**THE SINGARENI COLLIRIES COMPANY LIMITED**

**(A Government company)**

**INVITATION FOR A "VENDOR MEET" FOR SINKING AND LINING OF A RETURN AIR SHAFT OF FINISHED DIA OF 7.50 MTRS & APPROXIMATE DEPTH OF 360 MTRS FROM SURFACE TO FLOOR OF DRAINAGE GALLERY BELOW SALARJUNG SEAM (SJ SEAM) WITH NECESSARY WATER GARLANDS, INSETS AND ELEVATION OF SHAFT COLLAR UPTO 1.0M HEIGHT AND OTHER ASSOCIATED WORKS AT SHANTHIKHANI LONGWALL PROJECT, MANDAMARRI AREA OF SCCL.**

## 1.0 ABOUT SCCL:

The Singareni Collieries Company Limited (SCCL) is engaged in mining coal in the Godavari valley Coal Field spread. The equity of the company is held by the Govt. of Telangana, and the Govt. of India besides a few private shareholders.

SCCL is a Government coal mining company jointly owned by the Government of Telangana and Government of India on a 51:49 equity basis. The company's coal reserves stretch across 350 Km of the Pranahita – Godavari Valley of Telangana with a proven geological reserves aggregating to whopping 8791 million tonnes.

Presently, SCCL is operating 48 Mines (Underground-29, Opencast-19) spread over 6 district of Telangana state viz. komaram bheem, Mancherial, peddapalli, Prof.Jayashankar-Bhupalpalli, Bhadadri – Kothagudem and Khammam. with a manpower of around 56,282.

SCCL is sharing around 9% of all India coal production. Coal mining is the core activities but also diversified into Power Generation and Consultancy works.

**Historical perspective:**

- In the year 1871, Dr. King of the Geological survey of India discovered coal near the village of yellandu, presently in Bhadradri district of Telangana.

- The Hyderabad (Deccan) company limited incorporated in England acquired mining rights in 1886 to exploit coal.

- The present company was incorporated on 23rd December 1920 under "The Hyderabad Companies Act as a public limited company with the name The Singareni Collieries Company Limited (SCCL).It acquired all the assets and liabilities of the Hyderabad (Deccan) Company Limited. Best & company acted as secretaries and selling agents. The State of Hyderabad purchased majority shares of the company in 1945. From 1945 to 1949, Hyderabad Construction Company Limited was acting as Managing Agent.
- In 1960 the Govt. of India started its participation in the equity of the company and also started extending loan assistance. Thus, the company has been jointly owned by erstwhile Government of Andhra Pradesh and Govt. of India since March 1960.

- ❖ In 2014, Govt. of Andhra Pradesh shares is transferred to Govt. of Telangana State.

- ❖ Thus SCCL is Company has been the oldest Coal Mining Company in country. As such the technology and culture of the company has grown with sensitivity to the public and society needs, unlike many mines in coal India which were started with small private owners.

**Technology and milestones**:

**SCCL has been pioneer in introduction of various safe and modern technologies in India like-**

- Joy loader &shuttle cars in 1948.
- Electrical cap drills in 1951
- Electrical cap lamps in 1953
- Flame proof electrical equipment in1954.
- 3D Laser scanner (for mine survey) in 2007.
- ERP (SAP) IN 2008(first Govt. Coal producing company).
- Diesel operated UG machinery in 2008.
- Light Weight Cap lamps in 2009.
- High wall mining in 2010.
- High capacity LW at ALP IN2014.
- Mine cruiser for men transport.

**Mile stone of SCCL – Technology:**

- 1975: Open cast Mining.
- 1979: Side discharge loader.
- 1981: Load Haul dumpers and road header.
- 1983: Longwall mining.
- 1986: walking dragline.
- 1989: French blasting gallery method.
- 1994: In –pit crushing and conveying
- 2002: Surface miner.
- 2004: Phasing out “manual coal filling”.
- 2006: Continuous miner.
- 2010: High wall mining.
- 2014: High capacity long wall.

**For this an Invitation for VENDOR MEET for “SINKING AND LINING OF A RETURN AIR SHAFT OF FINISHED DIA OF 7.50 MTRS & APPROXIMATE DEPTH OF 360 MTRS FROM SURFACE TO FLOOR OF DRAINAGE GALLERY BELOW SALARJUNG SEAM (SJ SEAM) WITH NECESSARY WATER GARLANDS, INSETS AND ELEVATION OF SHAFT COLLAR UPTO 1.0M HEIGHT AND OTHER ASSOCIATED WORKS AT SHANTHIKHANI LONGWALL PROJECT, MANDAMARRI AREA OF SCCL.**

## 2.0 LOCATION & COMMUNICATION

The proposed shaft at SK LWP mine of Mandamarri Area is located in 4.5km away from Bellampalli town of **Mancherial** district of Telangana State. Bellampalli town is 15km from Mancherial town, which is the district headquarter of Mancherial District. Bellampalli is well connected by road to Hyderabad the State Capital (285 Kms.). The nearest railway station is Bellampalli, which is located on the Kazipet -Balharshah section of South Central Railway (Kazipet - Bellampalli – 130 Kms. and Balharshah - Bellampalli – 155 Kms.).

## 3.0 GEOLOGY

a. Stratigraphical formation : Barakar formation coal seams.

b. General Direction of Dip : N $55^{O}$ E

c. General Direction of Strike : N $35^{O}$ W

d. Average Gradient of the Seam : 1 in 4.5

e. Average length : 7.88km

f. Average width : 2.80 km

g. Max Depth : 670m

h. Grade of the Coal **:** G-14 CRR

## 4.0 MINE BOUNDARY

The boundaries of Shanthikhani mine Incline Project are as follows;

| | | |
|---|---|---|
| 1 | Rise side | Existing Shanthikhani Basthi |
| 2 | Dip side | Proposed limit of 670m depth line |
| 3 | South side | Boundary line drawn near BH No. SBS-144 in Sravanpalli Block-II |
| 4 | North side | Fault F-5 of Bellampalli Shaft Block-I |

## 5.0 TENTATIVE SCOPE OF WORK OF THE SELECTED BIDDER

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

### 5.1 CONSTRUCTION OF RETURN AIR SHAFT

The scope of work includes excavation, material supply, fabrication and casting. It may include all or any of the items, viz. Structural steel, roof bolts, side bolts, wire mesh, fore poling, masonry wall construction, W-strap, shotcrete, steel wire fabric, plain cement

concrete, prefabricated plain cement concrete bricks, reinforced cement concrete and steel reinforcements required for support and also any other item required for the purpose but not mentioned herein. All the materials, plant and labour to be provided by the Contractor for the completion of the works and the mode, manner, speed of execution and maintenance of the works are to be of a kind and conducted in a manner that is to the satisfaction of the GM/MM Area or Project Officer, SK LW Project. The cost of any material if supplied by the Company to the contractor shall be deducted from the total tender value. In case cement injection or other methods for reducing inflow of water or stabilization of rocks / strata / soils are considered necessary, their application shall be subject to approval of the GM, MM Area or Project Officer, SK LW Project. The Contractor shall have to carry out cement injection of strata as per directions of the GM, MM Area or Project Officer, SK LW Project. If the shaft sinking or any other preparatory works have already started departmentally/ by offloading, the successful Tenderer shall take the works from the existing level in **"As it is condition"**. The parameters of the shaft are given hereunder*:*

## 6.0 EXCAVATION & CONSTRUCTION WORK

Depth : 360m (approx)

Diameter (finished) : 7.5 m

### 6.1 Shaft collar:

Excavation of mixed type of soil and strata including excavation in rock for the nominal inclination and lining of 1200MM to 500MM thick RCC M20 lining. Four sets of pockets 1m below the brick work shall be left in the shaft to facilitate platform erection while fan drift construction is under taken.

The collar concreting shall be elevated by 1.0 m above ground level with curvilinear openings towards fan drifts/fan house to avoid aerodynamic resistance and for passage of drainage pipes and cables, if required. The air inlet opening is closed with 500mm thick wall of fly ash solid blocks of approved hard quality and complete masonry in cement mortar of 1:3 up to the shaft wall.

Steel reinforcement lapping is left from 3.0 mtrs depth to surface for lapping while casting the foundation columns for installation of permanent head gear later to become as an integral part of shaft collar RC Concrete.

Dowell bars shall be inserted into the shaft walls at intervals of 2.0m zig zag with old rails/ pipes or rods so as to anchor to the collar and RCC around the periphery of the shaft.
The steel segment should be installed immediately after 1m of the excavation. At least 50mm space should be left between the shaft wall and the steel segment .This space between steel segment and wall of the soil /rock must be filled completely with cement grout consisting of cement :sand =1:3 by weight mixed in water .Fly ash10% of cement may be added for increasing consistency. The fly ash in grout also decreases permeability of the lining after setting.

Further a 40 mm dia hole in each steel segment is cut using a gas cutter for drilling a 4m long hole in the shaft wall in radial direction and inclined downwards .The hole is filled with cement grout .A 4.2 m long, 20mm dia. Steel dowels are installed at 1.5m interval along periphery of the shaft wall and at vertical interval of 2 m. The projected part of the dowels should be tied with the steel reinforcement installed for concrete lining.

The steel segment consists of 3mm thick plate reinforce with ribs. Typical dimensions are

- Curved length = 1.5m
- Height =1.0m
- Radius of curvature :as per radius excavation wall

**6.2 Shaft lining & curbing:**

500MM/300MM thick RCC Grade M-20 with curbing for locking at every 30m interval and 2m above the insets shall be carried out. 'Weep holes' of 50mm dia shall be left in the shaft lining at a vertical interval of 10m, 2m apart in a zigzag manner as advised and at the roof of every water garland, shale, coal & clay bands. (Ref: Plate 4).

**6.3 Special lining for exceptionally bad strata:**

To suit the local strata based on the specific site conditions as advised by GM MM area**.**

**6.4 Shaft Inset at floor of No.2 Seam: (Floor level-279.40mtr approx.)**

**(Ref: Plate No.6)**

Double sided, driven to a length of 10.0m on each side of the shaft center, at the floor of No.2 Seam. Inset mouth with a finished dimension of 5.2m

(width) x 3.85 m (vertical height of side–wall), diminishing to 5.2m (width) x 1.8m (vertical height of side-wall) and bypass of 1.2m (width) x 1.8m (vertical height side wall) around the shaft at the inset level. Arched roof and walls of inset of 500mm thick RCC of Grade M-20.

The construction design of the main inset may change as per the specific site condition during execution of inset.

* The Floor RL of the inset may vary marginally depending on the seam RL

**6.5 Shaft Inset at floor of SJ Seam bottom section: (Floor level-360.00mtr approx.) (Ref: Plate No.7)**

Double sided, driven to a length of 10.0m on each side of the shaft center, at the floor of SJ Seam bottom section. Inset mouth with a finished dimension of 5.2m (width) x 3.85 m (vertical height of side–wall), diminishing to 5.2m (width) x 1.8m (vertical height of side-wall) and bypass of 1.2m (width) x 1.8m (vertical height side wall) around the shaft at the inset level (Four openings).Arched roof and walls of inset of 500mm thick RCC of Grade M-20.

The construction design of the main inset may change as per the specific site condition during execution of inset.

*Quantity of excavation will be adjusted as per actual measurement due to drivage of gallery at Bottom section of SJ seam if any.*

* The Floor RL of the inset may vary marginally depending on the seam RL

**6.6 Water garland: (Ref:Plate No.8)**

Excavation, lining and construction of 20 Nos. of concrete water garlands in RCC M-20 lining connected with 200mm dia special/Non-corrosive pipes, at suitable levels. The pipe range for the water garlands shall be fixed to the shaft with the help of rigid and loose supports. The drainage pipe from the just above water garland of inset shall be coursed

along the shaft lining and inset side wall. (The required pipes and fittings will be provided by the Company free of charge).

**6.7 Curbing / Locking Shaft wall: (Ref: Plate No.5)**

Extra excavation and RCC lining required for curbing / locking in the shaft wall at every 30m vertical interval and 2m above inset throughout the shaft. The 1st curbing shall be at a depth of 10.0 mtrs (depending upon the specific site conditions) and the next curbing's at intervals of 30 mtrs, depending on the specific site conditions. Curbing need not be constructed wherever water garland is to be provided.

**6.8 Floor matting in the sump: (Plate No.9)**

Casting of 0.30m thick M20 RCC flooring for Sump matting purpose shall be carried out.

**6.9 Strata grouting**

It is anticipated, during sinking of shaft, loose strata and heavy percolation of seepage water may be encountered. To ensure long term stability of the shaft, the shaft shall require cement grouting for Strata stabilization and water control management in advance. Hence, the bidders are requested to quote for execution of strata grouting water control measures as mentioned below.

**HOWEVER, THE CEMENT GROUTING FOR STABILIZATION OF STRATA/ *SEEPAGE WATER* MANAGEMENT WILL BE UNDERTAKEN ONLY WITH THE WRITTEN CONSENT OF GM, MM AREA.**

- The holes required for strata grouting will be drilled by the successful bidder as per the enclosed grid, depth design
- The grouting is to be carried out for strata stabilization and arresting water leakage at a maximum of 1.0Mpa.
- The contractor should arrange for cleaning and complete relief of the air in the hole at the time of grouting
- The grouting is to be carried out all along the periphery and shaft bottom as per the advice of GM, MM or PO, SK LWP mine.
- The rate quoted should include all the activities such as drilling, grouting, cost of ordinary cement, cost of additives, etc.

***Note*:** Payment will be made for the weight of cement used only no separate Payment will be made for other activities mentioned above.

- The contractor has to maintain record of each hole, direction of the hole, cleaning of the hole, grouting material used, pressure with which the grouting is done, quantity of grout material consumed in each hole etc and obtain the signature of the officer in charge every day.

1. It is recommended to grout the periphery up to a minimum depth of 4 m in sand stone and 6 m in coal clay/shale. The holes for cement grouting should be at intervals of not more than 2.00 X 2.00 m in a staggered pattern. If the strata is more unconsolidated and flow of water is high and under greater pressure, then spacing of the holes should be proportionately reduced.
2. Machine which can drill up to a depth of at least 10 m and up to 50 mm diameter is to be used for drilling strata grouting holes. The machine should have facility to drill in any direction (namely roof, floor, and either side), either perpendicular to the tunnel wall or at

any other angle to the tunnel walls.

3. As far as possible, drill holes shall be perpendicular (at least at some angle) to every joint set. But in no case parallel to the joint set. The direction in which the holes are to be drilled at different locations in both the inclines in the roof, floor and the sides, based on the orientation of the discontinuity planes existing at that particular location.
4. All the voids and joints are to be prepared for cement injection by cleaning all drill holes with compressed air and water under pressure before grouting.
5. The contractor should have the experience of strata grouting with cement (micro fine cement, PU or acrylic) or mortar (with additives like plasticizers, super plasticizers, accelerating agents, Bentonite, etc.) and also experience of strata stabilization and arresting water leaking at a maximum of 500 GPM pressure.
6. If the contractor is not having the experience of strata grouting, he may hire the services of a sub-contractor who has similar experience on obtaining approval from competent authority as per the order terms.
7. Grout pump which can pump the grout at a max. Pressure of 1.0 MPa with suitable packers of various diameters should be used.
8. Grout injection, once started should continue until back pressure on the pump is noticed and maintained about double the grout presser over the initial starting pressure.
9. When huge quantity of pumped with no or little change in water flow or pump pack pressure.
10. When grout is escaping from the joints/other drilled grout hole in the neighborhood. These joints are to be effectively plugged by cloth or some other suitable material.

**The successful bidder shall ensure that no cavities or side falls are taken place during execution of sinking of shaft. In case if the same happens during execution, what so ever may be the reason, same will be made good with his own risk and cost.**

**Note:** The detailed drawings of the shaft construction are provided in the PLATE No. 3 to 10

## 7. CONTINUATION OF FACILITIES FOR MAINTENANCE OF RETURN AIR SHAFT

The facilities for ventilation, scaffolding, de-watering and hoisting used during the construction of the shaft shall be continued to be maintained for an additional three months after the completion of the shaft for the purpose of installation of any fittings in and around the shaft, required for return air shaft and keeping the shaft free from water and approach, **if so required by the Company.**

The required electrical power shall be provided by the Company free of cost.

## 8. DISPOSAL OF MUCK GENERATED AND SEEPAGE WATER DURING SINKING.

The muck produced during excavation of the Return air shaft shall be dumped in the Area, within 500m from the proposed shaft mouth which shall be ear-marked by GM, MM Area or Project Officer, SK LW Project whose decision regarding these shall be final. The dirty water discharged from the Return air shaft during sinking shall be coursed through settling tanks before releasing/pumping it to the natural drainage/ underground sump.

## 9. RESTRICTED AREA AROUND THE RETURN AIR SHAFT.

The proposed Return air shaft will be around 500 meters away from the existing air shaft and its surface structures. The successful bidder is requested to take note of the above and plan accordingly the works.

**10.0 TIME SCHEDULE:**

The time schedule for sinking and lining of the Return air shaft inclusive of shaft lining, insets and other allied works and cleaning the site after completion of shaft sinking operations is **36 months**. The average rate of progress assumed for shaft sinking inclusive of lining is 13m per month and for one inset drivage is 1½ month. To ensure completion schedule, the operation should be planned at a higher rate of progress to take care of all exigencies.

**NOTES**

i) All the information given above is subject to prevailing local conditions and confirmation / modification by the GM, MM Area or Project Officer, SK LW Project.
The excavation and supporting design must be executed as advised by GM, MM Area or Project Officer, SK LW Project based on the Site conditions. The provision of all labour, material, constructional plant, temporary works / required supports and everything, whether of a temporary or permanent nature, required for the construction, completion and maintenance of the various works detailed above along with disposal of muck at specified Areas within a distance of around 500m radius from the Return air shaft mouth and leveling of muck dumps as per the direction of the GM, MM Area or Project Officer, SK LW Project shall be deemed to be included in the Scope of work.

ii) Coal seams to be crossed by the shaft have been considered to be of Degree-I gassiness for safety purposes.

iii) The Shaft shall connected to the underground workings through one bore hole drilled up to SJ seam bottom section by the contractor to facilitate drainage of water from the shaft to the mine workings/sump. However, it shall be part of the contractor's work to protect and maintain the bore hole(s) during shaft sinking.

iv) Details of material of a steel segment **(PLATE No.3B)**
The steel segment consists of 3mm thick plate reinforced with ribs. The typical dimensions are: Curved length = 1.5 m,
Height = 1.0 m

Radius of curvature: as per radius of the excavation wall.

| Material | Quantity (no.) | Length (mm) | Height/ width (mm) | Thickness (mm) | Weight (kg) | Total Weight (kg) |
|---|---|---|---|---|---|---|
| Base | 1 | 1500 | 1000 | 3 | 35.30 | 35.30 |
| Horizontal rib: top and middle | 2 | 1500 | 50 | 5 | 2.94 | 5.88 |
| Horizontal rib: Bottom | 1 | 1500 | 50 | 10 | 5.88 | 5.88 |
| Vertical ribs | 4 | 1000 | 50 | 5 | 1.96 | 7.84 |

Approx. 54.90kg (Say 55kg)

i) In case of any undue delay to give such a decision on the part of GM, Mandamarri Area or Project Officer, SK LW Project, the Contractor shall decide on the use of additional/ special support with prior intimation in writing to GM, Mandamarri Area.

ii) The GM, Mandamarri Area or Project Officer, SK LW Project may, on his own instruct the Contractor to use or not to use additional/special support for any part of the shaft or inset, if he feels it is necessary to do so.

iii) Exceptionally bad strata requiring stabilization is not likely to be met with as indicated by Litholog of nearby Borehole No. BPA 366. In case bad strata is met while driving the Return air shafts, requiring the usage of special methods of sinking or additional/special support, the Contractor shall seek the opinion of the GM, MM Area or Project Officer, SK LW Project and abide by his decision regarding the usage of the same in such strata.

iv) In case of any undue delay to give such a decision on the part of GM, MM Area or Project Officer, SK LW Project the Contractor shall decide on the use of additional/ special support with prior intimation in writing to GM, MM.

v) The GM, MM Area or Project Officer, SK LW Project may, on his own instruct the Contractor to use or not to use additional/special support for any part of the Return air shaft or inset, if he feels it is necessary to do so.

