, an important coal bearing sequence extends over a strike length of about 60 Km from Dorli in the Northwest to Bellampalli in the southeast. Beyond Dorli the area is covered with Deccan traps. Shantikhani Extn. Block has been delineated with complete sequence of Barakar formation.

4.0 MINE BOUNDARY

The boundaries of Shantikhani Longwall Project are as follows;

1	Rise side	Existing workings of Shantikhani Mine
2	Dip side	Proved limit of 600m depth line (SJ Seam Bot. Section)
3	South side	Boundary line drawn near BH.No.SBS-144 in Sravanapalli Block-II
4	North side	Fault F5 of Bellampalli Shaft Block-I

5.0 MODE OF ENTRIES

It is proposed to access the seams through a shaft of 375 m depth for men, material transport & intake airway. Existing roadways (Main incline and manway) of Shantikhani mine will be utilized for evacuation of coal and heavy material transport.

6.0 MAKE OF WATER

The make of water has been taken as 120 LPS based on data available from adjoining mines.

7.0 MAN POWER & LIFE OF THE MINE

A total of 821 men will be on roll & the life of the project will be around 23 years.

8.0 MEN AND MATERIAL TRANSPORT

The intake shaft which is under construction will have man-winding facility with landing at SJ seam. Until the Manwinding shaft is commissioned, the existing Manriding system in the mine will be utilized. The proposed double drum winder would operate at a speed of about 5.5 m/sec and this would enable hoisting of 550 persons within an hour. The shaft would be equipped with double deck cages and the capacity of each cage would be around 50 persons. Provision is also made for transportation of light material through the man winding shaft.

9.0 PARAMETERS OF THE SHAFT SINKING AND ASSOCIATED WORKS UNDER EXECUTION AT THE SHANTHIKHANI LONGWALL PROJECT VIDE OUR PURCHASE ORDER NO. MM 03 DTD. 20.04.2008.

- **Depth & Diameter (finished)** : 375m & 7.5 m
- **Shaft collar construction:** Excavation, benching, curving and lining of shaft collar.
- **Shaft lining:**

  300mm thick PCC Grade M-20 with curbing for locking at every 30m interval and 2m above every inset. 50mm dia 'Weep holes' shall be left in the shaft lining at regular intervals
- **Construction of Shaft Inset at Bottom section of Salarjung Seam**:

  (Floor level- 365m approx) Double sided, driven to a length of 10.0m on each side of the shaft center with a finished dimension of 5.2m X 2.8m with bye pass.
- **Construction of Water garland:**
  Excavation, lining and construction of 8 Nos. of concrete water garlands in PCC M-20 lining connected with 200mm dia HDPE/Non-corrosive pipes, at suitable levels.
- **Extension of Insets:**
- **Construction of Curbing / Locking Shaft wall & Fixing of pipe buntons:**

  Fabrication and installation of pipe buntons of 40kg/m rails/ ISMB300 upto a depth of 375m at every 6m interval on one side of the shaft.
- **Fixing of pipe ranges & fittings for electrical cables:**

  Fixing of 4 ranges of 200mm dia, 2 ranges of 150mm dia and 2 ranges of 100mm dia pipes and required brackets for fixing the cables upto 375m depth and into the inset mouth.
- **Installation of cage landing and Other Platforms**

  Supply, fabrication, installation of cage landing platforms at Bottom section of Salarjung Seam inset and Providing of pockets in the shaft lining at required places for installation of platforms required for shaft fittings / man winding requirements in the shaft / inset
- **Floor matting in the sump:**

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TENTATIVE SCOPE OF WORK OF THE SELECTED BIDDER

10.0 COMMISSIONING THE SYSTEM ON TURNKEY BASIS

A man-winding system i.e., winding engine with Head gear along with accessories, is to be Designed, manufactured, supplied, installed, commissioned and annual maintenance for 2 years on turnkey basis after the expiry of the warranty period.

