

**SOUTH EASTERN COALFIELDS LIMITD
OFFICE OF THE GENERAL MANAGER HASDEO AREA
(A Subsidiary of Coal India)**

Tender Notice NO. CGM/HSD/Civil/41/11-12

Dt.19/01/2012

Name of work: “Leveling of Area ,Construction of retaining wall , buffer wall ,flooring of area and making of Shed for Installation of main Riding structure at Sheetaldhara Mine of Kurja Sub Area.”

I N D E X

Sl.No.	Description	Page No.
1.	Front tender sheet (Appendix-9)	02
2.	Notice inviting Tender	03 to 06
3.	Detailed tender notice	07 to 11
4.	General terms & conditions	12 to 34
5.	Specification of Bricks	35 to 39
6.	Specification of Road	40 to 58
7.	Safety Code	59 to 62
8.	Certificate for tenderers using download from SECL web site	63
9	Declaration	64
10	Bank Details	65
11	2 Nos Affidavit on non judicial stamp paper each of Rs10/- as per the specimen enclosed with the tender document	66-67
12	Bill of quantity	68-69

//1//
SOUTH EASTERN COALFIELDS LIMITD
OFFICE OF THE CHIEF GENERAL MANAGER
HASDEO AREA
(COAL INDIA LIMITED)

(Appendix-9)

1. Name of work :- “Leveling of Area ,Construction of retaining wall , buffer wall ,flooring of area and making of Shed for Installation of main Riding structure at Sheetaldhara Mine of Kurja Sub Area.”

2. Tender Notice No.& dt.:- CGM/HSD/Civil/41/11-12 Dt.19/01/2012

3. Date & time of Submission of tender: 31/01/2012 upto-4.00PM

4. Date & time of opening of tender: 02/02/2012 – at 4.30PM

5. Updated-Estimated cost of work: Rs 7,71,000/-

6. Earnest Money: Rs 7,710/-

7. cost of tender document: Rs 250/-
(Non-refundable)

8. Tender document cost deposited vide cash receipt

No. _____ dt: _____

9. Name and address of the Company issuing tender:

10. Name of consultant if any:

Staff Officer (Civil)
Hasdeo Area
(Signature of issuing Authority)

South Eastern Coalfields Limited
(A Subsidiary of Coal India Limited)
OFFICE OF THE CHIEF GENERAL MANAGER ,HASDEO AREA

No.CGM/HSD/Civil/

Dated: 19/01/2012

TENDER NOTICE
(NIT No. CGM/HSD/Civil/41/11-12 Dt. 19/01/2012)

Sealed tenders in two parts (or two envelope) are invited from eligible Contractors for the following work :-

Sl No.	Description of work	Estt./Updated cost	Earnest Money	Cost of Tender Document	Period of completion
01	Leveling of Area ,Construction of retaining wall , buffer wall ,flooring of area and making of Shed for Installation of main Riding structure at Sheetaldhara Mine of Kurja Sub Area.	Rs 7,71,000/-	Rs7,710/-	Rs250/-	02(Two) Months

1) ISSUE OF TENDER DOCUMENTS:

Tender documents will be issued individually on requisition in writing from the intended contractors or their accredited representatives. Tender documents can be obtained from the Civil Engineering Deptt. Of CGM Office, Hasdeo Area, SECL, at the address mentioned above, on payment of the prescribed cost during working hours on any working day as per the dates mentioned below:

- i) BEGINS ON : 25/01/2012
- ii) CLOSSES ON : 30/01/2012
- iii). Last date for receipt of application/Requisitions for the Purchase of tender documents: **30/01/2012**

Cost of tender document should be paid with the Chief Cashier ,SECL,Hasdeo Area, during office hours on working days and cash receipt obtained should be produced to **Staff Officer (C), Hasdeo area** for obtaining Tender Documents.