**CREDENTIAL:**

Tenders should have experience of shaft sinking in Stone/Coal of at least 150m. Experience in execution of similar works, as sub-contract/petty contractor shall not be considered. Tenderers should have Annual Turnover of minimum Rupees one hundred lakhs in similar work at underground mine workings in any one financial year during the last five financial years".

**11.0. DEVIATIONS / VARIATIONS IN QUANTITIES AND PRICING:**

The quantities given in the 'Schedule of Quantities' are based on estimates and are meant to indicate the extent of the work and provided a uniform basis for Tendering and any variation thereof either by addition or omission shall not vitiate the Contract.

The contractor will take account of variation up to 5% by volume on excavation and supporting and packing are included in their quoted rates and time.

In case there is over excavation in excess of 5% due to bad ground conditions as certified by the GM, MM Area or Project Officer, SK LWP the contractor will be paid 60% of the excavation rate towards mucking and full quantities with scheduled rates for extra supporting and packing. However the contractor should take all precautionary measures like rock bolting, wire meshing etc. to restrict over excavation.

The Company shall have the power, without radically changing the original scope and nature of the work of the Contract, to make any alterations or additions or substitutions in the original specifications, drawings, designs and instructions that may appear to be necessary or advisable during the progress of the work.

The Contractor shall be bound to carry out the works in accordance with the instructions given to him in writing by the GM, MM Area or Project Officer, SK LWP. Such altered or additional or substituted work shall form a part of the original Contract and shall be carried out by the Contractor on the same terms and conditions in all respects on which the Contractor agreed to do the originally tendered work and at the same rate / rates as are specified in the Contract / Work Order.

The Company also reserves the right to cancel any items of work included in the Contract Agreement or portion thereof at any stage of execution if found necessary for the work and such omission shall not be considered to be a waiver of any condition of the Contract nor invalidate any of the provisions thereof.

The Company has the power to omit any part of the work in case of non-availability of a portion of the site or for any other reason and the Contractor shall be bound to carry out the rest of the work in accordance with the instructions given by the GM, MM. No claim for compensation shall be made by the Contractor on these grounds.

**12.0. RADIAL DEVIATIONS:**

In the event of any deviation being ordered which in the opinion of the Contractor changes radically the original scope or nature of the Contract, the Contractor shall under no circumstances suspend the work, either original or altered or substituted, and the disputes / disagreement as to the nature of deviation of the rate / rates to be paid therefore shall be resolved separately with the Company as per the procedures / norms laid down in this NIT in clause 5.0.

**13.0 .VALIDITY:**

The Tenders shall remain open for acceptance for a minimum period of 180 days (one hundred and eighty days) from the date of opening of the Technical Part. The price quoted shall also remain valid for the entire period during which the work shall be carried out with only valid changes being made as provided for by the escalation permitted.

The Tenderers shall not, during the said period or within the period extended by mutual consent, revoke, cancel or vary their Tenders or any terms thereof without the consent in writing of the Company. In case any Tenderer violates this clause, the Company shall be entitled to confiscate the Earnest Money deposited by him and reject his Tender.

**14.0 .SUFFICIENCY OF TENDER:**

The Tenderers shall satisfy themselves regarding the sufficiency of their Tenders in respect of any adverse physical conditions and artificial obstructions at the site. No claim shall be made against or entertained by the Company for any damage done by an act of God or an account of any circumstances beyond the control of the company.

**15.0. PUBLIC SECTOR UNDER TAKINGS HAVING M.O.U. WITH OTHER FIRMS:**

a. In case there is any memorandum or understanding between two Indian firms (specifically for public sector undertakings), copy of the same shall be furnished.

b. The agreement shall be legally binding and enforceable between the parties and the tender document shall be purchased on their name.

**16.0. TENDERERS WITH FOREIGN COLLABORATORS:**

a. No special facilities / terms shall be provided to Tenderers with foreign collaborators. However, a copy of agreement between the Indian and foreign collaborators, certified by a gazatted officer or by a G.M. of the S.C.Co. Limited, along with details of the foreign collaborators shall be furnished by such tenderer.
b. The agreement shall be legally binding and enforceable between the parties showing the role of collaborator and the tender document shall be purchased on their name.

**17.0 .E-PROCUREMENT TRANSACTION FEE :**

The Tenderer should pay E-procurement Transaction Fee including service charge of Rs…….. (……. only) should be paid on line payment only.

Participating bidders shall submit transaction fee at the time of bid submission. As per Go.Ms.13, Payment of Transaction fees through Online Payment Gateway is made Mandatory from 2nd Feb'2007. All the Tenderers have to pay the above non-refundable Transaction Fee and Service charge through Online Payment Gateway with any MASTER/VISA Credit Card issued by any bank and through Net Banking facility (Direct Debit) with UTI, ICICI or HDFC Banks.

There is no exemption towards the payment of E-procurement Transaction fee. Further, in case the tenderer is short listed for placement of Purchase Order, an equivalent amount of 0.04% on Order Value has to be paid to Govt. of A.P.

In case GOAP demands for payment of Transaction fee over and above the fee paid on-line, the bidder shall pay the same at a later date, as demanded.

**17.1. PUBLIC SECTOR UNDER TAKINGS HAVING M.O.U. WITH OTHER FIRMS:**

In case there is any memorandum of understanding between two Indian firms (specifically for public sector undertakings), copy of the same shall be furnished.

**18.0. TENDERERS WITH FOREIGN COLLABORATORS:**

No special facilities / terms shall be provided to Tenderers with foreign collaborators. However, a copy of agreement between the Indian and foreign collaborators, certified by a gazatted officer or by a GM. of the S.C.Co.Limited, along with details of the foreign collaborators shall be furnished by such Tenderers.

**19.0. SUBMISSION OF TENDER DOCUMENTS:**

**i)** Scanned copies of the following documents duly signed by the bidder should be uploaded:

a) A letter indicating the Bidder's acceptance for all the Terms and Conditions, including terms for execution of works (as per the format given in Appendix-1).

b) Credentials of the Bidders giving full details of the firm, details of similar work done by them, testimonials etc.

c) A technical note illustrating the technology proposed to be adopted in the execution of work and other details as per mentioned in the NIT.

d) Power of Attorney in case the Tender is signed by an authorized representative of the Bidder.

e) Scanned copy of EMD.

f) Attested copies of the latest income tax and copies of acknowledgement of returns filed and assessment orders passed by concerned authorities, copies of audited balance sheets as per the particulars specified in Appendix-2.

g) Documentary proof of financial resources as indicated in Appendix-2.

The required documents as mentioned in Appendix - I to V and annexure as
Required by the tender, such as:

- Particulars of tenderer
- Financial resources
- Documentary evidence to show the tender's ownership of major assets, if any.
- Past experience (with reference to work done in Singareni collieries Company limited)
- Details of mining works done by the tenderer in sccl and other organize
- Details of construction work.
- Details of works presently on hand
- Technical resources:
- Registration details: etc.

**ii) Opening of Cover I:**

Cover I i.e. the *Technical part shall be opened on the date informed in the Tender Notice and, after scrutiny, the Bidders shall be short-listed on the basis of technical evaluation.*

***iii) Opening of Cover II:***

*Cover II i.e., the Price* Bid or BOQ of those Bidders whose offers are technically & commercially acceptable shall be opened later.

**iv) No details/clarifications accepted after Tender closing date:**

No details/clarifications (technical or pricing) regarding the tender will be accepted by SCCL from the Bidders after the Tender closing date unless the same is specifically requested by the Company.

**20.0. TENDERERS TO SUBMIT TECHNICAL NOTE (scanned copy to be uploaded):**

The Tenderers shall indicate the equipment, machinery and vehicles likely to be used by them for the work. The Tenderers shall also state what technical and supervisory personnel they shall employ for supervising the work.

The Tenderers shall incorporate in their Tenders a technical note illustrating the technology proposed to be adopted in the execution of the works. The technology for sinking of return air shaft and relevant parameters shall also be detailed out in a sequential manner as given below:

I. Means of breaking the ground for shaft sinking.
II. Method of mucking and muck disposal including details of transport network.
III. Method of supporting sides and roof and interim support for shaft sinking and when required.
IV. Equipment to be used for each operation; The equipment's and machinery used for each operation should confirm to stipulations as per DGMS requirements and also as per relevant conditions mentioned in coal mines regulations 2017. The contractor should use only DGMS approved equipments/ machineries etc. complying with all requirements as per statute wherever required.
V. Proposed ventilation system.
VI. Proposed water drainage /pumping system.
VII. Manpower to be deployed at different stages such as preparatory / shaft sinking. etc., at different depths and stages and other allied works.
VIII. The time required for making preparatory arrangements at the site including collection of materials, procurement of machinery and installation and commissioning of equipment at the site.
IX. The proposed rate of shaft sinking and other allied works in meters / month.
X. The maximum period required for each operation to enable completion of the shaft sinking and other allied works in meters / month. (Within the scheduled completion date vide clause 19.1 hereof).
XI. Equipment to be used for each operation.
XII. It is anticipated, during sinking of shaft, loose strata and heavy percolation of seepage water may be encountered. To ensure long term stability of the shaft, the shaft shall require cement grouting for Strata stabilization and water control management in advance.
Bidders are required to submit a detailed methodology for execution of strata grouting and water control measures for smooth and safe execution of the works.

*XIII. The equipment and machinery used for each operation should confirm to Stipulations as per DGMS requirements and also as per relevant conditions mentioned in Coal Mines Regulations 2017.*

The Successful bidder should use only DGMS approved/exempted winding engine etc. complying with all requirements. The contractor shall also arrange to obtain necessary approvals / exemptions wherever required for execution of the works, from DGMS / other statutory authorities. SCCL shall provide possible assistance.
The winches to be used for scaffold anchoring should be of slow speed, synchronized and should confirm to all the return air standards as per CMR, 2017 with respect to its construction and brakes. The scaffold platform should be of strong and sturdy construction with proper load distribution, anchoring, communication, illumination and fencing.

The height of the scaffold shall be so designed, that in case one of the winch fails to operate accidentally the scaffold should not be tilted and should only struck to the shaft wall.

i) Details of the transport network including disposal of debris;
ii) Proposed ventilation system
iii) Proposed seepage water drainage /pumping system
iv) Proposed method of protecting and maintaining the drainage borehole provided in the middle of the shaft during shaft sinking.
v) Manpower to be deployed at different stages such as preparatory / shaft collar construction period, shaft sinking period, etc.
vi) The time required for making preparatory arrangements at the site including

collection of materials, procurement of machinery and equipment and installation of equipment at the site.

vii) The proposed rate of shaft sinking in meters / month.

viii) The maximum period required for each operation to enable completion of the shaft within the scheduled completion date vide clause 19.1 hereof.

ix) Evacuation of men from the shaft and shaft bottom during power failure/ breakdown of hauling equipment under emergent operation.

x) Ventilation and de-watering arrangements during power failure.

The tenderer shall inspect and acclimatize the transport network of the mine underground and on surface before submission of their quotation. The company shall not take responsibility for causing any delay while evacuation of the generated muck/ coal.

**21.0. FACILITIES TO BE PROVIDED BY THE COMPANY:**

**21.1**. **FACILITIES:**

The Company shall provide the following facilities to the Contractor as per clause 9 of Chapter IV.

i) **Supply of electricity:** SCCL will supply electrical power with transformer and Main switch at one point on surface and underground free of cost for the work at available transmission voltages (230 V at surface and or 3.3 KV & 550 V only and also if required 110V power will be supplied at UG by the company. The Contractor shall make arrangements for further distribution etc.,

ii) Space for godowns/stores, at free of charge.

iii) Industrial **water** and potable water, free of charge, at one convenient point on surface.

iv) Land for temporary accommodation will be provided for workers near the site, free of charge for temporary huts / sheds.

The Company shall also provide the following facilities to the Contractor as per clause 9 of Chapter III.

I) unfurnished **residential housing** facilities for the Contractor's supervisory Personnel, as detailed below, will be provided on rental basis.

a) 02 No's of Unfurnished, self-contained, NC/MC Type quarters or equivalent suitable for officers.

b) 04 No's of Unfurnished quarters or equivalent self contained accommodation suitable for supervisors (T2/MD/Barrack Type).

II) For the above accommodations rent, electricity and water charges along with taxes Under GST if any, as applicable from time to time will be levied and shall be deducted From their RA bills.

III) The successful bidder shall maintain these residential accommodations properly and hand over back in good condition to SCCL after the contract is completed / terminated. It will be the responsibility of the contractor for making other arrangements at his cost.

IV) Vocational training at a nominal rate of Rs.15/- per head and for medical examination Rs.2250/- per head, subject to the existing practices of the S.C. Co. Limited.Medical facilities, on charge, as per SCCL rules which may change from time to time, from the existing medical center on "Out Patient basis" at Area Hospital, Bellampalli.

v) 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 the Contractor's workers and supervisory personnel, shift wise from the nearest mine. The number of Cap lamps and flame safety lamps to be provided to the Contractor shall be determined by the GM, MM Area or Project Officer, SK LW Project.

The Contractor shall ensure that the cap lamps are duly returned, in proper condition, to the cap lamp room at the end of each shift. For any damage to, or loss of, any cap lamp by the Contractor's men, the Contractor is liable to be charged, by the Company, at rates to be fixed by the GM, MM.

b) Statutory supervision, such as Under Manager, Pit Engineer, Over man / or and Mining Sirdar to carry out statutory supervision.

c) Shot firing operation shall be done only by the Company's shot firer. SCCL will provide Shot firer at free of cost as and when blasting operations are undertaken.

**21.2 .MATERIALS:**

The Company shall supply the following store items to the successful Bidder for the Specific purpose of the sinking and lining of proposed return air shaft at SK LW Project.

a. Cement, steel (Both structural and reinforcement), explosives, detonators , shot firing cable, support materials such as Roof bolts and accessories including required capsules, etc., as per the availability of these items will be supplied by the Company on chargeable basis.

b. The cost of these materials along with taxes applicable from time to time shall be deducted from the firm's RA bills.

c. These items will be supplied at the following rates.

| | | | | |
|---|---|---|---|---|
| i) | Explosives | -- | Rs.58.00 - | per Kg |
| ii) | Detonators (delay) | -- | Rs.10.50 - | per detonator |
| iii) | Shot firing cable | -- | Rs.10 - | Per Meter. |
| iv) | Reinforcement Steel | -- | Rs. 49000/- | Per Ton |
| v) | Cement | -- | Rs. 258/- | Per Bag of 50 Kgs |
| vi) | 1.8m Roof Bolt with accessories | -- | Rs. -----/- - | Per No. |
| vii) | 2.4m Roof Bolt with accessories | -- | Rs. 717/- - | Per No. |
| viii) | Resin capsule | -- | Rs. 32/- - | Per No. |
| ix) | Resin capsule (Slow setting) | -- | Rs. 62/- - | Per No. |

The required pipes for permanent ranges and garland water drainage pipes, consumables such as flanges, nuts and bolts which will be forming integral part of the shaft shall be supplied by SCCL at its own cost.

The contractor shall have to maintain sufficient stock of required materials as per the progress of work. In the case of the GM, MM Area or Project Officer, SK LWP, explicitly

expressing inability, in writing, to supply any of the above items due to any reason whatsoever, the Contractor shall make his own arrangements for procurement of such items.

The non- supply of any store items by the Company shall not be accepted as a reason for delay in work. However, in such case, the contractor shall procure materials from the sources certified by GM., MM Area or Project Officer, SK LWP.

Explosives and accessories shall be issued on day to day basis from the nearest Mine Magazine or as advised by GM, MM or PO, SK LWP. Explosives and accessories shall be issued on day to day basis from the nearest mine magazine. The Contractor shall make his own arrangements for drawing of the explosives from the magazine and transport of the same to the place of use. He shall keep a record of all explosives and detonators (type-wise) issued, used on daily basis and strictly comply with all statutory provisions in this respect.

The Company at its discretion, if feasible and separable may also supply any materials/store items required for the specific purpose of the works pertaining to construction of Return air shaft on chargeable basis.

If the issue of any material by SCCL under this chapter attracts any Tax under GST the same shall be to the contractor's account and SCCL will issue valid Tax invoice for the same.

However, the contractor shall procure materials from the sources certified by GM., Mandamarri Area or Project Officer, SK LW Project.
Test certificates and valid authorized agency document from where the material is procured shall be submitted to SCCL.

In the case of the GM, MM Area or Project Officer, SK LW Project, explicitly expressing inability, in writing, to supply any of the above items due to any reason whatsoever, the Contractor shall make his own arrangements for procurement of such items.
The successful bidder shall procure materials, etc., of reputed makes with good quality only and the same shall be approved by SCCL, before procurement and supply.
The non-supply of any store items by the Company shall not be accepted as a reason for delay in work.

The contractor shall reconcile each and every material drawn from the company along with monthly RA bills and also in the final bill.

**21.3. ISSUE OF MATERIAL BY SCCL:**

**21.3.1** Cement, steel and any other material if issued to contractor by SCCL shall be on Sale Invoice to the contractors at SCCL Area stores/pit stores.

**21.3.2.** At the time of recovery of sale amount from the contractor, the amount as per the Tax Invoice based on notified Rates in NIT with applicable taxes will be recovered from the contractor. The contractor can claim ITC against the taxes mentioned in the Tax Invoice issued by SCCL.

Surplus materials/unused materials if any are available at site after completion of the work; the contractor has to return the same to the departmental stores in good condition through his Sale Invoice.

**22.0. EARNEST MONEY DEPOSIT (EMD):**

**a. Submission of EMD:**

Bidder shall submit bid along with EMD, unless exempted. Bid submitted without EMD will be summarily rejected. The EMD shall be paid in the form of Demand Draft drawn on any Nationalized / Scheduled Banks **located in Kothagudem** (presently, State Bank of India / Indian Overseas Bank / Andhra Bank / Vijaya Bank / ICICI Bank / HDFC Bank Axis Bank/ Karur Vysya Bank**, Bank of Baroda, Central Bank of India, Syndicate Bank, Canara Bank, Kotak Mahindra Bank**) in favour of The Singareni Collieries Company Limited, payable at **Kothagudem**, Bhadradri Kothagudem District (Telangana State).

The copy of the Demand Draft is to be scanned and uploaded in the e-portal; otherwise the bid is liable for rejection.