11.0 SCOPE OF WORK UNDER THIS CONTRACT.

The scope of work involved in this contract is given below:

12.0 DESIGN AND DOCUMENTATION

Design, supply, installation & commissioning of Man-winding system, including obtaining approval from statutory authorities such as CMPDIL, MECON, CMERI etc. General arrangement, drawing and detailed design drawings shall be supplied for scrutiny of SCCL before obtaining final certification/approval from the statutory authorities.

The contractor shall design the turnkey system as per NIT and other statutory requisitions. The detailed specification required for design and documentation are detailed below**.**

1. System General Arrangement

Preparation of general arrangement drawings of the total system indicating all the required fittings on the winding engine, head gear, collar platform, in the shaft, mid landings and pit bottom arrangements inclusive of foundation details of head gear and winding engine, Electrical & Electronic circuit diagrams of winding engine and other fittings.

2. General drawings

I) **Winder**

a) Preparation of general arrangement drawings of winder
b) Line diagram of winding engine illustrating its major parts and safety linkages
c) Preparation of detailed fabrication/manufacturing and Assembly drawings of the Fast moving items. Electricals etc.
d) Line diagrams of the control panels, equipments, operation manuals,
e) Test certificates, cabling schedule,
f) Wiring schedule of control panels
g) Preparation of foundation, reinforcement details and design calculation of Winding Engine foundation.
h) Design and load calculations of winding engine

II) **Head Gear**

a) Preparation of general arrangement drawings of head gear, Sheave wheel platform, catch plate platform, catch dogs platform, guide rope anchoring arrangement, emergency evacuation arrangement and platform, cage receivers, stairs & its platforms, foundations, reinforcement details and design calculation of permanent head frame foundation and backstay foundations.
b) Preparation of drawings, it s details, design and load calculations of permanent head frame, it s footings and backstays.

III) Pit top & Pit bottom

Preparation of general arrangement drawings for collar arrangement, sliding doors, shaft gates, cage landing, slow banking platforms etc., at shaft and insets, protective roofing , pit bottom buffers including it's superimposition along with cage landing and position of guide ropes, sliding doors for "Q" arrangement, keps including it's superimposition, guide rope anchoring arrangements, cheese weight inspection platform including ladder ways etc, collar platform and Man riding platform including it's gates, fencing and stairs.

IV) Detailed drawings

Preparation of detailed fabrication/manufacturing drawings of the above and catch dogs, cages, Keps etc.

Submission of one set of reproducible tracing of all the above drawings and complete documentation of the system and also any other advanced versions. **(Both hard and soft copy for the above)**

The successful tenderer should submit the above drawings after obtaining approval from the statutory authorities / CMPDIL/MECON/CMERI etc., before supplying of the required items.

3. Winder & Head Gear:

i). Design, Engineering, manufacture, supply of equipment, casting of foundations, Installation, commissioning of Winding engine along with Head gear and accessories. The required foundations as per the approved designs with necessary bolts shall be cast at the site after making necessary design drawings, its approval etc. as per Specifications enclosed in **Annexure-I & II**

ii) Annual maintenance for an initial period of 2 years after the expiry of the warranty period. (All mechanicals, shaft fittings, electrical, electronics, tests and approvals etc included)

4. Design, supply, installation and commissioning of

a) 2 sets of catch dogs on the headgear.

b) 2 sets keps at pit top with an arrangement for provision of electrical interlocking.

c) 4 sets of cage receivers on surface and at Salarjung Seam landing.

d) Landing arrangements at surface, and at Salarjung Seam

e) Man riding platforms on both sides at surface and at pit bottom including its civil works;

f) 2 sets of pneumatically / Hydraulically / Electrically operated Shaft gate sliding door and fencing on both sides at surface and at Salarjung landing.

g) protective roofing on top of both sides of salarjung landing.

h) Inset landing arrangement/ Pit bottom buffers platforms

i) 2 Sets of pit bottom buffers below the Salarjung Seam landing level.

j) 2 sets of double deck cages (three Nos. to be supplied).

k) 2 Nos. of required winding engine ropes (FLC) with test certificates and DGMS Approvals (three Nos. to be supplied). **.**

l) 8 Nos. of required guide ropes (Half locked coil) with necessary challans, test certificates and DGMS Approvals.