2)SUBMISSION OF TENDER

- i) Date and time for submission of tender (part I and Part II) i.e. (technical / commercial bid and Price Bid) **31/01/2012 upto 4.00PM**
- ii) **Location / Place for submission of tenders** :In Civil Engineering Deptt. of CGM, Office, Hasdeo Area, SECL, PO: South Jhagrakhand Dist:Korea, CG. 497448. and in the office of the Chief General Manager(Civil) SECL Heqd Quarter Post Box No.60 Seepath road Bilaspur 495006(CG)
- iii) In case Tender is sent by post, it should be sent by Registered Post only through Department of Posts and Photocopy of the Registration Slip may be retained

with the tenderers, so that the same can be produced on demand for verification, if any. **The department is not responsible for any postal delay.** The envelope containing the tender should be super scribed with the NIT No, Name of work and due date of submission and be addressed to STAFF OFFICER (CIVIL), SECL, Hasdeo Area, Office of the Chief General Manager, PO:South Jhagrakhand, Dist:Korea,CG Pin:497 448. Envelops not super scribed with NIT No, Name of the work and due date of submission are liable for rejection

- a. Late tenders / incomplete tenders / telegraphic tenders and tenders received through private courier services or tenders received after due date and time of tenders, submission shall not be accepted

3) **OPENING OF TENDERS: Part I**

Date and Time : 02/02/2012 at 4.30pm.

- i) Place : **STAFF OFFICER (CIVIL), SECL, Hasdeo Area**, Office of the Chief General Manager, PO: South Jhagrakhand, Dist: Korea,CG Pin: 497 448., in presence of the attending tenderers or their authorized representative

Part II : Shall be communicated after scrutiny of Part-I

- 4) **EARNEST MONEY DEPOSIT (EMD):** Tenderers may deposit the earnest money in the form of DD/Bankers Cheque ,Bankers pay order drawn in favor of SECL, Hasdeo Area on account on Central Bank of India South Jhagrakhand/ State Bank of India Manendragarh .Tenders without requisite earnest money shall not be considered. The date of Demand Draft/ Banker's Cheque in respect of Earnest Money Deposit (EMD) shall be on or after the date of Notice Inviting Tender (NIT) and Demand Draft /Banker's Cheque made before the NIT date shall be summarily rejected .

The Earnest Money Deposit is to be submitted in a SEPARATE ENVELOPE altogether, super scribing " Earnest Money Deposit" ; and NOT INSIDE THE ENVELOPE CONTAINING PART - I OR PART -II OF THE BID

- 5) **THE ELIGIBILITY / QUALIFYING CRITERIA FOR THE WORK:** The basic minimum eligibility criteria for the purpose of evaluation of offers received will be as under:-

- i) The intending tenderer must have in its name as a prime contractor experience of having successfully completed similar works during last 7 (seven) years ending last day of previous month (ie.31/12/2011) should be either of the following
 - a) 3(Three) Similar completed works each costing not less than the amount equal to 40% of the updated estimated cost of Sl.No. (1) Rs3.08 lacs OR
 - b) 2(Two) Similar completed works each costing not less than the amount equal to 50% of the updated estimated cost of Sl.No. (1) Rs3.86 OR
 - c) One Similar completed work costing not less than the amount equal to 80% of the updated estimated cost of Sl.No. (1) Rs6.17 lacs

In all the above cases, while considering the value of completed works, the full value of completed work will be considered whether or not the date of commencement is within the said seven years period.

In case the bidder is not a prime contractor but a sub contractor, the bidder experience as sub – contractor will be taken in to account if, the contract in support of qualification is a sub –contractor with the provision of such sub contract in the original contract awarded to prime contractor.

- ii) Average Annual Financial Turnover of Civil work during the last 3(Three) years ending 31st March. of the previous financial year, should be at least 30% of the updated estimated cost of Sl.No (1) Rs.2.31 lacs,

Annual financial turnover and cost of completed works of previous works shall be given a weight age of 5% per year.

Similar Nature of work : Sl.No. (1) Building Construction work

The intending tenderer must submit documentary evidence in support of 5(i) & 5 (ii) above in the form of certified copy of work order, completion certificate, payment certificate, vouchers and final bill indicating the period of work for which the payment has been made

In addition, the intending tenderer has to submit the following:

- i) Permanent Income Tax Account Number
- ii) Particulars of Registration with appropriate Sales Tax Authorities (In relation with works contract Tax) if applicable
- iii) Particulars of Registration/ Clearance from the appropriate Provident Fund Authorities if applicable.
- iv) Registration of the firm, in case of Partnership firm (The tender from un-registered Partnership firm will be rejected) Or Proprietorship.
- v) Particulars of Service Tax Registration, if Service Tax is applicable.
- vi) Details of construction Equipment/ machineries to be deployed for the work and list of technical supervisory personnel to be employed for supervising the work.