The original Demand Draft against EMD should reach the Office of G.M (MP) SCCL, within three working days after last date of submission of bid, otherwise the tender shall be treated as non-responsive.

i) EMD amount shall be Rs……../- (Rs…….. lakhs only) as specified.
ii) No interest will be paid on the EMD.
iii) EMD of unsuccessful bidders will be refunded immediately after the bidder is declared unsuccessful.
iv) EMD of successful bidders will be refunded on submission of Performance Bank Guarantee (PBG).
v) Wherever PBG clause is not applicable, EMD of successful bidder will be refunded after faithful execution of the order.
vi) EMD paid against earlier enquiry (ies) will not be adjusted for the current enquiry.

**b. Exemption for submission of EMD:**

The following are exempted from submission of EMD

i) All Government Undertakings.
ii) OEMs, OESs and Foreign manufacturers for supply of spares.
iii) Foreign manufacturers for capital items, if they are Proven Suppliers to SCCL for the enquired items.
iv) Firms registered with Directorate General of Supplies & Disposals (DGS&D) for enquired items.
v) Firms registered under Micro, Small and Medium Enterprises Development (MSMED) Act for enquired items/service. This is applicable for procurement of only items produced and services rendered by MSEs, but not for trading activities.
vi) Ancillary Units / Subsidiaries of SCCL.

The Bidder exempted from submission of EMD shall upload the scanned copy of documents online in support of exemption, during bid submission; otherwise the offer is liable for rejection.

**c. Forfeiture of EMD:**

EMD of the Bidder will be forfeited in the following circumstances:

i) Withdraws the offer during validity / extended validity period.
ii) Changes the terms and conditions of the offer during validity / extended validity period.
iii) Does not accept the LOA / order placed within the offer validity period / extended validity period, in accordance with terms & conditions of NIT, offer & negotiations.
iv) Breach of contract during execution, wherever PBG clause is not applicable.
v) The information/documents submitted by the bidder proved to be false/ incorrect.

**23.0 .SUPERIENTENDENT FOR THE WORKS:**

The Contractor shall give or provide all necessary superintendence during the execution of the works and as long thereafter as the GM, MM Area or Project Officer, SK LWP, may consider necessary for the proper fulfilling of the Contractor's obligations under the Contract. For the purpose, the Contractor shall keep on the work site during the progress of the Contract, as his representative a competent and experienced Resident Engineer and assistants exclusively for the work, approved of in writing by the GM, MM Area or Project Officer, SK LWP , (which approval may at any time be withdrawn). Such authorized Contractor's Resident Engineer and assistants are to be constantly on the works and give their whole time to the superintendence of the same. If such approval is withdrawn by the GM, MM Area or Project Officer, SK LWP, the Contractor shall, as soon as is practicable (having regard to the requirement of replacing him as hereinafter mentioned), after receiving written notice of such withdrawal, remove the Resident Engineer or his assistant from the site and shall not thereafter employ him again in the site in any capacity and shall replace him by another Resident Engineer or assistant, approved by the GM, MM. Such authorized Resident Engineer shall receive, on behalf of the contract, directions and instructions from the GM, MM Area or his representative. The minimum number of technical staff, including the Resident Engineer, to represent the Contractor on the site in connection with the execution and maintenance of the work should be, as detailed below.

**1.** One experienced engineer (Engineering Degree or equivalent )
**2.** One degree or equivalent engineer (Mining)
**3.** One experienced E&M engineer(Diploma or equivalent)
**4.** Six Nos. of Experienced Diploma engineers or equivalent experienced supervisors (out of this four should be of mining discipline, to supervise in shifts, one E&M engineer to maintain contractor equipment and one civil engineer)

The Contractor shall intimate the GM, MM Area or Project Officer, SK LWP , in writing, the names, qualifications, experience and full postal address of the each and every technical personnel employed by him at the site.

The Contractor shall not be allowed to execute the work unless he engages the required technical staff at the site. The delay on this account, if any, shall be the Contractor's responsibility.

All the important instructions shall be confirmed to the Contractor in writing. If the Contractor, while progressing with the works, finding any discrepancy between any drawing, forming part of the Contract documents, and the physical conditions of the locality or any error or omissions in any drawings, except those prepared by himself and not approved by the GM, MM Area or Project Officer, SK LWP , it shall be his duty to immediately inform the GM, MM Area or Project Officer, SK LWP , in

writing, and the GM, MM Area or Project Officer, SK LWP , shall verify the same. Any work done after such discovery and without intimation as indicated above shall be done at the risk of the Contractor.

**24.0. ACCEPTANCE OF TENDERER:**

On receipt of letter of intent of the Tender issued by the Company, the successful Tenderer shall accept a Work Order in the Company's prescribed form for the due fulfillment of the Contract. A Tender or part of a Tender shall be deemed to have been accepted only when such intent is notified of in writing to the Tenderer by the Company.

**25.0. CONTRACT AGREEMENT:**

On receipt of Letter of Acceptance of the Tender issued by the Company, the successful Tenderer shall execute / accept an Agreement / Work Order in the Company's prescribed form for the due fulfillment of the contract. The cost of the stamp papers for the Agreement shall be borne by the Contractor. The contract agreement shall be entered between successful tenderer and the General Manager of the Area within 30 days of commencement of work in a Non judicial bond paper of Rs.100/- in the Company's prescribed format.

Failure to enter into the required Contract / accept the Work Order issued by the Company within the period specified in the Work Order shall entail cancellation of the letter of intent of the Tender and forfeiture of the Tenderers Earnest Money by the Company.

The written Contract agreement / Work Order to be entered into between the Contractor and the company shall be the foundation of the rights of both the parties and the Contract shall not be deemed to be executed until the Contract agreement / Work Order is signed by both the parties i.e. Contractor and the Company.

**26.0. DEFECTS LIABILITY PERIOD:**

The "Defects Liability Period" shall mean the period of 12 months effective from the date of completion of the works, certified by the GM, MM Area or Project Officer, SK LWP, in accordance with clause 15 hereof, and a further period of 90 days beyond the end of this 12 months period. In the event of more than one certificate having been issued by the GM, MM Area or Project Officer, SK LWP, under the said clause, the "Defects Liability Period" shall be deemed to start from the dates so certified in the respective certificates and the expression "the works" shall be construed accordingly.

During this period, the Contractor shall be responsible to make good and remedy the defect(s) detected by the GM, MM Area or Project Officer, SK LWP, in the works in addition to the defect(s) to be rectified by the Contractor as per terms of the Contract / Work Order.

A program based on BAR CHART / PERT / CPM techniques shall be drawn by the Contractor and GM, MM Area for rectifying these defects within the "Defect Liability Period" and approved by the GM, MM Area incorporating therein any adjustments thereof as may be suggested by him. If the Contractor fails to adhere to this program, the GM, MM Area or Project Officer, SK LWP, shall be at liberty to procure proper materials and carry out the rectification(s) in any manner considered advisable as detailed hereunder.

**27.0 .STATUTORY TAXES, DUTIES AND LEVIES ETC.:**

**a. Goods and Service Tax (GST):**

ii) When the offered goods or services or both are subject to GST, the bidder shall clearly mention "GST" Extra, i.e., CGST+SGST+ Compensation Cess (if any) or CGST+UTGST+ Compensation Cess (if any) or IGST+ Compensation Cess (if any) in their bid along with the rate applicable unless exempted. Bids quoted on taxes inclusive basis will be summarily rejected.

iii) In case of bidders registered under GST, the bidder shall submit a copy of the "Certificate of provisional Registration" i.e., FORM GST REG-25 under GST. The bidder shall however submit a copy of the final "Certificate of Registration" i.e., FORM GST REG-06 after receipt of the same. The bidder shall invariably mention their GST Registration Number (GSTIN) and 4 Digit HSN Code along with description of goods or services or both as per the Goods and Service Tax Act for the enquired items in the BOQ Format of their offer.

iv) In case of unregistered bidders, the bidder shall submit their turnover certificate duly certified by Chartered Accountant for the immediate preceding financial year.

v) In order to enable SCCL to avail Input Tax Credit (ITC), the bidder registered under GST should submit Tax Invoice as per the provisions of GST Act.

vi) In case of bidders who opted for composition levy under GST, the bidder shall submit a copy of the "Certificate of provisional Registration" i.e., FORM GST REG-25 under GST and a copy of the intimation filed in FORM GST CMP-01. The bidder shall however submit a copy of the final "Certificate of Registration" i.e., FORM GST REG-06 after receipt of the same.

vii) The Composition bidder shall not quote any taxes under GST and his bid is invariably evaluated without taxes under GST.

viii) The Composition bidder shall submit "Bill of Supply" with the words "Composition taxable person, not eligible to collect tax on Supplies" for the supplies made by him

ix) In case, any credit, refund or other benefit is denied or delayed to SCCL due to any non-compliance by the Supplier (such as failure to upload the details of the sale on the GSTN portal, failure to pay GST to the Government) or due to non-furnishing or furnishing of incorrect or incomplete documents by the Supplier, the Supplier would reimburse SCCL the loss to SCCL including, but not limited to, the tax loss, interest and penalty.

**b. Customs Duty (CD), Integrated Goods and Service Tax(IGST), Compensation Cess**, if Applicable:

CD, IGST, Compensation Cess, if leviable, are applicable for overseas supplies. However, the bidder has to quote on FOB/CIF price basis only. For like to like comparison, loading will be done by SCCL as per the applicable rates.

**C. Royalty:**

Bidders shall mention Royalty details and shall also enclose valid Mining Lease granted to them or to their principal suppliers, where ever required.

**D. Any other Taxes / Duties applicable:**

i) If any Taxes / Duties / Cess / Levies other than those mentioned above are applicable as per the law of the land prevailing as on the date of submission of bid, the bidder shall clearly mention them along with rates applicable rates. Otherwise the same will be to the bidder's account.

ii) In case new Taxes / Duties / Cess / Levies are introduced after submission of the bids, but before opening the price bids, the bidder shall bring to the notice of the SCCL in writing

about such changes for loading and evaluating the status, otherwise, the same will be to the bidder's account.

iii) In case, the bidder mentions that any / all, Taxes / Duties / Cess / Levies are not applicable and if applicable during the order validity period, the same shall be absorbed by the bidder.

iv) During the contractual delivery period / extended delivery period, any upward / downward revision of applicable Taxes / Duties / Cess / Levies or imposition of new taxes / Duties / Cess / Levies as per order is to SCCL's account to the extent of revision. However, during the extended delivery period with penalty, any upward revision or imposition of new taxes / Duties / Cess / Levies etc. shall be absorbed by bidder.

**28.0. INPUT TAX CREDIT (ITC):**

i) SCCL is having centralized registration under Goods and Services Act, in the state of Telangana and the details of the same are furnished hereunder:

GSTIN (Provisional) : 36AAACT8873F1Z1

PAN (Under Income TAX ACT, 1961) : AAACT8873F

ii) At the time of evaluation of offers of the registered bidders, SCCL will consider Input Tax Credit (ITC), if eligible, in respect of eligible goods or services or both indicated in the Commercial Bid Format and their commercial status will be arrived at accordingly.

iii) At the time of evaluation of offers of the unregistered bidders, SCCL will, in addition to the price quoted in the bids, consider the taxes under GST that it shall pay under reverse charge mechanism in respect of goods or services or both indicated in the Commercial Bid. However, SCCL will consider the Input Tax Credit (ITC), if eligible, in respect of goods or services or both while evaluating the bids.

iv) Successful bidder shall quote the above GSTIN No. / PAN in all his invoices and documents against supplies, wherever required as per the provisions of the statutes, to enable SCCL to avail Input Tax credit.

**29.0. SUBLETTING:**

The Contractor shall not sub-let the whole/part of the works. Further, except where otherwise provided by the Contract, the Contractor shall not sub-let any part of the works without the prior written consent of the GM, Mandamarri Area (which shall not be unreasonably withheld). Such consent, if given, shall not relieve the Contractor from any liability or obligation under the Contract and he shall be responsible for the acts, defaults and neglects of any Sub-Contractor, his agents, servants or workmen as fully as if they were the act, defaults or neglects of the Contractor, his agents, servants or workmen. Provided always that the provision of labour on a piece rate basis shall not be deemed to be a sub-letting under this clause.

**30.0. PAYMENTS:**

The payments will be made for the work done in 30 days on or before the following 30$^{th}$ Day against progressive bills duly certified by GM, MM Area or his authorized representative.

Payment will be made by way of RTGS. RTGS charges if any will be to firm's account. If the firms opt for payment through cheque / DD, payment will be made accordingly. DD charges if any will be to firm's account. For RTGS payment, bidders are advised to indicate their Bank details in their offer. a) Name of the Bank. b) Branch Name. c) Branch Code. d) Account No. e) MICR Code. f) IFSC/RTGS Code.

**31.0. CONTRACTOR'S RESPONSIBILITIES:**

From the commencement to the completion of the works, the Contractor shall take full responsibility for the care thereof and of all temporary works and in case any damage, loss or injury shall happen to the works or to any temporary works from any cause whatsoever, the Contractor shall, at his own cost, repair and make good the same so that, at completion, the works shall be in good order and condition & in conformity in every respect with the requirements of the Contract and the GM, MM Area or Project Officer, SK LWP 's instructions. In the event of any such damage, loss or injury happening from any of the excepted risks, the Contractor shall, if and to the extent required by the GM, MM or Project Officer, SK LWP , and subject always to repair and make good the same as aforesaid at the cost of the Company. The Contractor shall also be liable for any damage to the works occasioned by him in the course of any operations carried out by him for the purpose of complying with his obligations.

**31.1. Watching and lighting:**

The Contractor shall, in connection with the works, provide and maintain, at his own cost, all lights, guards and fencing, when and where necessary or required by the GM, MM or his representative or by any duly constituted authority, for the protection of the works and materials at the site, the safety of workmen and the convenience of the public.

**31.2. Engagement of labour and other employees:**

The Contractor shall make his own arrangements for the engagement of all labour and other employees, local or otherwise, and, save in so far as the Contract otherwise provides, for the transport, housing, feeding and payment thereof. The Contractor shall release all labour and other employees, local or otherwise, after completion of the works, before claiming the final bill.

The Contractor shall provide and employ on the site in connection with the execution and maintenance of the works and to comply with the statutory requirements:

i) Only such technical assistants as are skilled and experienced in their respective callings and such sub-agents, foremen and leading hands as are competent to give proper supervision to the work they are required to supervise, and

ii) Such competent, skilled, semi-skilled and unskilled labour as is necessary for the proper and timely execution and maintenance of the works.

The GM, MM Area or Project Officer, SK LWP , shall be at liberty to object to and require the Contractor to remove from the works, within three hours of the receipt of such orders, any person employed by the Contractor in or about the execution or maintenance of the works, for, in the opinion of the GM, MM Area or Project Officer, SK LWP , misconduct or incompetence or negligence in the proper performance of his duties or whose employment is otherwise considered by GM, MM Area or Project Officer, SK LWP , to be undesirable and such person shall not be again employed upon the works without the written permission of the GM, MM Area or Project Officer, SK LWP . Any person so removed from the works shall be replaced as soon as possible by a competent substitute approved by the GM, MM Area or Project Officer, SK LWP.

**32.0. VARIOUS SAFETY GADGETS TO BE PROVIDED BY SUCCESSFUL BIDDER:**

a. Bidders are requested to note that various safety appliances mentioned hereunder are to be provided to their employees and in the equipment as a part of overall shaft sinking works and rate quoted by the bidders ,shall be inclusive of provision of these safety appliances;
No separate rates will be paid for any other appliances.

i) The successful bidder shall provide all safety appliances to all the employees and to the equipment such as Miners Helmet, Miners Safety Shoes, Miners Safety Belt, Fire extinguishers etc. and ensure that they are put into use as required under law.
ii) The successful bidder shall maintain proper co-ordination with SCCL authorities.
iii) Prepare written Safe Operating Procedure (SOP) for the work to be carried out, including an assessment of risk, wherever possible and safe methods to deal with the same.
iv) Provide a copy of the SOP to the person designated by the mine authorities who shall be supervising the work.
v) Keep an up-to-date SOP and provide a copy of changes to a person designated by the mine authorities.
vi) Ensure that all works are carried out in accordance with the applicable laws and SOP and for the purpose he shall deploy adequate qualified and competent personnel for the purpose of carrying out the job in a safe manner.
vii) For any work of a specified scope/nature, develop and provide to the mine owner a site specific code of practice.
viii) Ensure that all sub-tenderers engaged by him comply with the provisions of contract and shall be liable for ensuring compliance of all safety laws by him including sub-sub tenderers if any.
ix) All persons deployed by the successful bidder for working in a mine must undergo vocational training, initial and periodical medical examination. They should be issued identification cards stating the name of the successful bidder and the work and its validity period, indicating the status of Vocational Training & Initial Medical Examination etc.
x) The successful bidder shall submit to DGMS returns indicating – Name of his firm, Registration Number, Name and address of person heading the firm, nature of work, type of deployment of work persons, number of work persons deployed, how many work persons hold Vocational Training certificates, how many work persons have undergone Initial Medical Examination and type of medical coverage given to the work persons. The return shall be submitted quarterly (by $10^{th}$ of April, July, October and January of each year) for contracts of more than one year and for contracts of less than one year, return shall be submitted monthly. However, these are subject to change from time to time.

**b. Responsibilities of successful bidder's employees**

i) An employee must, while at work, take reasonable care for the health and safety of people who are at the employer's place of work and who may be affected by the employee's acts or omissions.
ii) An employee must, while at work, comply with any requirement under the Act or regulations in the interest of health, safety and welfare of the employees or any other person.
iii) Every person deployed by the successful bidder in a mine must wear safety gadgets provided by the successful bidder.

**33.0. STATUTORY RULES:**

a) The successful bidder shall comply all applicable Rules, Regulations, Acts and permissions etc. issued from time to time for carrying out the subject work viz. Coal Mines Regulations, Mines Rules, Mines Act, Indian Electricity Rules, CEA Regulations, DGMS permission conditions, Minimum Wages Act, Workmen Compensation Act, Coal Mines

Provident Fund Act, Insurance Act, Explosives Act and Environment Act etc. and obtain all statutory licenses, for the safety and welfare of the employees engaged by him to carry out the subject work.

b) The minimum wages shall be paid to the workers as per latest notification issued by Commissioner of Labour, Government of Telangana. However, these wages are subject to revision from time to time by Government of Telangana.

The successful bidder shall pay wages to the employees not less than the wages prescribed under Minimum Wage Act and the payment to the employees shall be made through bank as indicated in the prescribed column of wage sheet. A certificate to this effect issued by the authorized official shall be submitted to project officer, SK LWP, MM Area.

The successful bidder shall make necessary arrangements for enrolling all his workmen and staff as the members of the CMPF. He shall deduct the employee's contribution towards CMPF and pension from their wages and deposit along with employer's matching share with the concerned Regional Commissioner, CMPF. A certificate to this effect issued by the authorized official shall be submitted by, SK LWP, MM Area.