m) 2 Nos. of suitable DGMS approved suspension Gear with necessary challans, test certificates and DGMS Approvals (three Nos. to be supplied).

n) 2 sets of guide rope anchoring arrangements on head gear and at pit bottom.

o) Cheese weights for tensioning guide ropes

p) 2 nos.of cast iron sheave wheel and accessories (3 Nos. to be supplied).

q) Cutting, squaring / dressing of pockets in concrete / stone / coal for placing & grouting of steel structure in cement mortar (the pockets are to be done by the shaft sinking contractor).

5. Painting

i). All Structural steel fabrication of **head gear and winding engine** shall be sand blasted and spray painted by one coat of Zinc Chromate Primer and followed by one coat of intermediate primer. Two coats of Aluminum paint shall be painted for head gear and enamel paints for the winding engine finally.

ii). All the Structures to be fabricated and fitted in the shaft shall be provided with one coat of Zinc Chromate Primer followed by intermediate primer and finished by two coats of enamel paints.

6.0 COMPLETION SCHEDULE:

The entire works shall be executed on turn key basis and the winding engine system shall be commissioned within 18 months from the date of issue of confirmed work order.

6.1 The shaft under construction is expected completion on or before June, 2011. In the event of non-completion of sinking, the successful tenderer should take up certain jobs parallely without affecting both the party's work as the winding engine room etc., will be kept available at the shaft site.

6.2 The site is equipped with the infrastructure like Service building, sinking system, collar frame, power supply etc., which will be handed over to the successful Tenderer free of charge for a period of 3 months only after completion of the shaft sinking works to undertake initial preparatory jobs and works to be executed in the middle of the shaft, landing etc., , if suitable to him and the same will be taken back on completion of the work or three months which ever is earlier .

6.3 On completion of the work all rubbish, scrap, debris, brick bats etc. shall be removed by the Contractor at his own expense and the site cleaned to the satisfaction of the General Manager, Mandamarri Area.

As the shaft sinking works are under progress, the Bidder shall take up such activities parallely without affecting the shaft sinking works. The Bidder shall co-ordinate with shaft sinking Contractor for healthy execution and successful commissioning of the total system within the completion schedule.

Hence, the successful tenderer is advised to take up the works in "As it is condition". The parameters of the shaft under construction are given hereunder:

7. FACILITIES TO BE PROVIDED BY THE SCCL

The Company shall provide the following facilities to the successful Bidder.

i) **Supply of electricity:** SCCL will supply electricity at one point on free of cost for the work at available transmission voltages (550 / 440V, 6.6 / 3.3 KV) of the company

ii) Industrial **water** and potable water, free of charge, at one convenient point.

iii) **Space** for godowns/stores, free of charge.

iv) Unfurnished **residential housing** facilities (limited to ---) for the Contractor's supervisory personnel will be provided on rental basis.

v) Land for **temporary accommodation** will be provided for workers near the mine site, free of charge.

vi) **Vocational training** at Rs.15/- per head, and Rs.500/- per person for **medical examination** would be recovered from the contractor's bills, subject to the existing practices of the S. C. Co. Limited.

vii) Medical facilities on chargeable basis, from the existing medical centers on "Out Patient basis" at Dispensary and Area Hospital, Mandamarri Area

viii) The Company shall provide the following additional facilities, in addition to the above, free of charge, to the Contractor.

a) Cap lamps and flame safety lamps for Contractor's workers and supervisory personnel, shift wise at Shanthikhani Mine, which is within 2.5 Km away from the construction site.

b) Statutory supervision, such as Under Manager, Pit Engineer, Overman Electrical Supervisor, Mechanical Chargehand and Mining Sirdar to carry out statutory supervision as and when required.

ix) MATERIALS

The Company at its discretion, may supply some of the materials / store items required for the specific purpose of the scheduled works on chargeable basis.