Copies of all the certificates are to be submitted, duly authenticated by the

- 6) In addition to above, a certificate shall be issued by the concerned personnel. Head that contractor has deducted the amount of CMPF and Pension and deposited along with the matching share with the concerned Regional Commissioner, CMPF and a copy of the certificate shall be attached with the bill of contractor where applicable
- 7) The tender notice can be seen in SECL Web site www.secl.nic. In the tender document can be down loaded from SECL's web site and in such case the tenderer has to submit the application fee for tender document in the form of

demand draft from scheduled banks /nationalized banks, altogether in a separate cover super scribing on it as the “ Application fee for Tender Document”. The company shall not be responsible for any delay/ difficulties/ inaccessibility of the downloading facility for any reason whatsoever. The downloading facility shall be available during the period of sale of tender paper

Tender without “Application fee” in a separate envelope with undertaking in case of downloaded tender document would be rejected outrightly.

- 8) The bidders who will download the tender documents from the website of the company will be required to pay the cost of tender documents (Application Fee) by Bank Draft as per NIT at the time of submission of tenders (Bank Draft should be prepared within the Sale period of tender Documents)
- 9a) Whether any relative of the owner/applicant or any of the partners of the applicant firm is related to any of the officers employed in Coal India or its subsidiaries. If so furnish name of the applicant/owner/partner and the same, designation and place of posting of the officer.
- 9b) Whether any relatives of the owner/applicant or any of the partners of the applicant firm are active trade Union leaders of CIL & its subsidiary company's. If so mention the name of the applicant/owner/partner and the trade Union leader & field of the operation/ activities.
- 9c) The bidder is required to submit 2 Nos Affidavit on non judicial stamp paper/notorised each of Rs10/- as per the specimen enclosed with the tender document..
- 10) **BANK ACCOUNT DETAIL:** The tenderers shall have to furnish the bank account details as below:- i)Account No of Tenderer ii)Name of Bank iii)Branch
- 11) **SERVICE TAX** :The service tax registration certificate / proof of application for registration, if service tax is payable
- 12) **Payment to Contractors Workers:** Contractors have to make payment to their labourers through Bank only
- 13) An amount of 1% of work value from all bills will be deducted towards the workers Welfare under Chhattisgarh building & other construction workers welfare cess Rule 1998 and Building and other construction works welfare cess Act 1996.

The tenderers are requested to fill check list enclosed in tender document properly. Also each page of tender document should be signed with Seal/Stamp.

Mere issuance of Tender documents will not make the tenderers eligible for consideration of opening of their price bid. SECL reserves its right to reject or accept any tender without assigning any reasons, thereof.

**Other details may be obtained from the Detailed Tender Notice
in the tender document.**

**STAFF OFFICER(C)
HASDEO AREA.**

Distribution:

- 01 G.M.(Civil)/HOD.Bilaspur.
- 02 G.M.(System),SECL: Bilaspur.
- 03 CGM,Hasdeo Area
- 04 All CGMs/GMs of SECL Areas.
05. All SAMs,Hasdeo Area.
06. All Project Engineers(Civil),Hasdeo Area
07. All tender Committee Members,Hasdeo Area .
- 08 All Notice Boards, Hasdeo Area
- 09 PRO/SECL Bilaspur- Along with 5 copies extra for publication in News papers

South Eastern Coalfields Limited (Annexure-B)
DETAILED NOTICE INVITING TENDER

Sealed tenders in prescribed forms and parts with the name of works super scribed as:-
Name of work: “Leveling of Area ,Construction of retaining wall ,buffer wall ,flooring of area and making of Shed for Installation of main Riding structure at Sheetaldhara Mine of Kurja Sub Area)” vide Tender Notice CGM/HSD/Civil/41/11-12 Dt 19/01/2012 (Description of work, place, Tender Notice No and date on each of the envelopes) are invited from bonafide and experienced contractors and will be received either in the office of Staff Officer (C) Hasdeo Area Or in office of the CGM Civil, SECL ,Bilaspur up to 4.00PM on 31/01/2012. All tenders will be opened at 4.30 PM on 02/02/2012 in the presence of the attending tenderers or their authorized representatives who wish to be present .In case where the tender is in two parts, only Part-I, will be opened on the above day and time. The tender notice can be seen in SECL Web site www.secl.nic. in The tender document can be down loaded from SECL’s web site and in such case the tenderer has to submit the application fee for tender document in the form of Bank draft from scheduled banks drawn in favour of “ SOUTH EASTERN COALFIELDS LIMITED” payable at “ South Jhagrakhand OR Manendragarh altogether in a separate cover super scribing on its as the “ Application fee for Tender Document ” . In such case the tenderer will also submit a certificate in the form of an undertaking as per the format provided at Annexure I