Total contribution towards CMPF 26.72%+ 3% of monthly wages

Alternatively, the successful bidder can opt the provisions of Employees Provident Fund, Government of Telangana.

c) The successful bidder shall possess a license as required under Contract Labour (Regulation and abolition) Act, 1970 and Contract Labour (Regulation and Abolition) Central Rules 1971 and satisfy all the provisions of the Act.
d) The successful bidder shall follow rules, if any, imposed by local/state/ central authorities.
e) The successful bidder shall indemnify the Company (SCCL) from any liability be falling on SCCL due to any commission/ omission by himself or by his representative or by his employee or by any third party in execution of contract. If the SCCL is made liable for such claims by any court or authority, the same shall be reimbursed to the SCCL by the successful bidder, as if the SCCL has paid on their behalf.
f) During the course of execution of the work, if any accident occurs whether major or minor, the successful bidder or his supervisory staff shall inform the same immediately without any delay to the Colliery Manager/ Agent/General Manager concerned to take steps in accordance with the Mines Act and other relevant laws. Otherwise, the contractor or his supervisory staff will be prosecuted for violation of the Mines Act and other relevant laws.
g) Execution of the work with Contract Labour is prohibited vide notification u/s 10(1) Contract Labour (Regulation & Abolition) act S.O. 2063, dated 21.6.88. Hence, the successful bidder shall execute the work with his employees/ workmen only. The bidder has to submit an affidavit in the Performa prescribed in Annexure A1 or A2 as the case may be along with the tender.
h) The terms and conditions, if any, that will be stipulated from time to time by Government authorities concerned, including DGMS, will be binding on the successful bidder.

**34.0. OTHER TERMS AND CONDITIONS:**

i) Employment of local labour : The successful bidder are to employ, to the extent possible, local project affected people and pay wages not less than the minimum wages fixed by

the Law of the Land.

ii) The successful bidder should not engage workmen below 18 years of age.

iii) Statutory supervision will be arranged by SCCL. All the persons deployed at work site by the successful bidder shall be under the statutory control of SCCL supervisors. The successful bidder shall engage qualified persons as in-charges of various operations.

**35.0. ESCALATION:**

If the wages of labour required for execution of the work duties increase or decrease, the payment to be made to the Contractor shall be adjusted for such increase or decrease as per the provisions detailed hereunder.

The amount of the Contract shall accordingly be varied subject to the condition that such compensation for escalation in wages shall be available only for the work done during the stipulated period of the Contract including such period for the Contract as is validly extended under the provisions of the Contract without any penal action.

The base index shall be the one relating to the last date on which the tender, or revised price bid, was stipulated to be received, whichever is later.

The compensation for escalation shall be worked out at quarterly intervals and shall be with respect to the cost of work done during the previous three months. The first such payment shall be made at the end of three months (excluding the month in which the tender was accepted) and thereafter at three monthly intervals.

**35.1. Escalation for Labour:**

The amount to be paid to the Contractor for the work done shall be adjusted for increase or decrease in the cost of labour and the cost shall be calculated quarterly in accordance with the following formula:

$$V_L = W \times \frac{A}{100} \times \frac{(L - L_o)}{L_o} \times 0.85$$

Where,

$V_L$ = Variation in labour cost i.e. increase or decrease in the amount in rupees to be paid or recovered,

W =Value of work done during the period to which escalation relates,

A =Component of labour expressed as a percentage of the total value of the work which shall be considered as 30% (Thirty per cent).

$L_o$ =Minimum wages for unskilled workers applicable to the place of work as elaborated in clause 18.1 hereof as on the last date stipulated for receipt of the price bids or revised price bids, whichever is later, and

L = Revised minimum wages of unskilled workers applicable to the place of work as elaborated in clause 18.1 hereof corresponding to the period to which the escalation relates.

**35.2 Material escalation:**

Material escalation shall be paid based on the price of various material inputs as per the All India Whole Sale Price Index (All commodities). Increase in the price of materials shall result in the escalation of rates as per the increase or decrease in the cost of materials and the amount shall be calculated quarterly in accordance with the following formula:

$$ME = 0.25 \times \frac{(M2 - M1)}{M1} \times V\ W\ D$$

Where:

ME = Material Escalation Value.

M1 = All India Whole Sale Price Index for All Commodities for the month in Which the last date stipulated for receipt of the price bids or revised Price bids whichever is later.

M2 = All India Whole Sale Price Index for All commodities for the quarter Under review, as published by Reserve Bank of India / Govt.

**36.0. DEFAULTS &FENALITIES:**

i) **Delay in Commencing Works**

If the Contractor, without reasonable cause or valid reasons, commits default in commencing the execution of the work within the aforesaid time limit, the Company shall without prejudice to any other right or remedy, be at liberty, by giving 15 days notice in writing to the Contractor to commence the work, forfeit the Earnest Money Deposited by him and to rescind the Letter of Tender / Work Order.

ii) **Delay in the Rate of progress / Date of Completion**

Quarterly comparisons shall be made by the GM, MM Area or Project Officer, SK LWP between the progress achieved by the Contractor in the various works with the desired progress as per the programme submitted vide clause 7.2 hereof.

iii) **Penalties for Delays**

a) In the event of the Contractor's failure to achieve the desired progress vide these comparisons or to complete the whole works within the time prescribed by clause 7.1 hereof, or extended time as per clause 7.3 hereof, the Contractor shall be liable to pay as compensation for the balance part of the work(s) scheduled to have been completed but still remaining incomplete @ 1% (one per cent) of the Contract value of said part of the work not completed, per week, or part of a week, during the period in which the said part of the work(s) remains incomplete as liquidated damages for such default. The aggregate of such compensation(s) shall not exceed 15% (Fifteen per cent) of the total contract value.

In case 85% of the quantity required under the quarterly comparisons is not completed by the Contractor vide the program submitted under clause 7.2 hereof, penalty as above will be applicable as for incomplete work, will be levied after the date of completion of the quarter under review.

If the Contractor completes 85% or more of the quantity required vide the above program but less than the desired quantity (I.e., 100%), Penalty will not be recovered but will be carried to the subsequent quarters and penalty as above will be levied as for incomplete works.

The penalty levied/ so recovered as above will be refunded along with the subsequent bill/bills, provided, the contractor achieves 100 % of the cumulative progress including the backlog in the subsequent quarters.

b) The Company may, without prejudice to any other method of recovery, deduct such amount from any money due or which may become due to the Contractor in other works being executed at SCCL. The deduction of such an amount shall not relieve the Contractor from his obligation to complete the works or from any other of his obligations and liabilities under the Contract.

c) Penalties shall be for the delays directly attributable to the Contractor and exempted for force majeure conditions vide clause 24 hereof, subject to documentary evidence/ approval.

d) In case the Contractor executes more work than indicated for each month, the same shall be carried forward to the subsequent months to decide about the penalty vide the program submitted under clause 7.2. Penalties, if any, will be recovered from the RA bill ending the subsequent quarter.

e) If the work is completed within the scheduled completion period, including force majeure conditions, the penalties so recovered will be refunded along with the final bill.

f) For the purpose of calculation of penalty, the value of the Additional work executed by the firm & the number of days affected due to the execution of Additional works during execution of the shaft sinking and other associated works will not be accounted.

**IV) Reduction in Penalties:**

If, before the scheduled completion of part of the work(s) or the whole works, any particular part of the said part or whole works has been certified by the GM, MM AREA as completed pursuant to clause 15 hereof and occupied or used by the Company, the liquidated damages for delay for any period of delay for such part or whole works, after such certification, shall be reduced in the proportion which the value of the part so certified bears to the value of the part or whole of the works which were to have been completed by that time.

**37.0. ENGANING OF OTHER AGENCIES:**

If the progress of the work or of any part of the work as per clause 7.2 is unsatisfactory, after giving the Contractor 15 days' notice in writing, to complete the backlog / residual work, as required vide clause 7.2, and the contractor failing to do so, GM, MM shall be entitled to arrange, either wholly or partly, by employing another Agency for the job, even at higher rate, or by workmen of the Company debiting the total cost involved in engaging one or more Agencies for the job or in executing the work by workmen of the Company, as the case may be, to the Contractor. The GM, MM decision regarding the quantum of cost for the work so done, even if it is more than the Contractor's agreement value for the work, and the certificate issued by him for the purpose shall be final and conclusive.

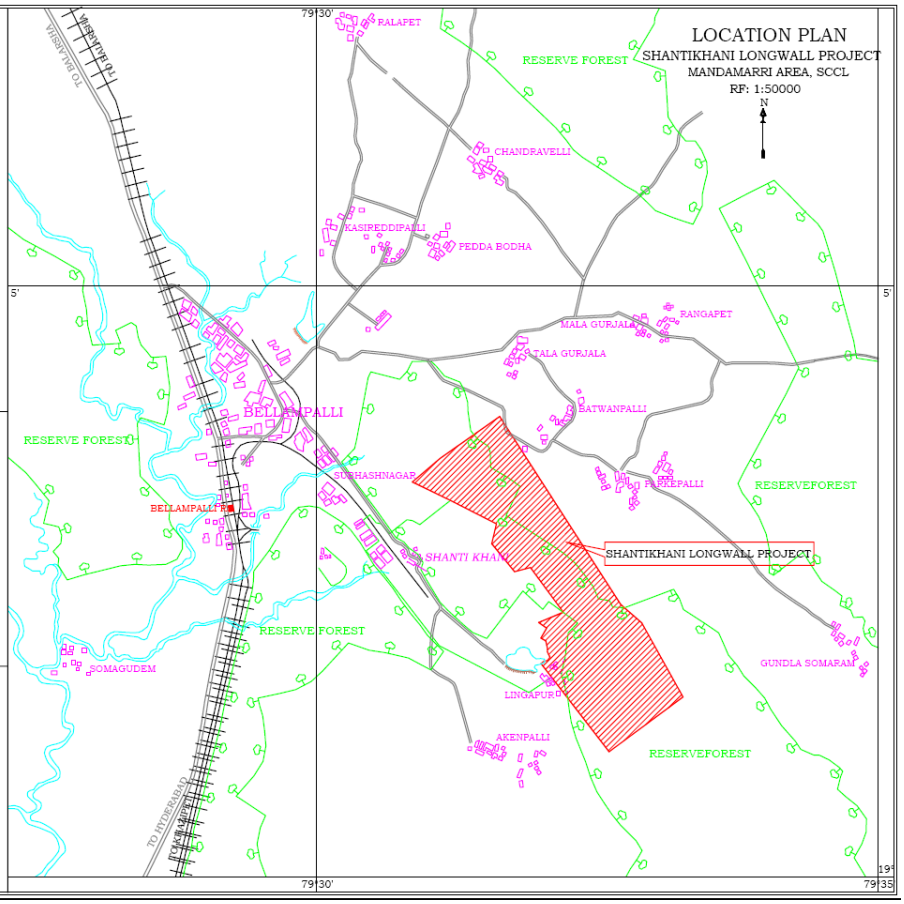
**38.0. SETLEMENT OF DISPUTES:**

It is incumbent upon the Contractor to avoid litigation(s) and disputes during the execution of the Contract. However, if any such disputes do arise between the Contractor and the Company, the Contractor shall request the GM, MM in writing for the settlement of such disputes/claims within 30 days of their origin failing which no disputes/claims of the Contractor shall be entertained by the Company.

As a first step, all efforts shall be made to settle the disputes/claims through committees formed at different levels for this purpose by the Company. If differences still persist in respect of site plans, specifications, measurements, manner of execution or anything connected with the work, not specially provided for, here in under the specification or in respect of meaning of any clause of the terms and conditions of Tender Document shall be decided by 'CIVIL COURT' of competent jurisdiction and not by arbitration.

PLATE No.1


TELANGANA STATE

10-Apr-2018

SINGARENI COLLIERIES COMPANY LIMITED

EXPLORATION DIVISION

DESCRIPTIVE GEOLOGICAL LITHOLOG (SHORT)

BOREHOLE NO : BPA-366
LATITUDE : 977318.44
DEPARTURE : 3055318.58
DRILL : SERM-75

BLOCK : Shantikhani Long Wall Block
REDUCED LEVEL : 930.61
GP LOG DEPTH : 0.00
TOTAL DEPTH : 387.00
LOGGED BY : Sapavath Srinivas

| LITHOLOGY DEPTH | | | | LITHOLOGY DESCRIPTION | SEAM | CORE DIP | RQD |
|---|---|---|---|---|---|---|---|
| FROM | SPLITTO | THICK | RECO | | | | |
| | | | | | | | |
| BPA-366 | | | | Shantikhani Long Wall Block | | | |
| 0.00 | 3.00 | 3.00 | 0.00 | GREYISH BROWN SOIL | | | |
| 3.00 | 6.00 | 3.00 | 0.00 | GREYISH BROWN SAND (UNCONSOLIDATED) | | | |
| 6.00 | 9.00 | 3.00 | 2.00 | GREYISH BROWN SAND (UNCONSOLIDATED) | | | |
| 9.00 | 12.00 | 3.00 | 2.50 | SAND (UNCONSOLIDATED) SANDY | | | |
| 12.00 | 14.14 | 2.14 | 1.50 | GREYISH BROWN SANDSTONE(FINE TO MEDIUM GRAINED) | | | |
| 14.14 | 15.00 | 0.86 | 0.60 | SANDY SHALE | | | |
| 15.00 | 18.00 | 3.00 | 2.80 | GREYISH BROWN SANDSTONE(MED. TO C. GRAINED) | | | |
| 18.00 | 18.23 | 0.23 | 0.20 | GREYISH BROWN SANDSTONE(MEDIUM GRAINED) | | | |
| 18.23 | 18.43 | 0.20 | 0.17 | REDDISH BROWN SANDSTONE(MEDIUM GRAINED) | | | |
| 18.43 | 19.00 | 0.57 | 0.48 | LIGHT BROWN SANDSTONE(MED. TO C. GRAINED) | | | 37 |
| 19.00 | 19.77 | 0.77 | 0.32 | GREYISH WHITE SANDSTONE(COARSE GRAINED) MEDIUM STRONG | | | 21 |
| 19.77 | 20.39 | 0.62 | 0.26 | GREYISH WHITE SANDSTONE(MED. TO V.C. GRAINED) MEDIUM STRONG | | | |
| 20.39 | 21.00 | 0.61 | 0.25 | GREYISH BROWN SANDSTONE(MED. TO C. GRAINED) | | | |
| 21.00 | 24.00 | 3.00 | 0.00 | GREYISH BROWN SANDSTONE | | | |
| 24.00 | 24.46 | 0.46 | 0.19 | YELLOWISH BROWN SANDSTONE(MEDIUM GRAINED) MEDIUM STRONG | | | 41 |
| 24.46 | 25.17 | 0.71 | 0.29 | REDDISH BROWN SANDSTONE(MED. TO C. GRAINED) MEDIUM STRONG | | | 25 |
| 25.17 | 26.02 | 0.85 | 0.35 | YELLOWISH BROWN CLAY | | | |
| 26.02 | 27.00 | 0.98 | 0.40 | GREY SAND (UNCONSOLIDATED) CLAYEY | | | |
| 27.00 | 27.27 | 0.27 | 0.12 | GREY CLAY | | | |
| 27.27 | 30.00 | 2.73 | 1.20 | REDDISH BROWN CLAY | | | |
| 30.00 | 30.46 | 0.46 | 0.40 | DARK GREY SHALE CLAYEY | | | |
| 30.46 | 30.86 | 0.40 | 0.35 | DARK GREY SHALY SANDSTONE MICA | | | |
| 30.86 | 31.38 | 0.52 | 0.45 | DARK GREY SHALY SANDSTONE MICA | | | |
| 31.38 | 33.00 | 1.62 | 1.42 | YELLOWISH BROWN SANDSTONE(FINE GRAINED) PEBBLY AT PLACES MEDIUM STRONG | | | 82 |
| 33.00 | 36.00 | 3.00 | 0.54 | BROWN SANDSTONE(FINE TO MEDIUM GRAINED) PEBBLY AT PLACES MEDIUM STRONG | | | 15 |
| 36.00 | 37.85 | 1.85 | 0.80 | REDDISH BROWN SANDSTONE(COARSE GRAINED) MEDIUM STRONG | | | |
| 37.85 | 39.00 | 1.15 | 0.50 | BROWN SANDSTONE(COARSE GRAINED) PEBBLY AT PLACES MEDIUM STRONG | | | |
| 39.00 | 39.15 | 0.15 | 0.09 | BROWN SANDSTONE PEBBLY MEDIUM STRONG | | | |
| 39.15 | 40.32 | 1.17 | 0.70 | YELLOWISH BROWN SANDSTONE(FINE GRAINED) MICA MEDIUM STRONG | | | 44 |
| 40.32 | 40.74 | 0.42 | 0.25 | REDDISH BROWN SANDSTONE(FINE TO MEDIUM GRAINED) MEDIUM STRONG | | | 60 |
| 40.74 | 42.00 | 1.26 | 0.76 | BROWN SANDSTONE(MED. TO C. GRAINED) MEDIUM STRONG | | | 9 |
| 42.00 | 42.20 | 0.20 | 0.11 | BROWN SANDSTONE(MEDIUM GRAINED) MEDIUM STRONG | | | 55 |