The company if sparable shall provide certain equipments and machinery on hire basis. The Contractor shall maintain and ensure that the equipments etc. loaned are duly returned, in proper condition, to the mine / store at the end of the contract / work is completed.

The Company shall also supply the following required for erection and commissioning of the system.

1) Winding engine Room
2) Cage landing platform
3) Pit bottom buffer platform
4) Survey reference points and site for fabrication

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ANNEXURE – I

1. WINDER

Winder is used in mine shafts for movement of men and materials. One end of rope attached to cage and other end anchored to the drum. This is with two drums. One of the drum is keyed to main shaft known as fixed drum and another is driven via multi toothed clutch. While clutch slides on hexagonal shape drum shaft the actuation is operated by pneumatic/any other cylinders with necessary inter locking

The proposed double drum winder shall consist of DC motor with thyrister drive with all protections as detailed in the Annexure. Driver control desk with brake controller, non-contact type Joystick speed controller, with dead-man switch, telephone hand set and bell signals etc. Speed indicator-cum-automatic contrivance (Electronic type) with built in over wind, over speed and slow banking protections with speed recorder and total interlocking to the winding system with dynamic braking The automatic contrivances, power brake and speed chart recorder shall be of DGMS approved type as detailed in Annexure II and shall have at least the minimum testing facilities required under various coal mines regulations, circulars etc., pertaining to Indian Coal Mining conditions and also any other advanced versions.

Technical Data:-

1. Type of shaft / Dia	:	Vertical / 7.5 mts (finished)
2. Depth of shaft	:	375 mtrs
3. Depth of wind	:	365 mtrs
4. System of wind	:	Balanced
5. Motor KW,	:	around 450KW
6. Winder Type	:	Double drum driven by totally enclosed air cooled motor with digital control thyrister drive, PLC for interlock and signaling system along with HMI or any other advanced version.
7. No. of drums	:	2 Nos.
8. Drum dia	:	around 3.6m
9. Drum design	:	Split type or any other advanced version
10. Attachment of rope & drum	:	By clamping inside the drum. (To the drum and between rope Coils inside the drum or any other advanced version)
11. Construction of Winding rope	:	Fully locked coil
12. Size of rope / speed	:	around 36mm dia and 5.50m /sec.
13 Pay load (50 men @ 80 Kgs)	:	4,000 Kgs.
14 Guides (Ropes)	:	Half locked coil of required dia and length.
15 Site conditions	:	
i) maximum ambient temperature	:	50 degree C
ii) Maximum relative humidity	:	100 %
iii) HT Power Supply	:	6.6KV+/-5%, 3Phase, 50HZ, 75MVA
iv) LT Power Supply	:	415V +/- 5%, 3 Phase, 50 HZ, 28MVA

16. Equipments: All underground equipments shall be of flame proof and intrinsically safe as per the prevailing I.E. Rules and the DGMS specifications applicable to Indian Coal Mines.

17. No. of persons to be conveyed in a shift:: around 550 persons in less than one hour

18. Cage design and weight :Double deck cage/ around 4.50Te

19. Clutch arrangements :

There shall be arrangement to declutch the loose drum at the time of re-capping and maintenance if required.

20. Clutch interlock

Interlock between clutch and the loose drum brake, testing of brakes individually etc. shall fulfill the requirements as per CMR , 1957.

21.**Brake & Brake device:**

(This shall fulfill the requirements as mentioned in various regulations of CMR, 1957 & other relevant circulars pertaining to the Indian Coal Mines)

a) Type of brake : 'ON' type

b) No. of brakes : One on each drum

c) Power input for Brake : Pneumatic / Hydraulic or any other advanced version

d) Lining of brake : Ferrodo lining

e) Emergency brake :

(This shall fulfill the various requirements as mentioned in CMR 1957)

Electo-hydraulic thruster brake provided on the extended input shaft of the gear box and motor or any other advanced version.