2. Eligible Tenderers:

2.1 The invitation for tenders is open to all tenderers eligible to participate as per qualifying criteria laid down in Notice Inviting Tender (NIT) and here-in-after.

3 Tenders should be submitted in the prescribed form in time. These forms together with the proposed contract document including specifications and tender drawings (if available) may be obtained from the above office during normal working hours on payment of **Rs250/-**(Rupees Two hundred fifty only) (non-refundable) as Application Fee for each set from **25/01/2012 to 30/01/2012**. The payment may be made through Bank Draft from Scheduled/Nationalized Bank drawn in favour of “SOUTH EASTERN COALFIELDS LIMITED” payable at “South Jhagrakhand OR Manendragarh” only General specification and description of work is enclosed with the tender document.

4.Any Bid received after the deadline prescribed at Clause 1 above due to any reasons What so ever will not be accepted In the event of the specified date for the submission of bids being declared a holiday by the employer, the bids will be received up to the appointed time on the next working day.

5. Tenders thus submitted shall consist of the following:

5.1 Earnest Money Deposit.-The Earnest Money Deposit is to be submitted in a separate Envelope altogether; super scribing“ Earnest Money Deposit”; and **NOT INSIDE THE ENVELOPE CONTAINING PART- I OR PART- II OF THE BID.**

5.2 Part-I (Technical / Commercial Bid) –The Part-I tender will consist of the following:

5.2.1 Complete set of Part-I tender documents as sold duly filled in and signed

on all pages and at different places as required of the Part-I tender document of the tenders as per the tender notice as applicable.

5.2.2 Documentary evidence in support of basic minimum eligibility / qualifying criteria in accordance with NIT stipulations in the form of certified copy of work orders, completion certificate, payment certificates/vouchers indicating the period of work for which the payment has been made.

5.2.3 Permanent Income Tax Account Number (PAN).

5.2.4 Particulars of Registration from appropriate Sales Tax Authorities (In relation with 'Works Contract Tax)' if applicable

5.2.5(a) Particulars of Registration /Clearance from the Appropriate Provident Fund Authorities, if applicable.

5.2.5(b) Declaration in regards to the PF Registration as per the *ANNEXURE No. XII*

5.2.6 Power of Attorney in the case, the tender is signed by an authorized representative of the tenderer.

5.2.7 Papers relating to Technical aspects of the bid along with copies of all certificates related to the technical qualifications of the bidder.

5.2.8 Additional commercial terms & conditions, if any.

5.2.9 Other deviations from the terms & conditions of the tender, if any. This is to be provided in the requisite places in the Tender Document.

N.B. Deviations:

Deviations sought by the bidders, whether they are technical or commercial deviations must only be given in the schedules prescribed for them. Any willful attempt by the bidders to camouflage the deviations by giving them in the covering letter or in any other documents than the prescribed schedules may render the bid itself as non-responsive.

5.2.10 Documents showing full information about the tendering firm in accordance with Clause 23(a) of this Detailed Tender Notice.

5.2.11 However, in addition to above particulars any other credentials may be asked for in Part-I tender if felt necessary by authority calling tenders

5.2.12 Copies of all the certificates submitted, duly authenticated by the bidder, will have to be verified with the originals by the department

5.3 Part-II (Price bid)

The part-II tender will contain the price bid i.e. Part-II tender document as sold to the tenderer wherein the price bid / rates should be furnished. Each page of the tender document should be signed by the tenderers. This will not contain any alternative item or suggestions, comments or conditions.