| LITHOLOGY DEPTH | | | | LITHOLOGY DESCRIPTION | SEAM | CORE DIP | RQD |
|---|---|---|---|---|---|---|---|
| FROM | SPLITTO | THICK | RECO | | | | |
| | | | | | | | |
| BPA-366 | | | | Shantikhani Long Wall Block | | | |
| 42.20 | 43.26 | 1.06 | 0.59 | BROWN SANDSTONE(MED. TO C. GRAINED) MEDIUM STRONG | | | 29 |
| 43.26 | 43.48 | 0.22 | 0.12 | GREYISH WHITE SANDSTONE(FINE GRAINED) MICA | | | |
| 43.48 | 45.00 | 1.52 | 0.85 | BROWN SANDSTONE(COARSE GRAINED) MEDIUM STRONG | | | 17 |
| 45.00 | 46.33 | 1.33 | 0.91 | BROWNISH GREY SANDSTONE(COARSE GRAINED) MEDIUM STRONG | | | 21 |
| 46.33 | 47.76 | 1.43 | 0.98 | YELLOWISH BROWN SANDSTONE(COARSE TO V.C.GRAINED) MEDIUM STRONG | | | 40 |
| 47.76 | 48.00 | 0.24 | 0.16 | GREY SANDSTONE(FINE GRAINED) | | | |
| 48.00 | 48.80 | 0.80 | 0.70 | YELLOWISH BROWN SANDSTONE(COARSE TO V.C.GRAINED) MEDIUM STRONG | | | 48 |
| 48.80 | 50.04 | 1.24 | 1.08 | BROWNISH GREY SANDSTONE(COARSE TO V.C.GRAINED) MEDIUM STRONG | | | |
| 50.04 | 50.42 | 0.38 | 0.33 | BROWNISH YELLOW SANDSTONE(COARSE GRAINED) PEBBLY AT PLACES MEDIUM STRONG | | | 76 |
| 50.42 | 50.64 | 0.22 | 0.19 | YELLOWISH BROWN SANDSTONE(FINE TO MEDIUM GRAINED) MEDIUM STRONG | | | 45 |
| 50.64 | 51.00 | 0.36 | 0.31 | BROWN SANDSTONE(MED. TO C. GRAINED) MEDIUM STRONG | | | |
| 51.00 | 52.26 | 1.26 | 1.04 | YELLOWISH GREY SANDSTONE(MED. TO C. GRAINED) MICA MEDIUM STRONG | | | 76 |
| 52.26 | 52.90 | 0.64 | 0.53 | BROWN SANDSTONE(MEDIUM GRAINED) MEDIUM STRONG | | | 34 |
| 52.90 | 54.00 | 1.10 | 0.90 | BROWN SANDSTONE(COARSE GRAINED) MEDIUM STRONG | | | |
| 54.00 | 54.35 | 0.35 | 0.13 | BROWN SANDSTONE(FINE GRAINED) CLAYEY AT PLACES SOFT | | | 37 |
| 54.35 | 56.54 | 2.19 | 0.81 | BROWN SANDSTONE(FINE GRAINED) SOFT | | | 37 |
| 56.54 | 57.00 | 0.46 | 0.17 | BROWN SANDSTONE(MED. TO C. GRAINED) CLAYEY AT PLACES | | | |
| 57.00 | 60.00 | 3.00 | 0.62 | GREENISH GREY SANDSTONE(MED. TO C. GRAINED) PEBBLY AT PLACES MEDIUM STRONG | | | 20 |
| 60.00 | 61.03 | 1.03 | 0.64 | GREENISH GREY SANDSTONE(COARSE GRAINED) MEDIUM STRONG | | | |
| 61.03 | 61.45 | 0.42 | 0.26 | GREY SANDSTONE(FINE GRAINED) SOFT | | | |
| 61.45 | 62.13 | 0.68 | 0.42 | BROWN SANDSTONE(FINE GRAINED) MEDIUM STRONG | | | |
| 62.13 | 63.00 | 0.87 | 0.54 | BROWN SANDSTONE(MEDIUM GRAINED) MEDIUM STRONG | | | 39 |
| 63.00 | 63.49 | 0.49 | 0.44 | BROWN SANDSTONE(COARSE GRAINED) MEDIUM STRONG | | | 22 |
| 63.49 | 64.14 | 0.65 | 0.59 | GREY CLAY | | | |
| 64.14 | 64.52 | 0.38 | 0.34 | GREENISH GREY SANDSTONE(FINE GRAINED) CLAYEY | | | |
| 64.52 | 64.58 | 0.06 | 0.05 | GREY CLAY | | | |
| 64.58 | 65.47 | 0.89 | 0.81 | GREENISH GREY SANDSTONE(FINE GRAINED) MICA MEDIUM STRONG | | | 85 |
| 65.47 | 66.00 | 0.53 | 0.49 | GREENISH GREY SANDSTONE(MED. TO C. GRAINED) MEDIUM STRONG | | | 52 |
| 66.00 | 68.26 | 2.26 | 2.18 | GREENISH GREY SANDSTONE(MED. TO C. GRAINED) PEBBLY AT PLACES MEDIUM STRONG | | | 58 |
| 68.26 | 68.50 | 0.24 | 0.23 | GREY SANDSTONE(FINE GRAINED) | | | |
| 68.50 | 68.60 | 0.10 | 0.10 | GREENISH GREY SANDSTONE(VERY COARSE GRAINED) | | | 100 |
| 68.60 | 69.00 | 0.40 | 0.38 | GREY SANDSTONE(FINE TO MEDIUM GRAINED) | | | 26 |
| 69.00 | 69.26 | 0.26 | 0.24 | GREENISH GREY SANDSTONE(COARSE GRAINED) PEBBLY AT PLACES | | | |
| 69.26 | 69.46 | 0.20 | 0.18 | GREYISH WHITE SANDSTONE(COARSE GRAINED) HARD | | | 90 |
| 69.46 | 69.78 | 0.32 | 0.29 | GREENISH GREY SANDSTONE(COARSE GRAINED) | | | 81 |
| 69.78 | 70.00 | 0.22 | 0.20 | GREYISH WHITE SANDSTONE(FINE GRAINED) MICACEOUS LAMINATED < 30 MM | | | 55 |
| 70.00 | 70.82 | 0.82 | 0.75 | GREENISH GREY SANDSTONE(FINE TO MEDIUM GRAINED) MICACEOUS MEDIUM STRONG | | | 50 |
| 70.82 | 72.00 | 1.18 | 1.07 | GREYISH WHITE SANDSTONE(MED. TO C. GRAINED) MICACEOUS | | | 76 |

| LITHOLOGY DEPTH | | | | LITHOLOGY DESCRIPTION | SEAM | CORE DIP | RQD |
|---|---|---|---|---|---|---|---|
| FROM | SPLITTO | THICK | RECO | | | | |
| | | | | | | | |
| BPA-366 | | | | Shantikhani Long Wall Block | | | |
| 72.00 | 73.49 | 1.49 | 1.48 | GREYISH WHITE SANDSTONE(MED. TO C. GRAINED) PEBBLY AT PLACES | | | 100 |
| 73.49 | 75.00 | 1.51 | 1.49 | GREYISH WHITE SANDSTONE(MED. TO C. GRAINED) COALY STREAKS | | | 82 |
| 75.00 | 76.05 | 1.05 | 0.81 | GREYISH WHITE SANDSTONE(FINE TO MEDIUM GRAINED) | | | 56 |
| 76.05 | 77.49 | 1.44 | 1.11 | GREYISH WHITE SANDSTONE(MED. TO C. GRAINED) PEBBLY AT PLACES SOFT | | | 24 |
| 77.49 | 78.00 | 0.51 | 0.40 | GREYISH WHITE SANDSTONE(MEDIUM GRAINED) SOFT | | | |
| 78.00 | 81.00 | 3.00 | 2.86 | GREYISH WHITE SANDSTONE(COARSE GRAINED) MASSIVE MEDIUM STRONG | | | 78 |
| 81.00 | 81.65 | 0.65 | 0.62 | BROWN CLAY | | | |
| 81.65 | 82.52 | 0.87 | 0.83 | GREY SANDSTONE(FINE GRAINED) | | | 16 |
| 82.52 | 83.47 | 0.95 | 0.91 | GREY SANDSTONE(MEDIUM GRAINED) | | | 78 |
| 83.47 | 83.56 | 0.09 | 0.09 | GREY SANDSTONE(FINE GRAINED) MICACEOUS | | | |
| 83.56 | 84.00 | 0.44 | 0.41 | GREY SANDSTONE(FINE TO MEDIUM GRAINED) | | | 53 |
| 84.00 | 84.51 | 0.51 | 0.35 | GREY SANDSTONE(FINE TO MEDIUM GRAINED) | | | 20 |
| 84.51 | 85.04 | 0.53 | 0.36 | GREY SHALE | | | |
| 85.04 | 85.82 | 0.78 | 0.53 | GREY SANDSTONE(FINE TO MEDIUM GRAINED) MEDIUM STRONG | | | 56 |
| 85.82 | 87.00 | 1.18 | 0.81 | GREY SANDSTONE(FINE GRAINED) MEDIUM STRONG | | | 18 |
| 87.00 | 88.08 | 1.08 | 0.96 | GREY SANDSTONE(FINE GRAINED) MICACEOUS | | | 45 |
| 88.08 | 88.17 | 0.09 | 0.08 | GREY CLAY | | | |
| 88.17 | 89.27 | 1.10 | 0.98 | GREY SANDSTONE(V.FINE GRAINED) SLICKENSIDED | | | 27 |
| 89.27 | 89.66 | 0.39 | 0.35 | GREY SANDSTONE(FINE GRAINED) MEDIUM STRONG | | | 90 |
| 89.66 | 90.00 | 0.34 | 0.30 | GREY SANDSTONE(FINE TO MEDIUM GRAINED) | | | 53 |
| 90.00 | 90.25 | 0.25 | 0.23 | GREY SANDSTONE(FINE GRAINED) | | | 92 |
| 90.25 | 90.49 | 0.24 | 0.22 | GREY SANDSTONE(FINE TO MEDIUM GRAINED) MICA LAMINATED < 30 MM | | | 54 |
| 90.49 | 91.11 | 0.62 | 0.58 | GREY SANDSTONE(FINE TO MEDIUM GRAINED) MEDIUM STRONG | | | 74 |
| 91.11 | 91.69 | 0.58 | 0.54 | GREY SANDSTONE(MEDIUM GRAINED) MEDIUM STRONG | | | 88 |
| 91.69 | 91.95 | 0.26 | 0.24 | GREY SANDSTONE(FINE GRAINED) | | | 92 |
| 91.95 | 92.18 | 0.23 | 0.21 | GREY SANDSTONE(FINE GRAINED) MICACEOUS LAMINATED < 30 MM | | | 61 |
| 92.18 | 93.00 | 0.82 | 0.77 | GREY SANDSTONE(FINE TO MEDIUM GRAINED) HARD | | | 93 |
| 93.00 | 93.79 | 0.79 | 0.74 | GREY SANDSTONE(FINE TO MEDIUM GRAINED) MEDIUM STRONG | | | 86 |
| 93.79 | 94.81 | 1.02 | 0.96 | GREY SANDSTONE(MEDIUM GRAINED) MEDIUM STRONG | | | 88 |
| 94.81 | 94.95 | 0.14 | 0.13 | GREY SANDSTONE(FINE GRAINED) | | | |
| 94.95 | 96.00 | 1.05 | 0.98 | GREY SANDSTONE(MED. TO C. GRAINED) | | | 31 |
| 96.00 | 96.38 | 0.38 | 0.36 | GREY SANDSTONE(FINE GRAINED) MICA LAMINATED < 30 MM | | | 47 |
| 96.38 | 97.05 | 0.67 | 0.63 | GREY SANDSTONE(MEDIUM GRAINED) MEDIUM STRONG | | | 69 |
| 97.05 | 98.15 | 1.10 | 1.03 | GREY SANDSTONE(MEDIUM GRAINED) | | | 79 |
| 98.15 | 99.00 | 0.85 | 0.80 | GREY SANDSTONE(COARSE GRAINED) MEDIUM STRONG | | | 94 |
| 99.00 | 99.76 | 0.76 | 0.60 | GREYISH WHITE SANDSTONE(COARSE GRAINED) | | | 79 |
| 99.76 | 100.24 | 0.48 | 0.38 | GREYISH WHITE SANDSTONE(FINE GRAINED) | | | 58 |
| 100.24 | 101.90 | 1.66 | 1.31 | GREYISH WHITE SANDSTONE(MED. TO C. GRAINED) | | | 57 |
| 101.90 | 102.00 | 0.10 | 0.08 | GREY SANDSTONE(MEDIUM GRAINED) | | | |
| 102.00 | 102.29 | 0.29 | 0.15 | GREY CLAY | | | |
| 102.29 | 102.41 | 0.12 | 0.06 | DARK GREY SHALE | | | |
| 102.41 | 102.62 | 0.21 | 0.11 | GREY SANDSTONE | | | |
| 102.62 | 103.00 | 0.38 | 0.20 | GREY CLAY | | | |
| 103.00 | 105.84 | 2.84 | 1.72 | GREY SHALE SANDY | | | 29 |
| 105.84 | 106.00 | 0.16 | 0.10 | GREY CLAY | | | |

| LITHOLOGY DEPTH | | | | LITHOLOGY DESCRIPTION | SEAM | CORE DIP | RQD |
|---|---|---|---|---|---|---|---|
| FROM | SPLITTO | THICK | RECO | | | | |
| | | | | | | | |
| BPA-366 | | | | Shantikhani Long Wall Block | | | |
| 106.00 | 109.00 | 3.00 | 0.00 | GREY SANDSTONE | | | |
| 109.00 | 110.56 | 1.56 | 0.88 | GREY SANDSTONE(FINE GRAINED) | | | 38 |
| 110.56 | 112.00 | 1.44 | 0.81 | GREY SANDSTONE(FINE GRAINED) MICA | | | 22 |
| 112.00 | 113.19 | 1.19 | 1.00 | GREY SANDSTONE(FINE TO MEDIUM GRAINED) MEDIUM STRONG | | | 80 |
| 113.19 | 114.77 | 1.58 | 1.33 | GREY SANDSTONE(MEDIUM GRAINED) MEDIUM STRONG | | | 81 |
| 114.77 | 115.00 | 0.23 | 0.19 | GREY SANDSTONE(FINE GRAINED) | | | |
| 115.00 | 116.99 | 1.99 | 1.88 | GREY SANDSTONE(FINE TO MEDIUM GRAINED) MEDIUM STRONG | | | 74 |
| 116.99 | 118.00 | 1.01 | 0.96 | GREY SANDSTONE(COARSE GRAINED) MEDIUM STRONG | | | 63 |
| 118.00 | 121.00 | 3.00 | 1.69 | GREY SANDSTONE(COARSE GRAINED) | | | 19 |
| 121.00 | 121.19 | 0.19 | 0.18 | GREY SANDSTONE(MEDIUM GRAINED) | | | 63 |
| 121.19 | 121.49 | 0.30 | 0.28 | GREY SANDSTONE(MED. TO C. GRAINED) | | | 93 |
| 121.49 | 124.00 | 2.51 | 2.33 | GREYISH WHITE SANDSTONE(COARSE GRAINED) | | | 55 |
| 124.00 | 125.34 | 1.34 | 1.09 | GREYISH WHITE SANDSTONE(MED. TO C. GRAINED) MEDIUM STRONG | | | 27 |
| 125.34 | 125.59 | 0.25 | 0.20 | GREYISH WHITE SANDSTONE(MEDIUM GRAINED) | | | |
| 125.59 | 127.00 | 1.41 | 1.15 | GREY SANDSTONE(MED. TO C. GRAINED) | | | 40 |
| 127.00 | 127.76 | 0.76 | 0.75 | GREYISH WHITE SANDSTONE(COARSE GRAINED) PEBBLY AT PLACES | | | 71 |
| 127.76 | 128.59 | 0.83 | 0.82 | GREYISH WHITE SANDSTONE(MED. TO C. GRAINED) SOFT | | | |
| 128.59 | 130.00 | 1.41 | 1.39 | GREYISH WHITE SANDSTONE(MEDIUM GRAINED) FRACTURE LOW ANGLE | | | 63 |
| 130.00 | 131.96 | 1.96 | 1.78 | GREYISH WHITE SANDSTONE(MED. TO C. GRAINED) MICACEOUS MEDIUM STRONG | | | 81 |
| 131.96 | 132.51 | 0.55 | 0.50 | GREY CLAY | | | |
| 132.51 | 133.00 | 0.49 | 0.45 | GREY SANDY SHALE | | | |
| 133.00 | 133.60 | 0.60 | 0.57 | GREY SANDSTONE(FINE GRAINED) MICA | | | 87 |
| 133.60 | 133.84 | 0.24 | 0.23 | GREY SANDSTONE(MEDIUM GRAINED) MICA MEDIUM STRONG | | | 62 |
| 133.84 | 134.42 | 0.58 | 0.55 | GREY SANDSTONE(FINE TO MEDIUM GRAINED) | | | 34 |
| 134.42 | 135.10 | 0.68 | 0.65 | GREY SANDSTONE(MEDIUM GRAINED) | | | 18 |
| 135.10 | 135.27 | 0.17 | 0.16 | GREY SANDSTONE(FINE GRAINED) MICACEOUS | | | |
| 135.27 | 135.59 | 0.32 | 0.30 | GREY SANDSTONE(FINE TO MEDIUM GRAINED) | | | |
| 135.59 | 136.00 | 0.41 | 0.39 | GREY SANDSTONE(FINE GRAINED) MICA LAMINATED < 30 MM | | | 61 |
| 136.00 | 136.27 | 0.27 | 0.27 | GREY SANDSTONE(FINE GRAINED) MICA LAMINATED < 30 MM | | | 85 |
| 136.27 | 137.27 | 1.00 | 1.00 | GREY SANDSTONE(FINE TO MEDIUM GRAINED) MEDIUM STRONG | | | 86 |
| 137.27 | 137.94 | 0.67 | 0.67 | GREY SANDSTONE(MEDIUM GRAINED) | | | 18 |
| 137.94 | 138.84 | 0.90 | 0.90 | GREY SANDSTONE(FINE TO MEDIUM GRAINED) FRIABLE | | | |
| 138.84 | 139.00 | 0.16 | 0.16 | GREY SANDSTONE(MEDIUM GRAINED) | | | 100 |
| 139.00 | 139.31 | 0.31 | 0.30 | GREY SANDSTONE(MEDIUM GRAINED) MEDIUM STRONG | | | 97 |
| 139.31 | 141.86 | 2.55 | 2.43 | GREY SANDSTONE(MED. TO C. GRAINED) HARD | | | 91 |
| 141.86 | 142.00 | 0.14 | 0.13 | GREY SANDSTONE(FINE GRAINED) | | | |
| 142.00 | 143.80 | 1.80 | 1.80 | GREY SANDSTONE(MED. TO C. GRAINED) MEDIUM STRONG | | | 87 |
| 143.80 | 144.01 | 0.21 | 0.21 | GREY SANDSTONE(FINE TO MEDIUM GRAINED) MEDIUM STRONG | | | 100 |
| 144.01 | 144.59 | 0.58 | 0.58 | GREY SANDSTONE(MEDIUM GRAINED) | | | 72 |
| 144.59 | 145.00 | 0.41 | 0.41 | GREY SANDSTONE(FINE GRAINED) MICA | | | 100 |
| 145.00 | 145.09 | 0.09 | 0.09 | GREY SANDSTONE(FINE GRAINED) | | | |
| 145.09 | 148.00 | 2.91 | 2.80 | GREY SANDSTONE(MED. TO C. GRAINED) | | | 81 |
| 148.00 | 148.65 | 0.65 | 0.58 | GREY SANDSTONE(MED. TO C. GRAINED) MEDIUM STRONG | | | 75 |
| 148.65 | 148.93 | 0.28 | 0.25 | GREY SANDSTONE(MEDIUM GRAINED) | | | 89 |
| 148.93 | 151.00 | 2.07 | 1.94 | GREY SANDSTONE(COARSE GRAINED) PEBBLY AT PLACES MEDIUM STRONG | | | 73 |