22. **Safety devices** :

a) Depth indicator : Vertical column type / dial type with limit switches to take care over wind & slow banking with warning bell

b) Speed indicator – cum-automatic contrivance (Electronic type)

c) Speed chart recorder : Electronic type

d) Motor controller : Reputed make thyrister drive suitable for Motor rating.

e) Type of winder control : Manual and Auto (Selector)

f) Communication: Bell signal & telecommunication arrangement between on setter and the banksman and between banksman and the operator has to be provided as per the requirements of CMR –1957.

23. **SIGNALING SYSTEM :**

There should be two independent distinctive and definite means of transmitting signals between top of the shaft and the landings in the shaft. It should confirm to DGMS stipulations and shall consists of :

1 No. master banks man board and 1 No. winder Operator board with a main bell, level reset push buttons with indication, keps indication, level & keps relays, step down transformer, rotary switch with men/material/shaft inspection, reset & repeat push button etc.,

24. **ELECTRICAL FEATURES**

Following are the tentative electrical and electronics features to be incorporated in the proposed Winding Engine.

- winder supervisory system
- continuous speed supervision
- actual and reference value monitoring for currents
- supervision of shaft switches
- drive regulation tasks:
- DC Motor protection task
- monitoring of cage level
  The different level of cage operation should be monitored by comparing different level set point and the cage depth at a particular required instant of time.
- mine winder supervision

  Point Wise Supervision :- The point wise supervision shall be used to monitor winder speed at different desired depth in the shaft during braking.
- supervision of pulse tachos (drum, rope slip & motor tachos) :-
- supervision of shaft switches :- All the shaft switches mounted on the cage side must be supervised to avoid the false operation,
- winder interlocking system.
- safety circuit
  1. Safety Circuit Trip : The safety circuit should be tripped by the operator on pressing SAFETY TRIP push button.
  2. Emergency Trip : The emergency relay shall be always in energised condition through the NC contact of Emergency push buttons provided at each level and also on the driver desk. By pressing emergency PB from any level, the Emergency hooter is to be made on alarm with an indicating lamp.
  3. The emergency relay is to be reset by driver "Emergency Reset" push button when brakes are in applied position.
- Back Out Operation
- winder interlocking
  1. Interlocks required for Manual/Auto operations of winder should be done in winder interlocking. This should cover the following.

- Auto selection / Manual selection
- Men winding / material winding / shaft Inspection / rope inspection selection
- Auto start ready conditions, auto start command
- Conveyance up reference
- Brake close / open conditions
- Brake auto command / Brake manual command
- Enabling speed regulator, current regulator
- mode of operations

The operator shall select mode of operations and winding type using the following selector switches mounted on the control desk.

- Auto / Manual selector switch : For selecting mode of operation
- Men / Rope inspection / shaft inspection selector switch : For selecting type of winding
- Normal / Emergency selector switch : This switch is put in normal mode for hoisting.
- Over speed operation for testing purpose. Selection should be done only if the following pre-conditions should also to be satisfied.
- Control lever is in applied position
- Brake is applied
- Winder is at zero speed

25**. SHEAVE WHEEL**

a) The sheave wheel made of cast iron with replaceable groove liners should be sufficiently strong in construction to withstand the maximum load exerted by the winding ropes under most severe conditions but should not be very heavy to cause slipping of the rope due to inertia.

b) The construction and supply shall fulfill IS: 9239 – 1979 norms and also the sheave pulley shall be tested ultrasonically for surface flaw , internal crack defects and shall be statically balanced. Further it shall be marked and the proof load shall be tested as per the ISI standards.

26. CATCH DOG:

Above the top most landing, catch dogs (Cage catcher) shall be provided to act safely, in the event of over wind, designed with shock absorbing units, adequate strength and should confirm to DGMS stipulations.

Testing arrangement shall also be provided for testing the functioning of the same.
Quantity: 2 Sets, Spring loaded (5 dogs per row and 4 rows per cage).

27. DOUBLE DECK CAGE:

The construction of the Double deck cage shall be stronger enough to withstand its own weight, added weights, inertia due to movement of lateral stress and falling objects. The weight of the cage shall be kept to the barest minimum as required to avoid unnecessary increase in pay load on the winding rope & suspension.