6. The Tender shall be submitted, *In two parts as indicated in the Notice Inviting Tenders. Part-I shall consist of Part-I tender document as sold to the tenderer any deviations from terms & conditions of the tender and additional terms & conditions and if asked for, technical bid and credentials. Declaration in accordance with Clause 1.7 of Tender Evaluation & Bid Assessment, Information of Bid Capacity, Affidavit in accordance with Clause 25(a) of Detailed Tender Notice. Part II shall consist of Part-II tender documents as sold to the tenderers duly filling in rates, amounts etc. i.e. price bid. The Earnest Money Deposit is to

be submitted in a separate Envelope altogether; superscribing "Earnest Money Deposit"; and not inside the envelope containing Part I or part II of the Bid. The Part I & Part II should also be put into separate sealed envelopes super scribed as such. Thereafter all the three envelopes should be submitted in a sealed envelope with appropriate superscription as given in Clause –I of Detailed Tender Notice. Full name and address of the tenderer shall be written on the bottom left hand corner of the sealed covers. The date of opening of the Second Envelope or Part II of the tenders shall be communicated in due course after consideration of First Envelope or Part-I.

7. The tender document in which the tender is submitted by the tenderer shall become the property of the Company shall have no obligation to return the same to the tenderer.

8. Each bidder shall submit only one bid for one package. A bidder who submits or participates in more than one bid other than as sub-contractor or in case of alternatives that have been permitted or requested will cause all the proposals with the bidders' participation to be disqualified.

9. Earnest money should be deposited in a separate envelop in the form as indicated in Notice Inviting Tender (NIT) and Clause 6 above.

10. No tender shall be considered unless accompanied by the said Earnest Money.

11. The earnest money will be retained in the case of successful tenderer and refunded to the unsuccessful tenderer in due course and will not carry any interest. The earnest money deposited by the successful tenderer will be dealt with as provided elsewhere in the tender documents.

12 (a) Site Investigation Report: The contractor, in preparing the bid, may rely on the site

Investigation report referred to in the bid document, supplemented by any information

available to the bidder.

12 (b) Every tenderer is expected, before quoting his rates, to go through the requirements of materials/workmanship under specification/requirements and conditions of contract and to inspect the site/area of the proposed work. In case of item rate tender a schedule of quantities is enclosed with the tender document. He should quote specific rate for each item in the schedule and the rates shall be in rupees and paise. The rates shall be written both in words and figures and the unit in the words and the amount against each item totaled. In the event of any discrepancy between the description in words and figures, the description in words will prevail. The rates for the work should be inclusive of all incidentals, overheads, all taxes, Octroi's, duties, leads, lifts, carriage, tools & plant etc. as required for execution and completion of the work. It shall be deemed that the tenderer has visited the site/area and got fully acquainted with the working conditions and other prevalent conditions and fluctuations thereto whether they actually visited the site/area or not and have taken all the above factors into account while quoting his rates.

13. Corrections where unavoidable, shall be made by crossing out and rewriting

duly authenticated with full signature and date by the tenderer. Erasing or over-writing in the tender documents may disqualify the tender.

14. The tender shall be submitted either in English or in Hindi.

15. Cost of Bidding: The bidder shall bear all costs associated with the preparation and submission of his bid and the Employer will in no case be responsible and liable for those cost

16. The tenderer shall closely study all specification in detail, which govern the rates for which he is tendering.

17. Particulars of Registration with appropriate Sales Tax Authorities (In relation with 'Works Contract Tax'), if applicable should accompany the tender.

18. The work should be completed within **02 (Two) Months** order or handing over the site or handing over reasonable number of working drawings to the contractor or the period of mobilization allowed in the work order for starting the work in special circumstances, whichever is latest.

19. On completion of the work all rubbish, debris, brick bats etc. shall be removed by the contractor(s) at his/their own expense and the site cleaned and handed over to the company and he/they shall intimate officially of having completed the work as per contract.

20. The Company does not bind itself to accept the lowest tender and reserves the right to reject any or all the tenders without assigning any reasons whatsoever and to split up the work between two or more tenderers or accept the tender in part and not in its entirety.

21. The tenderer(s) will indicate the equipment/machinery/ vehicles he/they is/are going to use on this job and also give adequate evidence of experience in doing similar works and financial capacity to complete the work in time.

22. The tenderer(s) should also state what technical/ supervisory personnel he/they would be employing for supervising the work.