| LITHOLOGY DEPTH | | | | LITHOLOGY DESCRIPTION | SEAM | CORE DIP | RQD |
|---|---|---|---|---|---|---|---|
| FROM | SPLITTO | THICK | RECO | | | | |
| | | | | | | | |
| BPA-366 | | | | Shantikhani Long Wall Block | | | |
| 151.00 | 154.00 | 3.00 | 3.00 | GREY SANDSTONE(COARSE GRAINED) PEBBLY AT PLACES MEDIUM STRONG | | | 71 |
| 154.00 | 154.44 | 0.44 | 0.43 | GREY SANDSTONE(COARSE GRAINED) | | | 66 |
| 154.44 | 157.00 | 2.56 | 2.49 | GREY SANDSTONE(MED. TO C. GRAINED) | | | 84 |
| 157.00 | 158.10 | 1.10 | 0.93 | GREY SANDSTONE(FINE GRAINED) MICA | | | 29 |
| 158.10 | 158.46 | 0.36 | 0.30 | GREY SANDSTONE(MED. TO C. GRAINED) | | | |
| 158.46 | 159.41 | 0.95 | 0.80 | GREY SANDSTONE(COARSE GRAINED) | | | 74 |
| 159.41 | 160.00 | 0.59 | 0.50 | GREY CLAY SANDY | | | |
| 160.00 | 160.14 | 0.14 | 0.14 | GREY SHALE | | | |
| 160.14 | 161.14 | 1.00 | 1.00 | GREY CLAY | | | |
| 161.14 | 161.90 | 0.76 | 0.76 | LIGHT GREEN SANDSTONE(FINE GRAINED) | | | 80 |
| 161.90 | 162.80 | 0.90 | 0.90 | GREY SANDSTONE(FINE GRAINED) | | | 93 |
| 162.80 | 163.00 | 0.20 | 0.20 | GREY SANDSTONE(MEDIUM GRAINED) | | | 100 |
| 163.00 | 164.36 | 1.36 | 1.36 | GREY SANDSTONE(MED. TO C. GRAINED) | | | 90 |
| 164.36 | 164.76 | 0.40 | 0.40 | GREY SANDSTONE(FINE GRAINED) MICA LAMINATED < 30 MM | | | 82 |
| 164.76 | 166.00 | 1.24 | 1.23 | GREY SANDSTONE(MED. TO C. GRAINED) | | | 71 |
| 166.00 | 169.00 | 3.00 | 3.00 | GREY SANDSTONE(MED. TO C. GRAINED) MEDIUM STRONG | | | 83 |
| 169.00 | 170.40 | 1.40 | 1.30 | GREY SANDSTONE(COARSE GRAINED) | | | |
| 170.40 | 170.78 | 0.38 | 0.35 | GREY CLAY | | | |
| 170.78 | 171.64 | 0.86 | 0.80 | DARK GREY CLAY | | | |
| 171.64 | 171.86 | 0.22 | 0.20 | GREY CLAY SANDY | | | |
| 171.86 | 172.00 | 0.14 | 0.14 | GREY SANDSTONE(FINE GRAINED) | | | 93 |
| 172.00 | 173.20 | 1.20 | 1.20 | GREY SANDSTONE(FINE TO MEDIUM GRAINED) MEDIUM STRONG | | | 100 |
| 173.20 | 173.92 | 0.72 | 0.72 | GREY SANDSTONE(FINE GRAINED) MICACEOUS MEDIUM STRONG | | | 94 |
| 173.92 | 175.00 | 1.08 | 1.08 | GREY SANDSTONE(MED. TO C. GRAINED) | | | 100 |
| 175.00 | 178.00 | 3.00 | 2.60 | GREY SANDSTONE(COARSE GRAINED) | | | 74 |
| 178.00 | 180.73 | 2.73 | 2.06 | GREY SANDSTONE(FINE TO MEDIUM GRAINED) MEDIUM STRONG | | | 68 |
| 180.73 | 181.00 | 0.27 | 0.20 | DARK GREY SANDY SHALE | | | |
| 181.00 | 181.67 | 0.67 | 0.60 | GREY SANDY SHALE | | | |
| 181.67 | 182.63 | 0.96 | 0.86 | DARK GREY SANDY SHALE MICACEOUS | | | 58 |
| 182.63 | 183.41 | 0.78 | 0.70 | GREY SANDSTONE(FINE GRAINED) MICA LAMINATED < 30 MM | | | 78 |
| 183.41 | 184.00 | 0.59 | 0.54 | GREY SANDSTONE(FINE TO MEDIUM GRAINED) | | | 82 |
| 184.00 | 187.00 | 3.00 | 3.00 | GREY SANDSTONE(FINE TO MEDIUM GRAINED) MICA | | | 96 |
| 187.00 | 187.94 | 0.94 | 0.89 | GREY SANDSTONE(FINE TO MEDIUM GRAINED) | | | 95 |
| 187.94 | 188.68 | 0.74 | 0.70 | GREY SANDSTONE(FINE TO MEDIUM GRAINED) SOFT | | | |
| 188.68 | 190.00 | 1.32 | 1.26 | GREY SANDSTONE(MEDIUM GRAINED) | | | 72 |
| 190.00 | 192.65 | 2.65 | 2.42 | GREY SANDSTONE(FINE TO MEDIUM GRAINED) | | | 53 |
| 192.65 | 193.00 | 0.35 | 0.32 | GREY CLAY | | | |
| 193.00 | 194.03 | 1.03 | 1.03 | LIGHT GREEN SANDSTONE(FINE GRAINED) | | | 93 |
| 194.03 | 194.41 | 0.38 | 0.38 | GREY SANDSTONE(FINE GRAINED) MICACEOUS | | | 100 |
| 194.41 | 196.00 | 1.59 | 1.59 | GREY SANDSTONE(FINE TO MEDIUM GRAINED) MASSIVE | | | 66 |
| 196.00 | 196.57 | 0.57 | 0.57 | GREY SANDSTONE(FINE TO MEDIUM GRAINED) | | | 95 |
| 196.57 | 196.87 | 0.30 | 0.30 | DARK GREY SHALE | | | |
| 196.87 | 196.91 | 0.04 | 0.04 | SHALY COAL | | | |
| 196.91 | 197.00 | 0.09 | 0.09 | DARK GREY SHALE | | | |
| 197.00 | 197.60 | 0.60 | 0.60 | DARK GREY CLAY | | | |
| 197.60 | 198.44 | 0.84 | 0.84 | LIGHT GREEN SANDSTONE(FINE GRAINED) | | | 95 |
| 198.44 | 199.00 | 0.56 | 0.56 | GREY SANDSTONE(FINE TO MEDIUM GRAINED) | | | 100 |

| LITHOLOGY DEPTH | | | | LITHOLOGY DESCRIPTION | SEAM | CORE DIP | RQD |
|---|---|---|---|---|---|---|---|
| FROM | SPLITTO | THICK | RECO | | | | |
| BPA-366 | | | | Shantikhani Long Wall Block | | | |
| 199.00 | 199.61 | 0.61 | 0.59 | GREY SANDSTONE(FINE TO MEDIUM GRAINED) | | | 82 |
| 199.61 | 202.00 | 2.39 | 2.39 | GREY SANDSTONE(COARSE GRAINED) MEDIUM STRONG | | | 71 |
| 202.00 | 202.20 | 0.20 | 0.20 | GREY SANDSTONE(MEDIUM GRAINED) | | | 100 |
| 202.20 | 202.30 | 0.10 | 0.10 | DARK GREY SHALE | | | |
| 202.30 | 203.30 | 1.00 | 1.00 | DARK GREY CLAY | | | |
| 203.30 | 204.71 | 1.41 | 1.41 | GREY SANDSTONE(FINE GRAINED) | | | 94 |
| 204.71 | 205.00 | 0.29 | 0.29 | GREY SANDSTONE(FINE GRAINED) MICACEOUS | | | 100 |
| 205.00 | 206.21 | 1.21 | 1.21 | GREY SANDSTONE(FINE GRAINED) COALY STREAKS | | | 83 |
| 206.21 | 206.55 | 0.34 | 0.34 | GREY SANDSTONE(COARSE GRAINED) | | | 100 |
| 206.55 | 207.43 | 0.88 | 0.88 | GREY SANDSTONE(MED. TO C. GRAINED) PEBBLY | | | 88 |
| 207.43 | 207.84 | 0.41 | 0.41 | DARK GREY SHALE | | | |
| 207.84 | 208.00 | 0.16 | 0.15 | GREY SANDSTONE(FINE GRAINED) | | | 100 |
| 208.00 | 210.18 | 2.18 | 2.18 | GREY SANDSTONE(FINE GRAINED) MASSIVE | | | 100 |
| 210.18 | 211.00 | 0.82 | 0.82 | GREY SANDSTONE(FINE TO MEDIUM GRAINED) COALY STREAKS | | | 100 |
| 211.00 | 214.00 | 3.00 | 2.86 | GREY SANDSTONE(COARSE GRAINED) | | | 94 |
| 214.00 | 216.75 | 2.75 | 2.71 | GREY SANDSTONE(COARSE GRAINED) MEDIUM STRONG | | | 88 |
| 216.75 | 217.00 | 0.25 | 0.25 | GREY SANDSTONE(FINE TO MEDIUM GRAINED) COALY STREAKS MEDIUM STRONG | | | 100 |
| 217.00 | 217.87 | 0.87 | 0.82 | GREY SANDSTONE(FINE TO MEDIUM GRAINED) | | | 51 |
| 217.87 | 219.16 | 1.29 | 1.21 | GREY SANDSTONE(FINE GRAINED) | | | 86 |
| 219.16 | 219.90 | 0.74 | 0.70 | GREYISH WHITE SANDSTONE(COARSE GRAINED) | | | 81 |
| 219.90 | 220.00 | 0.10 | 0.09 | GREYISH WHITE SANDSTONE(FINE GRAINED) | | | |
| 220.00 | 220.18 | 0.18 | 0.18 | GREYISH WHITE SANDSTONE(FINE GRAINED) | | | |
| 220.18 | 223.00 | 2.82 | 2.82 | GREYISH WHITE SANDSTONE(MED. TO C. GRAINED) MICA | | | 90 |
| 223.00 | 224.01 | 1.01 | 0.99 | GREYISH WHITE SANDSTONE(FINE TO MEDIUM GRAINED) | | | 89 |
| 224.01 | 225.21 | 1.20 | 1.18 | GREYISH WHITE SANDSTONE(MED. TO C. GRAINED) | | | 91 |
| 225.21 | 226.00 | 0.79 | 0.77 | DARK GREY SHALE | | | |
| 226.00 | 226.35 | 0.35 | 0.35 | DARK GREY SHALE | | | |
| 226.35 | 226.81 | 0.46 | 0.46 | DARK GREY SANDSTONE(FINE GRAINED) | | | 100 |
| 226.81 | 227.02 | 0.21 | 0.21 | GREYISH WHITE SANDSTONE(FINE GRAINED) MICACEOUS | | | 100 |
| 227.02 | 228.02 | 1.00 | 1.00 | DARK GREY SHALE | | | |
| 228.02 | 228.82 | 0.80 | 0.80 | GREY CLAY | | | |
| 228.82 | 229.00 | 0.18 | 0.18 | GREYISH WHITE SANDSTONE(FINE GRAINED) | | | 67 |
| 229.00 | 229.62 | 0.62 | 0.62 | GREY SANDSTONE(FINE GRAINED) MICA | | | 44 |
| 229.62 | 230.64 | 1.02 | 1.02 | DARK GREY INT. SANDSTONE> SHALE MICACEOUS | | | 96 |
| 230.64 | 232.00 | 1.36 | 1.28 | GREY SANDSTONE(FINE GRAINED) STREAKS COALY | | | 93 |
| 232.00 | 232.35 | 0.35 | 0.34 | GREY SANDSTONE(FINE GRAINED) COALY STREAKS | | | 57 |
| 232.35 | 232.76 | 0.41 | 0.40 | GREY SANDSTONE(FINE TO MEDIUM GRAINED) | | | 98 |
| 232.76 | 235.00 | 2.24 | 2.16 | GREYISH WHITE SANDSTONE(MED. TO C. GRAINED) MASSIVE MEDIUM STRONG | | | 94 |
| 235.00 | 235.57 | 0.57 | 0.54 | GREYISH WHITE SANDSTONE(COARSE GRAINED) | | | 95 |
| 235.57 | 235.85 | 0.28 | 0.26 | SANDSTONE(FINE GRAINED) MICA | | | 71 |
| 235.85 | 236.19 | 0.34 | 0.32 | SHALY COAL | | | |
| 236.19 | 236.38 | 0.19 | 0.18 | CARB SHALE LOW | | | |
| 236.38 | 236.72 | 0.34 | 0.32 | DARK GREY SHALE | | | |
| 236.72 | 236.90 | 0.18 | 0.17 | CARB SHALE HIGH | | | |
| 236.90 | 237.14 | 0.24 | 0.23 | DARK GREY SHALE | | | |
| 237.14 | 237.55 | 0.41 | 0.39 | GREYISH WHITE SANDSTONE(FINE GRAINED) | | | 95 |

| LITHOLOGY DEPTH | | | | LITHOLOGY DESCRIPTION | SEAM | CORE DIP | RQD |
|---|---|---|---|---|---|---|---|
| FROM | SPLITTO | THICK | RECO | | | | |
| | | | | | | | |
| BPA-366 | | | | Shantikhani Long Wall Block | | | |
| 237.55 | 238.00 | 0.45 | 0.43 | GREYISH WHITE SANDSTONE(MEDIUM GRAINED) | | | 74 |
| 238.00 | 238.16 | 0.16 | 0.15 | GREYISH WHITE SANDSTONE(MEDIUM GRAINED) | | | 94 |
| 238.16 | 238.85 | 0.69 | 0.64 | GREYISH WHITE SANDSTONE(MED. TO C. GRAINED) | | | 80 |
| 238.85 | 240.27 | 1.42 | 1.32 | GREYISH WHITE SANDSTONE(FINE GRAINED) MICACEOUS LAMINATED < 30 MM | | | 82 |
| 240.27 | 240.56 | 0.29 | 0.27 | CARB SHALE LOW | 1A | | |
| 240.56 | 240.82 | 0.26 | 0.24 | SHALY COAL | 1A | | |
| 240.82 | 241.00 | 0.18 | 0.17 | DARK GREY SANDSTONE(FINE GRAINED) | | | 94 |
| 241.00 | 241.30 | 0.30 | 0.30 | DARK GREY SANDSTONE(FINE GRAINED) | | | 100 |
| 241.30 | 242.36 | 1.06 | 1.06 | GREYISH WHITE SANDSTONE(FINE GRAINED) MICACEOUS LAMINATED < 30 MM | | | 90 |
| 242.36 | 242.98 | 0.62 | 0.62 | GREYISH WHITE SANDSTONE(FINE TO MEDIUM GRAINED) | | | 74 |
| 242.98 | 244.00 | 1.02 | 1.02 | GREYISH WHITE SANDSTONE(FINE GRAINED) MICA | | | 93 |
| 244.00 | 247.00 | 3.00 | 2.88 | GREYISH WHITE SANDSTONE(COARSE GRAINED) MASSIVE | | | 86 |
| 247.00 | 250.00 | 3.00 | 2.95 | GREYISH WHITE SANDSTONE(COARSE GRAINED) PEBBLY AT PLACES MASSIVE MEDIUM STRONG | | | 87 |
| 250.00 | 253.00 | 3.00 | 2.75 | GREYISH WHITE SANDSTONE(COARSE GRAINED) MEDIUM STRONG | | | 92 |
| 253.00 | 253.27 | 0.27 | 0.26 | GREYISH WHITE SANDSTONE(COARSE GRAINED) | | | 96 |
| 253.27 | 254.82 | 1.55 | 1.50 | COAL | 1 | | |
| 254.82 | 256.00 | 1.18 | 1.15 | DARK GREY CLAY | | | |
| 256.00 | 256.49 | 0.49 | 0.47 | DARK GREY CLAY | | | |
| 256.49 | 256.56 | 0.07 | 0.07 | DARK GREY SHALE | | | |
| 256.56 | 256.96 | 0.40 | 0.39 | GREYISH WHITE INT. SANDSTONE> SHALE | | | |
| 256.96 | 257.28 | 0.32 | 0.31 | GREYISH WHITE SANDSTONE(FINE GRAINED) | | | 97 |
| 257.28 | 259.00 | 1.72 | 1.66 | GREYISH WHITE SANDSTONE(FINE TO MEDIUM GRAINED) PEBBLY AT PLACES | | | 90 |
| 259.00 | 262.00 | 3.00 | 3.00 | GREYISH WHITE SANDSTONE(MED. TO C. GRAINED) MASSIVE | | | 91 |
| 262.00 | 265.00 | 3.00 | 3.00 | GREYISH WHITE SANDSTONE(MED. TO C. GRAINED) MASSIVE | | | 95 |
| 265.00 | 265.94 | 0.94 | 0.94 | GREYISH WHITE SANDSTONE(MEDIUM GRAINED) | | | 87 |
| 265.94 | 266.52 | 0.58 | 0.58 | GREYISH WHITE SANDSTONE(FINE GRAINED) HARD | | | 100 |
| 266.52 | 268.00 | 1.48 | 1.47 | GREYISH WHITE SANDSTONE(MED. TO C. GRAINED) MICACEOUS | | | 86 |
| 268.00 | 268.67 | 0.67 | 0.67 | GREYISH WHITE SANDSTONE(COARSE GRAINED) | | | 91 |
| 268.67 | 269.26 | 0.59 | 0.59 | GREYISH WHITE SANDSTONE(FINE TO MEDIUM GRAINED) | | | 76 |
| 269.26 | 269.64 | 0.38 | 0.38 | GREYISH WHITE SANDSTONE(FINE GRAINED) MICACEOUS | | | 61 |
| 269.64 | 271.00 | 1.36 | 1.34 | GREYISH WHITE SANDSTONE(FINE TO MEDIUM GRAINED) MEDIUM STRONG | | | 61 |
| 271.00 | 271.36 | 0.36 | 0.36 | GREYISH WHITE SANDSTONE(MEDIUM GRAINED) | | | 100 |
| 271.36 | 271.55 | 0.19 | 0.19 | GREYISH WHITE SANDSTONE(FINE GRAINED) | | | 68 |
| 271.55 | 274.00 | 2.45 | 2.43 | GREYISH WHITE SANDSTONE(FINE TO MEDIUM GRAINED) | | | 77 |
| 274.00 | 277.00 | 3.00 | 3.00 | GREYISH WHITE SANDSTONE(MED. TO C. GRAINED) | | | 60 |
| 277.00 | 277.46 | 0.46 | 0.46 | GREYISH WHITE SANDSTONE(COARSE GRAINED) | | | 72 |
| 277.46 | 277.60 | 0.14 | 0.14 | CARB SHALE HIGH | | | |
| 277.60 | 278.30 | 0.70 | 0.70 | GREY CLAY | | | |
| 278.30 | 280.00 | 1.70 | 1.70 | SHALY COAL | 2 | | |
| 280.00 | 280.21 | 0.21 | 0.16 | COAL | 2 | | |
| 280.21 | 280.70 | 0.49 | 0.37 | GREY CLAY | 2 | | |
| 280.70 | 282.34 | 1.64 | 1.25 | COAL | 2 | | |
| 282.34 | 283.00 | 0.66 | 0.50 | SHALY COAL | 2 | | |
| 283.00 | 283.21 | 0.21 | 0.20 | COAL | 2 | | |