The roof of the cage shall be provided with detachable fencing & canopy to facilitate shaft inspection.

The cages shall be provided with guide shoes and replaceable brass bushes (8Nos. on each cage) and hangers plate of sufficient size on top (6 Nos.) for anchoring .

The top deck of the cage shall be neatly finished with false sheeting inside and provided with cage communication.

The cage shall accommodate at least 25 persons in each deck.

The cage hangers may be designed such that extensive forging shall be avoided to the possible extent and shall be as per DGMS requirements. The load carrying components shall be suitably tested for safe working load and undergone heat treatment before assembling.

Annexure II

1. Speed chart recorder:

This shall be provided with the following;

- Digital recording of the speed of winding engine at every second.
- The speed indicator shall indicate the speed continuously.
- Scanning and recording of the stored data in minimum time are ensured.
- This shall be an electronic point by point speed supervision, mutual supervision of actual speed transmitters, with fast variable signals(Transient) with fast response and continuous writing type of recorder and absolute value detector.
- This shall provide with indication and recording of maximum speed.
- This shall be of DGMS approved type.
- Incase the instrument is of a foreign make, either DGMS approval/exemption shall be obtained by the firm and submitted to SCCL.

2. Power brakes.

This shall have the following features.

- The service brakes provided on both the drum flanges shall be designed to remain 'ON' and are released only on operation (compressed air/Hydraulic).
- A suitable pressure switch for supply of required compressed air/hydraulic is to be provided for smooth operation of the brakes.
- Solenoid valves are to be provided as an electrical interlocking for the brake operation. The Solenoid valves also acts as an emergency stop valve to cut off the Compressed air/hydraulic supply to the brake in emergency such that the brake falls to 'ON' position during power failure, tripping due to any circuit fault etc. & is interlocked with the automatic contrivance and clutch interlocking.
- This shall be of DGMS approved type.
- Incase the instrument is of a foreign make, either DGMS approval/exemption shall be obtained by the firm and submitted to SCCL.

3. Automatic Contrivance:

The Automatic Contrivance provided either as an in-built package along with the winder control system or as a separate unit shall have the following features.

- Adjustable over-winding protection on the Headgear, Depth indicator Speed selection mode for shaft inspection, rope inspection and normal mode.
- Slow banking activation through Magnetic Sensors provided at 4 places below the Shaft collar from certain depth to reduce the speed to 75%, 50%, 25% and Zero% i.e., while the ascending cage approaches up to certain depth from the platform, a warning bell shall ring and the rope speed shall be reduced to 75% of the set speed and further reduced to 50%, 25% and finally to zero speed in stages before it reaches to the top landing, i.e. the winder speed shall be nil at '0' level platform.
- This Auto slow banking shall be smooth, jerk free and failsafe.
- Once the cage reaches the slow banking zone, the warning bell provided on the Operator's Desk shall activate for 5 seconds loudly.
- Provision shall be made for resetting after the stopping/Tripping.

- Over wind & Over speed trippings shall be incorporated in the safety circuit interlocking with both service brakes & Emergency brake and there shall be foolproof testing arrangements as required under CMR 1957.
- During tripping due to over speed and over-winding, the compressed air/hydraulic and electric power shall be cut off and the brake on the drum and motor gearbox coupling shall be energized instantly and automatically.
- The speed Regulations at various zones shall be incorporated as per the provisions of Reg.No.76 (7) of CMR 1957.
- The solenoid valves shall be provided to stop/flush the compressed air/hydraulic oil and smooth braking shall be totally protected.
- Digital Displays shall be provided in the Operator's panel for displaying speed, Depth, Position of Magnetic Sensors, Automatic & Field current details.
- The Winder Operation / Brake release shall be interlocked with cage gate operation, Keps Operation, Transformer condition, Drive regulator, mode selection, Registering the Cage direction, signal transmission, compressed air/hydraulic pressure, motor protection, Clutch interlocking etc.
- The equipment shall have the required testing facilities for Overwind & Overspeed as per DGMS regulations.
- This shall be of DGMS approved type.
- Incase the instrument is of a foreign make, either DGMS approval/ exemption shall be obtained by the firm and submitted to SCCL.

4. THE HEAD GEAR.

It is a fabricated steel structure positioned over the shaft that houses the sheaves carrying the winding rope, flexible guides and other safety appliances. This is built of structural steel using rolled joist, angels and plates.

The four legged head frame comprise rectangular vertical structure to take up winding load, head frame weight and wind load, the back stay takes up primarily the rope tension force.

The headgear shall be provided with stairs and hand rails with toe guards, fencing and platforms at regular intervals, change over and fencing from floor level to sheave wheel platform. There shall be provided with evacuation arrangements for persons getting out of the cage in case of an over wind. Above the sheave platform gantry arrangement shall be provided for handling sheave wheels etc. lightening arrestors and aviation lamp. The lightening Arrestors shall be earthed as per I E Rules.

The back stay of head gear shall have enlarged foot to ensure stability of head gear structure.
Proper arrangement shall be made on the Headgear and platforms for replacing/changing of Double Deck cages and a trial shall be made.

Parameters to be considered while designing Head gear, its foundation and winder foundations.

Foundation casting shall be of RCC M20 containing coarse aggregate of 20 mm and down gauge of approved quality as per IS:456-1978 specification.

The head gear loads to be considered are.

I**. Dead load**

a) Weight of head gear structure.
b) Weight of platforms
c) Pulleys, EOT /Gantry arrangements.
d) Guide ropes and other fittings.

II. **Winding Load**.

a) Pay load (Men & material)
b) Weight of suspension
c) Cages, tubs, rope and
d) Frictional force.

III. **Impact load**. :

a) Load due to breakage,
b) minimum breaking load of rope force.

IV. **Wind Load**.:

a) This should comply with IS 875-64 with the direction of wind producing worst effects when combined with rope loads.

5.0 KEPS

This should be designed to take up total payload, additional impact load due to pushing of tubs and seating of cages. It shall also be designed in such a way that there should not be any inadvertent disengagement while the cages are seated on the keps. This shall confirm to the relevant IS specifications and DGMS requisites.

The electrical interlocking shall be such that, the winding engine will not operate while the keps is in 'ON' position except for inching/creping. Inspite of this, if the winder operates and the cage comes in contact with the keps, the keps seat shall fall back immediately with the impact and give clear passage for the cage to move upwards freely.

6. CAGE RECEIVERS

7. SHAFT COLLAR PLATFORM:

Collar Platform arrangement at surface:

Supply, fabrication and installation of collar platform at surface consisting of mainly rolled joists etc. A gate shall be provided to restrict unauthorized movement of persons to the back side.

8. SLIDING GATE AT SURFACE:

a) Horizontal:

Gates should be pneumatically/ electrically operated and will be controlled by banksman only. Gates are made of structural steel / flats and rolling arrangement by roller bearings which slides on gravity on guides. The size of each door shall be such that it will cover the total cage opening.

b) Vertical:

The gate shall be operated along with the cage movement only. The installation shall be such that, in addition to the horizontal sliding door, the vertical sliding door shall cover the shaft opening when ever the cages are not available at the landing platform on surface.

This shall be an additional protection. Care shall be taken for smooth, noiseless and friction free movement. One set comprises 4 gates (front and back for both cages).

9. MANRIDING PLATFORM (SURFACE & PIT BOTTOM LANDING):

Man riding Platform shall be constructed strongly for man-entry to top deck cages easily. A gate shall be provided to restrict un authorized movement of persons to the back side. Fencing on all sides at a height of 1.5 M with stair, hand rails and gates should be provided. Checkered plates of 8/10mm shall be used to cover the platform.

The Man riding platform at the bottom landing will be upto 3.0mtrs in front and back upto the finished inset and strongly constructed with fencing, stairs and handrails.

The platform shall be designed such that its outer edges are provided with handrails of at least 1.5 M high. The platforms , floors and walkways shall be kept free of dangerous projections , and should be provided with adequate protection against slipping / fall of persons and shall be confirming to DGMS standards.