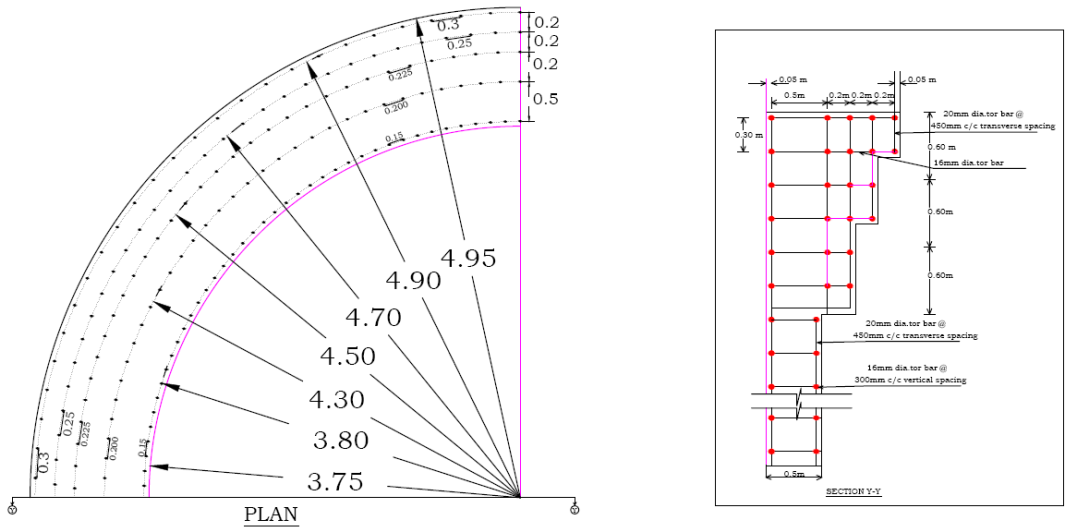
| LITHOLOGY DEPTH | | | | LITHOLOGY DESCRIPTION | SEAM | CORE DIP | RQD |
|---|---|---|---|---|---|---|---|
| FROM | SPLITTO | THICK | RECO | | | | |
| | | | | | | | |
| BPA-366 | | | | Shantikhani Long Wall Block | | | |
| 283.21 | 283.56 | 0.35 | 0.34 | DARK GREY SANDY SHALE | | | |
| 283.56 | 285.01 | 1.45 | 1.41 | GREYISH WHITE SANDSTONE(FINE GRAINED) PYRITIC MICACEOUS | | | 83 |
| 285.01 | 285.42 | 0.41 | 0.40 | GREYISH WHITE SANDSTONE(FINE TO MEDIUM GRAINED) AT PLACES MICACEOUS | | | 98 |
| 285.42 | 286.00 | 0.58 | 0.57 | GREYISH WHITE SANDSTONE(MED. TO C. GRAINED) | | | 71 |
| 286.00 | 287.00 | 1.00 | 1.00 | GREYISH WHITE SANDSTONE(MED. TO C. GRAINED) MEDIUM STRONG | | | 93 |
| 287.00 | 287.34 | 0.34 | 0.34 | GREYISH WHITE SANDSTONE(FINE GRAINED) MICACEOUS | | | 74 |
| 287.34 | 289.00 | 1.66 | 1.66 | GREYISH WHITE SANDSTONE(MED. TO C. GRAINED) MEDIUM STRONG | | | 96 |
| 289.00 | 292.00 | 3.00 | 2.83 | GREYISH WHITE SANDSTONE(MED. TO C. GRAINED) MEDIUM STRONG | | | 84 |
| 292.00 | 295.00 | 3.00 | 2.98 | GREYISH WHITE SANDSTONE(COARSE GRAINED) MASSIVE MEDIUM STRONG | | | 89 |
| 295.00 | 295.68 | 0.68 | 0.68 | GREYISH WHITE SANDSTONE(MED. TO C. GRAINED) | | | 90 |
| 295.68 | 297.06 | 1.38 | 1.37 | GREYISH WHITE SANDSTONE(FINE TO MEDIUM GRAINED) HARD | | | 99 |
| 297.06 | 298.00 | 0.94 | 0.93 | GREYISH WHITE SANDSTONE(MED. TO C. GRAINED) | | | 84 |
| 298.00 | 298.45 | 0.45 | 0.45 | GREYISH WHITE SANDSTONE(COARSE GRAINED) | | | 78 |
| 298.45 | 298.57 | 0.12 | 0.12 | COAL | | | |
| 298.57 | 298.87 | 0.30 | 0.30 | SHALY COAL | | | |
| 298.87 | 299.95 | 1.08 | 1.08 | DARK GREY SANDSTONE(FINE GRAINED) PYRITIC MICA LAMINATED < 30 MM | | | 81 |
| 299.95 | 301.00 | 1.05 | 1.04 | GREYISH WHITE SANDSTONE(FINE GRAINED) MICA LAMINATED < 30 MM | | | 100 |
| 301.00 | 304.00 | 3.00 | 2.99 | GREYISH WHITE SANDSTONE(FINE GRAINED) MICA LAMINATED < 30 MM | | | 82 |
| 304.00 | 305.50 | 1.50 | 1.50 | DARK GREY SANDY SHALE CARBONACEOUS MICA LAMINATED < 30 MM | | | 73 |
| 305.50 | 306.25 | 0.75 | 0.75 | SHALY COAL | LB1 | | |
| 306.25 | 306.50 | 0.25 | 0.25 | CARB SHALE LOW | LB1 | | |
| 306.50 | 306.56 | 0.06 | 0.06 | GREYISH WHITE SANDSTONE(FINE GRAINED) | | | |
| 306.56 | 306.66 | 0.10 | 0.10 | CARB SHALE HIGH | | | |
| 306.66 | 307.00 | 0.34 | 0.34 | GREYISH WHITE SANDSTONE(FINE GRAINED) MICA | | | |
| 307.00 | 308.35 | 1.35 | 1.29 | GREYISH WHITE SANDSTONE(FINE GRAINED) MICA | | | 80 |
| 308.35 | 310.00 | 1.65 | 1.57 | GREYISH WHITE SANDSTONE(MED. TO C. GRAINED) HARD | | | 88 |
| 310.00 | 311.84 | 1.84 | 1.84 | GREYISH WHITE SANDSTONE(MED. TO C. GRAINED) | | | 91 |
| 311.84 | 313.00 | 1.16 | 1.16 | GREYISH WHITE SANDSTONE(FINE TO MEDIUM GRAINED) MICACEOUS | | | 100 |
| 313.00 | 316.00 | 3.00 | 2.87 | GREYISH WHITE SANDSTONE(MED. TO C. GRAINED) | | | 89 |
| 316.00 | 316.15 | 0.15 | 0.15 | COAL | 3B | | |
| 316.15 | 316.40 | 0.25 | 0.25 | CARB SHALE LOW | 3B | | |
| 316.40 | 317.41 | 1.01 | 1.00 | SHALY COAL | 3B | | |
| 317.41 | 317.49 | 0.08 | 0.08 | DARK GREY INT. SANDSTONE> SHALE | | | |
| 317.49 | 317.72 | 0.23 | 0.23 | GREYISH WHITE SANDSTONE(FINE GRAINED) PYRITIC | | | 100 |
| 317.72 | 318.06 | 0.34 | 0.34 | DARK GREY SANDSTONE(FINE GRAINED) | | | 100 |
| 318.06 | 319.00 | 0.94 | 0.91 | GREYISH WHITE SANDSTONE(FINE GRAINED) MICA LAMINATED < 30 MM | | | 99 |
| 319.00 | 319.35 | 0.35 | 0.34 | GREYISH WHITE SANDSTONE(FINE GRAINED) PYRITIC MICA | | | 54 |
| 319.35 | 320.61 | 1.26 | 1.23 | GREYISH WHITE SANDSTONE(MED. TO C. GRAINED) | | | 95 |
| 320.61 | 320.77 | 0.16 | 0.16 | GREYISH WHITE SANDSTONE(MEDIUM GRAINED) MICA | | | 100 |

| LITHOLOGY DEPTH | | | | LITHOLOGY DESCRIPTION | SEAM | CORE DIP | RQD |
|---|---|---|---|---|---|---|---|
| FROM | SPLITTO | THICK | RECO | | | | |
| BPA-366 | | | | Shantikhani Long Wall Block | | | |
| 320.77 | 322.00 | 1.23 | 1.06 | GREYISH WHITE SANDSTONE(MED. TO C. GRAINED) MICA LAMINATED < 30 MM | | | 86 |
| 322.00 | 323.17 | 1.17 | 1.15 | GREYISH WHITE SANDSTONE(MED. TO C. GRAINED) | | | 93 |
| 323.17 | 323.48 | 0.31 | 0.30 | GREY INT. SANDSTONE> SHALE MICA | | | 97 |
| 323.48 | 323.89 | 0.41 | 0.40 | GREYISH WHITE SANDSTONE(FINE GRAINED) MICA | | | 98 |
| 323.89 | 325.00 | 1.11 | 1.09 | GREYISH WHITE SANDSTONE(FINE TO MEDIUM GRAINED) PYRITIC HARD | | | 98 |
| 325.00 | 328.00 | 3.00 | 3.00 | GREYISH WHITE SANDSTONE(COARSE GRAINED) PYRITIC MEDIUM STRONG | | | 93 |
| 328.00 | 329.62 | 1.62 | 1.57 | GREYISH WHITE SANDSTONE(FINE TO MEDIUM GRAINED) MICA | | | 67 |
| 329.62 | 331.00 | 1.38 | 1.33 | GREYISH WHITE SANDSTONE(MED. TO C. GRAINED) | | | 96 |
| 331.00 | 331.92 | 0.92 | 0.90 | GREYISH WHITE SANDSTONE(MED. TO C. GRAINED) MASSIVE MEDIUM STRONG | | | 98 |
| 331.92 | 332.53 | 0.61 | 0.60 | GREYISH WHITE SANDSTONE(FINE TO MEDIUM GRAINED) MICACEOUS | | | 84 |
| 332.53 | 334.00 | 1.47 | 1.44 | GREYISH WHITE SANDSTONE(MEDIUM GRAINED) | | | 86 |
| 334.00 | 337.00 | 3.00 | 2.92 | GREYISH WHITE SANDSTONE(MEDIUM GRAINED) MASSIVE MEDIUM STRONG | | | 82 |
| 337.00 | 337.93 | 0.93 | 0.89 | GREYISH WHITE SANDSTONE(FINE TO MEDIUM GRAINED) PEBBLY AT PLACES | | | 87 |
| 337.93 | 338.43 | 0.50 | 0.48 | COAL | 3A | | |
| 338.43 | 338.71 | 0.28 | 0.27 | GREYISH WHITE SANDSTONE(FINE GRAINED) | | | 96 |
| 338.71 | 339.27 | 0.56 | 0.54 | GREYISH WHITE SANDSTONE(FINE GRAINED) MICA LAMINATED < 30 MM | | | 89 |
| 339.27 | 340.00 | 0.73 | 0.70 | GREYISH WHITE SANDSTONE(FINE TO MEDIUM GRAINED) MICA | | | 96 |
| 340.00 | 343.00 | 3.00 | 2.82 | GREYISH WHITE SANDSTONE(MED. TO C. GRAINED) AT PLACES PYRITIC | | | 80 |
| 343.00 | 344.31 | 1.31 | 1.12 | GREYISH WHITE SANDSTONE(COARSE GRAINED) MEDIUM STRONG | | | 79 |
| 344.31 | 345.11 | 0.80 | 0.74 | GREYISH WHITE SANDSTONE(FINE GRAINED) MICA | | | 76 |
| 345.11 | 346.00 | 0.89 | 0.89 | GREYISH WHITE SANDSTONE(COARSE GRAINED) | | | 93 |
| 346.00 | 347.32 | 1.32 | 1.31 | GREYISH WHITE SANDSTONE(COARSE TO V.C.GRAINED) | | | 67 |
| 347.32 | 347.68 | 0.36 | 0.36 | GREYISH WHITE SANDSTONE(FINE GRAINED) PYRITIC HARD | | | 100 |
| 347.68 | 348.51 | 0.83 | 0.82 | GREYISH WHITE SANDSTONE(MED. TO C. GRAINED) | | | 90 |
| 348.51 | 348.74 | 0.23 | 0.23 | GREYISH WHITE SANDSTONE(FINE GRAINED) MICA LAMINATED < 30 MM | | | 100 |
| 348.74 | 349.00 | 0.26 | 0.26 | GREYISH WHITE SANDSTONE(FINE TO MEDIUM GRAINED) | | | |
| 349.00 | 351.02 | 2.02 | 2.02 | GREYISH WHITE SANDSTONE(FINE TO MEDIUM GRAINED) COALY STREAKS MICA | | | 96 |
| 351.02 | 351.26 | 0.24 | 0.24 | COAL | | | |
| 351.26 | 351.64 | 0.38 | 0.38 | DARK GREY SHALE | | | |
| 351.64 | 352.00 | 0.36 | 0.27 | SHALY COAL | SJT | | |
| 352.00 | 353.58 | 1.58 | 1.55 | COAL | SJT | | |
| 353.58 | 354.40 | 0.82 | 0.80 | DARK GREY SHALE | | | |
| 354.40 | 354.50 | 0.10 | 0.10 | COAL | SJB | | |
| 354.50 | 355.00 | 0.50 | 0.49 | CARB SHALE LOW | SJB | | |
| 355.00 | 355.26 | 0.26 | 0.26 | CARB SHALE LOW | SJB | | |
| 355.26 | 358.00 | 2.74 | 2.74 | COAL | SJB | | |
| 358.00 | 359.35 | 1.35 | 1.30 | COAL | SJB | | |
| 359.35 | 360.37 | 1.02 | 0.98 | GREYISH WHITE SANDSTONE(FINE GRAINED) MICA LAMINATED < 30 MM | | | 62 |

| LITHOLOGY DEPTH FROM | SPLITTO | THICK | RECO | LITHOLOGY DESCRIPTION | SEAM | CORE DIP | RQD |
|---|---|---|---|---|---|---|---|
| BPA-366 | | | | Shantikhani Long Wall Block | | | |
| 360.37 | 361.00 | 0.63 | 0.61 | GREYISH WHITE SANDSTONE(FINE TO MEDIUM GRAINED) MEDIUM STRONG | | | 97 |
| 361.00 | 363.15 | 2.15 | 2.15 | GREYISH WHITE SANDSTONE(FINE TO MEDIUM GRAINED) PYRITIC | | | 93 |
| 363.15 | 364.00 | 0.85 | 0.85 | GREYISH WHITE SANDSTONE(MED. TO C. GRAINED) PYRITIC | | | 91 |
| 364.00 | 365.56 | 1.56 | 1.42 | GREYISH WHITE SANDSTONE(COARSE TO V.C.GRAINED) PYRITIC | | | 55 |
| 365.56 | 366.00 | 0.44 | 0.42 | GREYISH WHITE SANDSTONE(FINE GRAINED) | | | 91 |
| 366.00 | 366.63 | 0.63 | 0.60 | COAL | LB3 | | |
| 366.63 | 366.76 | 0.13 | 0.12 | GREYISH WHITE SANDSTONE(FINE GRAINED) | | | 92 |
| 366.76 | 369.00 | 2.24 | 2.13 | GREYISH WHITE SANDSTONE(FINE GRAINED) MICA | | | 95 |
| 369.00 | 370.39 | 1.39 | 1.18 | GREYISH WHITE SANDSTONE(FINE GRAINED) MICA LAMINATED < 30 MM | | | 80 |
| 370.39 | 372.00 | 1.61 | 1.36 | GREYISH WHITE SANDSTONE(MED. TO C. GRAINED) MEDIUM STRONG | | | 79 |
| 372.00 | 375.00 | 3.00 | 3.00 | GREYISH WHITE SANDSTONE(MED. TO C. GRAINED) PEBBLY PYRITIC MEDIUM STRONG | | | 93 |
| 375.00 | 376.00 | 1.00 | 0.92 | GREYISH WHITE SANDSTONE(FINE TO MEDIUM GRAINED) MICA | | | 59 |
| 376.00 | 379.00 | 3.00 | 2.90 | GREYISH WHITE SANDSTONE(FINE TO MEDIUM GRAINED) MEDIUM STRONG | | | 78 |
| 379.00 | 380.32 | 1.32 | 1.25 | GREYISH WHITE SANDSTONE(FINE TO MEDIUM GRAINED) MICACEOUS | | | 95 |
| 380.32 | 382.00 | 1.68 | 1.60 | GREYISH WHITE SANDSTONE(MED. TO C. GRAINED) PYRITIC | | | 88 |
| 382.00 | 383.24 | 1.24 | 1.24 | GREYISH WHITE SANDSTONE(MED. TO C. GRAINED) MEDIUM STRONG | | | 77 |
| 383.24 | 385.00 | 1.76 | 1.76 | GREYISH WHITE SANDSTONE(MEDIUM GRAINED) | | | 97 |
| 385.00 | 386.22 | 1.22 | 1.22 | GREYISH WHITE SANDSTONE(MED. TO C. GRAINED) COALY AT PLACES | | | 100 |
| 386.22 | 386.72 | 0.50 | 0.50 | COAL | | | |
| 386.72 | 387.00 | 0.28 | 0.28 | DARK GREY INT. SANDSTONE> SHALE | | | 75 |

Bore Hole BPA-366 Closed at : 387.00

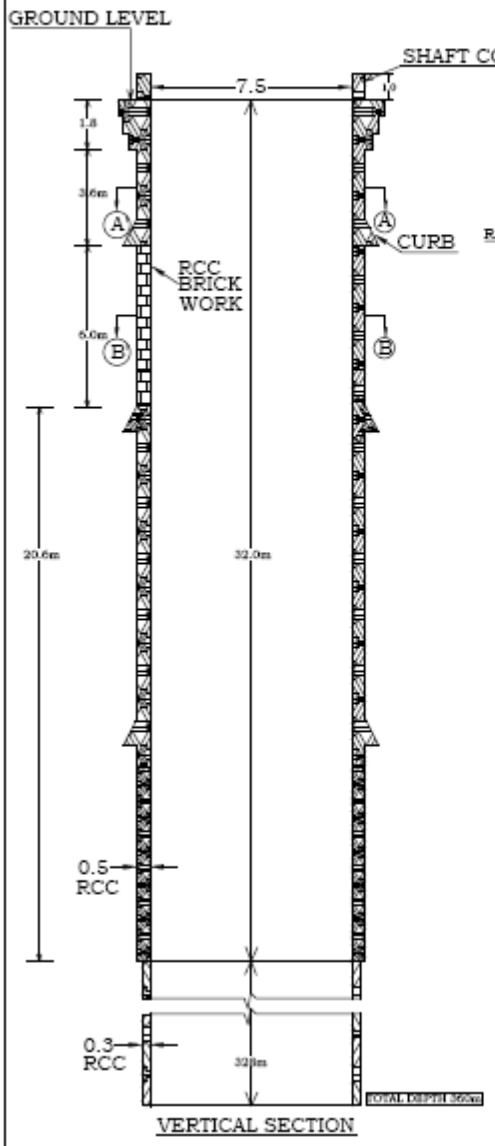
PLATE No.3



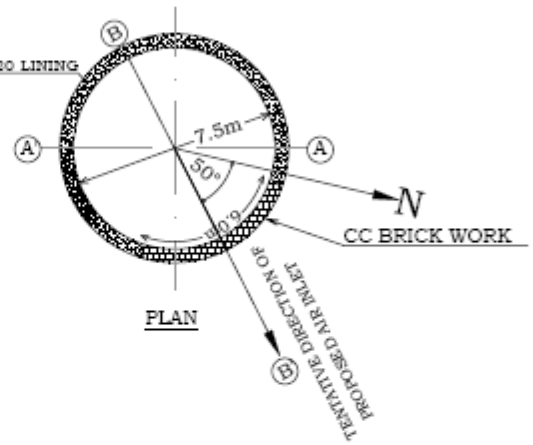

Vertical section showing reinforcement design in 500mm thick shaft collar lining & part plan at section Y-Y of shaft collar showing dowel reinforcement in collar concrete near surface

ALL DIMENSIONS ARE IN METRES

# PLATE No. 3A




VERTICAL SECTION



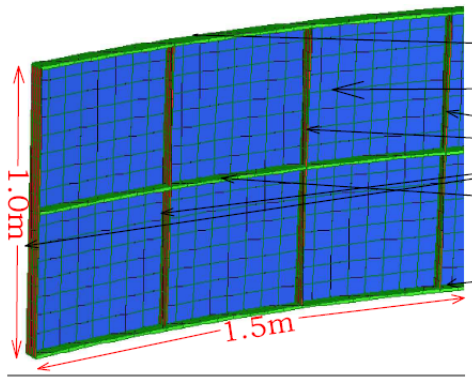

PLAN

FOR TENDERING PURPOSE ONLY

THE S.C.Co.LTD
MANDAMARRI AREA
SHANTHIKHANI LONGWALL PROJECT
SHAFT COLLAR AND CLOSED AIR INLET

NOT TO SCALE

PLATE NO - 3B




Horizontal ribs = 5 mm thick
Base = 3 mm thick plate
Vertical ribs = 5 mm thick
Horizontal ribs = 5 mm thick
Bottom horizontal rib= 10 mm thick
(Height of all ribs = 50 mm)