10. SLIDING GATE AT PIT BOTTOM

The sliding gates shall be operated either manually or by pneumatic cylinders controlled with a valve provided with onsetter along with limit switches, indicating lamps and making necessary interlocking to the winding system. The interlocking shall be such that, the gate shall not open unless the cages are positioned in the same level, except at the time of inspection and maintenance .

The size of each door shall be such that it will cover the total cage opening and this should be fitted above with the roller fittings.

11. PIT BOTTOM BUFFERS

The Pit Bottom Buffers shall be installed as per the DGMS stipulations. The hydraulics used shall be compatible with fire resistant hydraulic fluid duly approved by DGMS.

12. FENCING AND ‘Q SYSTEM’: ON SUFRACE AND AT PIT BOTTOM

13. GUIDE ROPE ANCHORING ARRANGEMENT

Rope guide anchoring arrangement at the top and bottom should be of adequate strength not only for safely suspending the rope, but also to withstand any normal and abnormal vibrations/jerks likely to occur on the guides due to various factors.

The top fixture should be provided with a suitable device (swivel) by which the guide rope can be given a part turn to shift the position of outer wires.

13.1 ON THE HEAD GEAR & AT THE PIT BOTTOM

An inspection platform shall be provided in the shaft for cheese weight anchoring inspection. A suitable ladder way with fencing and platforms confirming to DGMS stipulations shall be provided.

Each guide rope shall be provided with cheese weight anchoring rod, which should withstand a load of around 5.0T.

14. PROTECTIVE ROOFING:

Installation of protective roofing on top of both sides of the inset as per CMR 1957 along with a water collection / drain to collect and course the seepage / spillage water in the shaft.

15. CAGE LANDING PLATFORM:

Supply, fabrication and installation of cage landing platform at pit bottom is provided vide order no.: MM-03, Dtd.20.04.2008 by the shaft sinking contractor.

However, after the designing and approval further supply, fabrication and erection required for installation and commissioning of pit bottom buffer platform shall be taken up by the successful bidder.

16. CHEESE WEIGHT INSPECTION PLAT FORM:

Design, fabrication, supply and installation of cheese weight inspection plat form below the cage landing plat form.

NOTE

- The Bidder shall carry out the works under the supervision of SCCL for commissioning the total man winding system at Shanthikhani Longwall Project.
- The Bidder shall co-operate/co-ordinate with SCCL officials connected to winder for commissioning the total system.
- The Bidder shall develop required design drawing and documentation for the total system.
- The Bidder shall take concurrence of any of the approved design house mentioned herein for designing headgear construction and foundation for Winding engine, head gear before submitting it to SCCL authorities as per the prevailing rules and regulations.
- The Bidder shall adhere strictly in supplying the items as per the finalized specifications and standards as mentioned in Annexure and should produce test certificates and other relevant documents as required by law enforcing agencies.
- Test Certificates and DGMS approvals should be produced for the applicable equipment and materials supplied.
- Prior to supply, the bidder should send the details of equipment, name of the manufacturer, test certificates etc. for approval of the competent authority. This approval will not be unreasonably delayed or withheld.
- The design parameters mentioned in these documents are tentative. The bidders shall propose / accommodate **any other advance versions** with fool proof safety features.

The qualified and interested bidders shall respond and submit their expression of interest at the following address and may also contact at the following address for further details:

Chief General Manager, Purchase **The Singareni Collieries Company Limited,** **Kothagudem Collieries,** **Khammam District,** **Andhra Pradesh, India. Pin: 507101.** **Phone: 08744 243109.** **Fax : 08744 245651.** **E-mail id: gm_pd@scclmines.com** **Web site: www.scclmines.com**	**Chief General Manager, (E&M)/UGM** **The Singareni Collieries Company Limited,** **Kothagudem Collieries,** **Khammam District,** **Andhra Pradesh, India. Pin: 507101.** **Phone: 08744 244524.** **Fax : 08744 242305.** **E-mail id: gm_eug@scclmines.com** **Web site: www.scclmines.com**

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