WEIGHT OF 1 SEGMENT
= 55kg

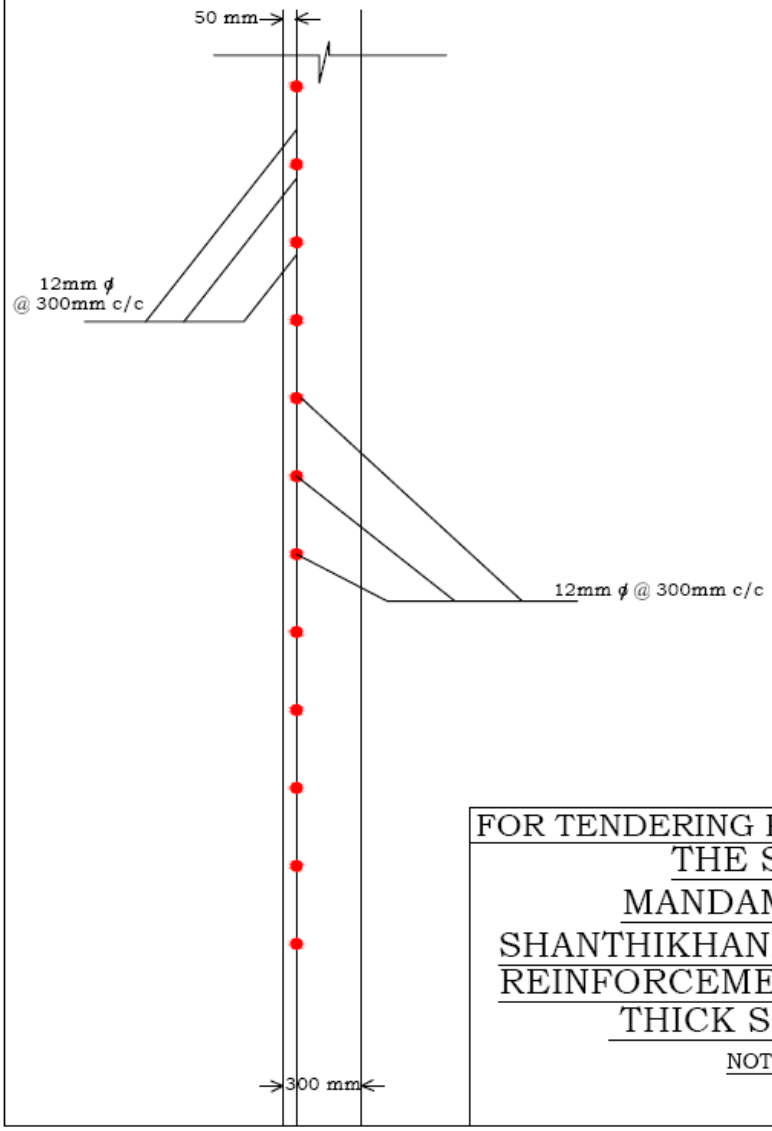
FOR TENDERING PURPOSE ONLY

# THE S.C.Co.LTD
## MANDAMARRI AREA
## SHANTHIKHANI LONGWALL PROJECT
## REINFORCEMENT OF STEEL SEGMENT

NOT TO SCALE

ALL DIMENSIONS ARE IN METRES

PLATE No.4




FOR TENDERING PURPOSE ONLY

THE S.C.Co.LTD

MANDAMARRI AREA

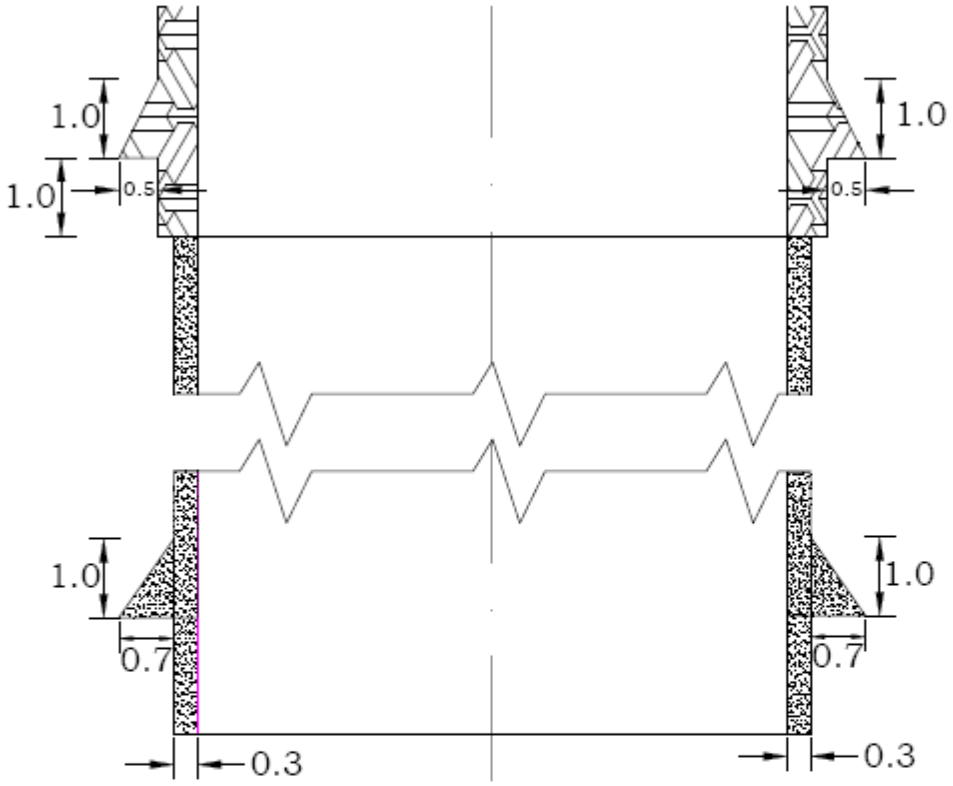
SHANTHIKHANI LONGWALL PROJECT

REINFORCEMENT DESIGN IN 300 mm THICK SHAFT LINING

NOT TO SCALE

ALL DIMENSIONS ARE IN METRES

# PLATE No.5



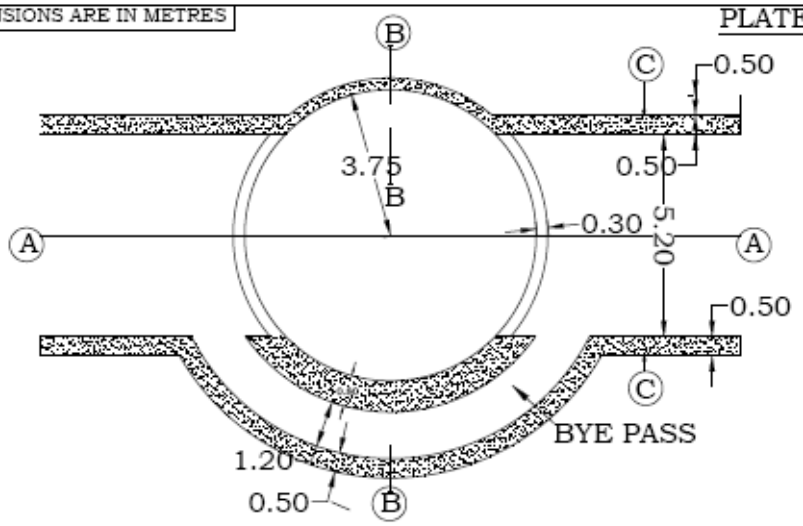

FOR TENDERING PURPOSE ONLY

## THE S.C.Co.LTD
## MANDAMARRI AREA
## SHANTHIKHANI LONGWALL PROJECT
## SHAFT CURBING

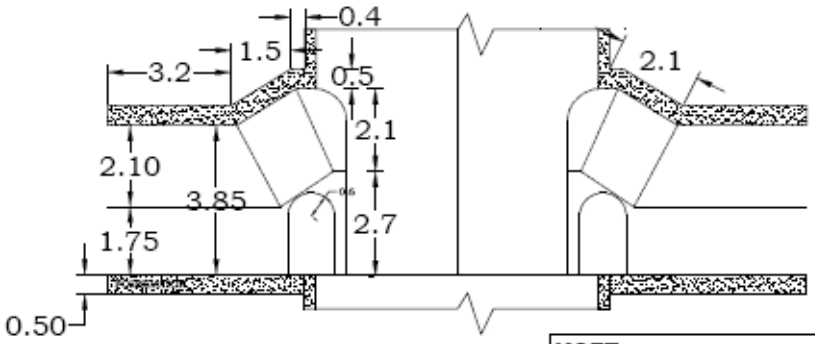
NOT TO SCALE

ALL DIMENSIONS ARE IN METRES

PLATE No.6

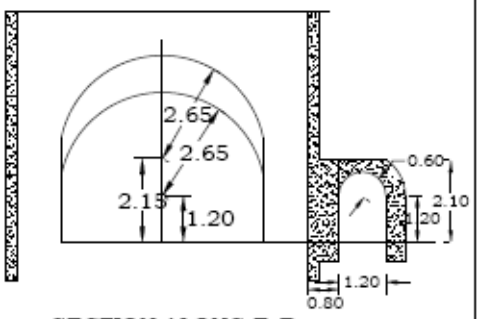



PLAN

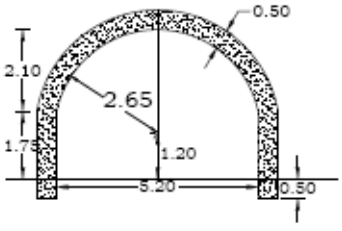



SECTION ALONG A-A

NOTE:-
THE WALLS AND ROOF OF THE INSETS SHALL BE CAST WITH MONOLITHIC RCC OF GRADE M-20




SECTION ALONG B-B




SECTION ALONG C-C

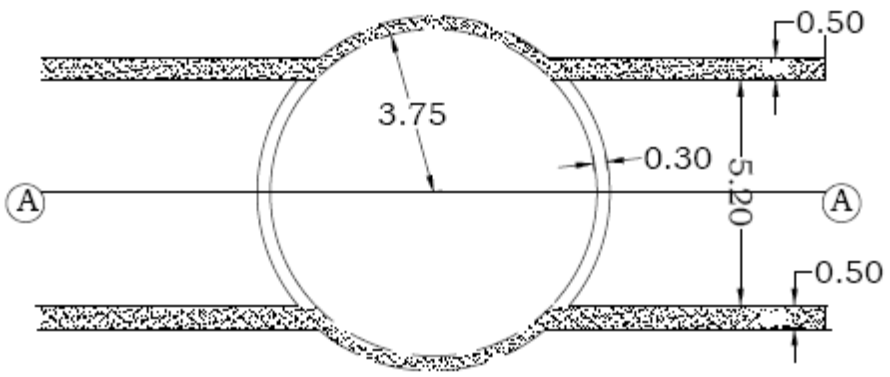
FOR TENDERING PURPOSE ONLY

# THE S.C.Co.LTD
# MANDAMARRI AREA
# SHANTHIKHANI LONGWALL PROJECT
# MAIN INSET AT SHAFT IN 2-SEAM

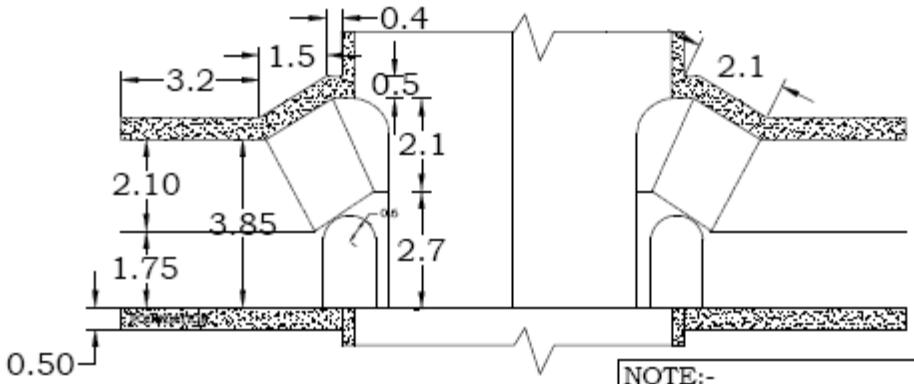
NOT TO SCALE

ALL DIMENSIONS ARE IN METRES

PLATE No.7




PLAN




SECTION ALONG A-A

NOTE:-
THE WALLS AND ROOF OF THE INSETS SHALL BE CAST WITH MONOLITHIC RCC OF GRADE M-20

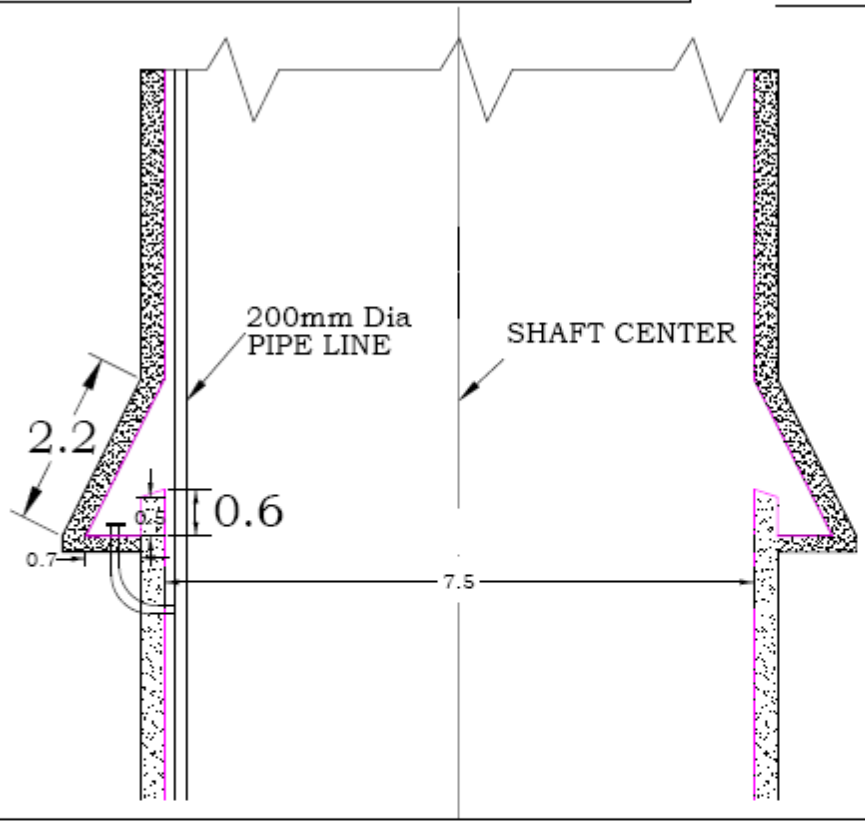
FOR TENDERING PURPOSE ONLY

# THE S.C.Co.LTD
# MANDAMARRI AREA
# SHANTHIKHANI LONGWALL PROJECT
# MAIN INSET AT SHAFT IN SJ SEAM BOTTOM
# SECTION WITH FOUR SIDE OPENINGS

NOT TO SCALE

ALL DIMENSIONS ARE IN METRES

PLATE No.8




FOR TENDERING PURPOSE ONLY

# THE S.C.Co.LTD
# MANDAMARRI AREA
# SHANTHIKHANI LONGWALL PROJECT
# SHAFT GARLAND

NOT TO SCALE

ALL DIMENSIONS ARE IN METRES

PLATE No.9

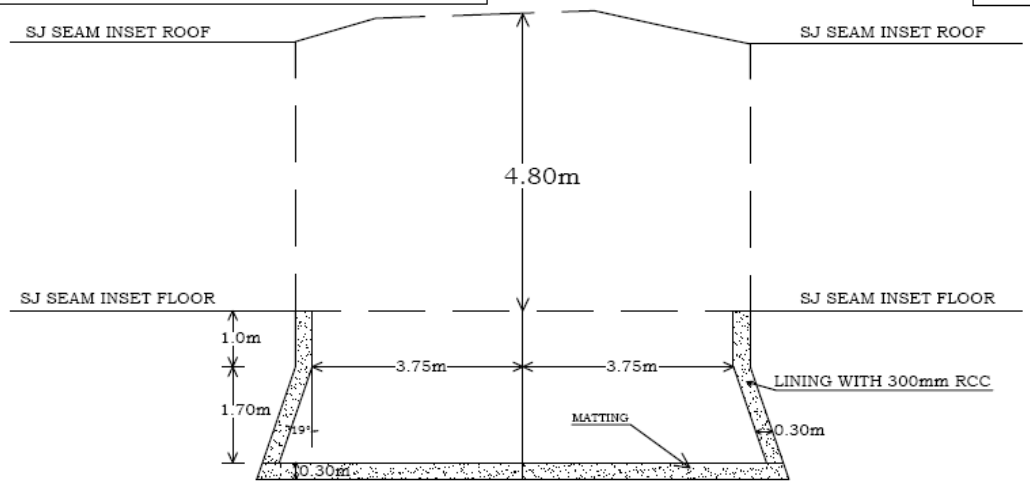



Fig.14
SECTION SHOWING THE FLOOR MATTING

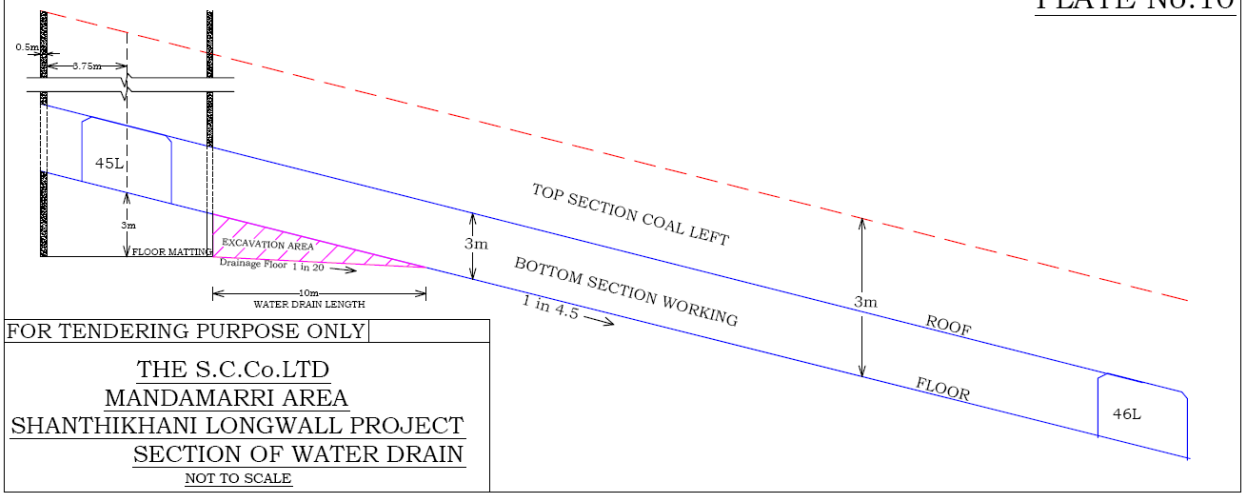
FOR TENDERING PURPOSE ONLY

# THE S.C.Co.LTD
# MANDAMARRI AREA
# SHANTHIKHANI LONGWALL PROJECT
# FLOOR MATTING

NOT TO SCALE

ALL DIMENSIONS ARE IN METRES

PLATE No.10




FOR TENDERING PURPOSE ONLY

THE S.C.Co.LTD
MANDAMARRI AREA
SHANTHIKHANI LONGWALL PROJECT
SECTION OF WATER DRAIN
NOT TO SCALE