23 (a). Full information should be given by the tenderer in respect of following:

i) If an individual: Full name. Postal Address. Place of Business.

ii) If proprietary firm: Name of the Proprietor. Full postal address of Firm/Proprietors.

iii) If partnership firm: Full name of partners. Full postal addresses of the registered office of firm & the partners. Registered Partnership Deed.

iv) In case of Company: Date and place of registration. Memorandum & Articles of Association. Name of all the Directors. Full postal address of the registered office & all the Directors.

v) Joint Venture Two or three companies/contractors may jointly undertake contract/contracts. Each entity will be jointly responsible for completing the task as per the contract.

vi) Bank Details of your As per *ANNEXURE XI* Firm

23(b) Change in Constitution of the Contracting Agency:

Prior approval in writing of the company shall be obtained before any change is made in the constitution of the contracting agency, otherwise it will be treated as a breach of Contract.

24. Canvassing in connection with the tenders in any shape or form is strictly prohibited and tenders submitted by such tenderers who resort to canvassing shall be liable for rejection.

25 (a) Every Tenderer will have to submit a declaration in support of the authenticity of the credentials submitted by him along with the Tender in the form of an AFFIDAVIT as per the format provided at **ANNEXURE IX.**)

25 (b) If a Tenderer deliberately provides wrong information or submits false credentials in support of his qualifications, the Company reserves the right to terminate/rescind the contract, forfeit the EMD and other dues of the contractor and to take any other action as may be deemed fit.

26 (a) An intending tenderer, after obtaining tender documents on payment of Application Fee, having doubts as to the meaning of any part of the tender documents may submit to the official inviting tender a written request for interpretation or clarification thereof. Any interpretation or clarification of the tender documents by formal addendum if issued by the official inviting tender, shall be final and valid and binding on the company and the tenderers.

27. On receipt of letter for acceptance of the tender issued by the Company, the successful tenderers shall execute/accept contract agreement/work order in the company's prescribed form for the due fulfillment of the contract. Failure to enter into the required contract/accept the work order issued by the company within the specified period in the work order shall entail cancellation of letter of acceptance of tender/work order and forfeiture of the earnest money. The written contract/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/ work order is signed/ accepted by both the parties i.e. Contractor and the Company.

28 (a) The validity period of the tenders shall be 4 (four) months from the date of opening of price bid or revised price bid, if any. The tenderer shall not, during the said period or within the period extended by mutual consent, revoke or cancel his tender or alter the tender or any terms/conditions thereof without consent in writing of the company. In case the tenderer violates to abide by this, the Company will be entitled to forfeit the Earnest Money and reject the tender.

28 (b) The Company reserves the right to postpone the date of receipt and opening of tenders or to cancel the tenders without assigning any reason whatsoever.

29. The Company reserves its right to allow Public Enterprises purchase preference facility as admissible under prevailing policy.

30. This detailed Tender Notice shall be deemed to be part of the Contract Agreement/Work Order.

31. No subletting of work as a whole by the contractor is permissible. Subletting of work in piece rated jobs is permissible with the prior approval of the department. The Contract Agreement will specify major items of supply or services for which the contractor proposes to engage sub-contractor/sub-vendor. The contractor may from time to time propose any addition or deletion from any such list and will submit proposals in this regard to the Engineer-in –

Charge/Designated Officer in charge for approval well in advance so as not to impede the progress of work. Such approval of the Engineer in Charge / Designated Officer in Charge will not relieve the contractor from any of his obligations, duties and responsibilities under the contract.

32. In case the Contractor enters into any litigation, such action should have to be taken in a court of law with jurisdiction of Bilaspur Court only.

South Eastern Coalfields Limited

CIVIL ENGINEERING DEPARTMENT

Schedule - A

GENERAL TERMS AND CONDITIONS

1. Definitions

i) "**Employer**" or "Company" means the South Eastern Coalfields (SECL), Regd. Office, Bilaspur (CG) who will employ the contractor represented by the appropriate authority.

ii) "**Principal Employer**" means the South Eastern Coalfields Limited or the officer nominated by the company to function on its behalf.

iii) The word "**Contractor/ Contractors**" wherever occurs working space or any other purpose as means the successful tenderer/ tenderers who has/have deposited the necessary Earnest money and has/have been given written intimation about the acceptance of tender and shall include legal representative of such individual or persons composing a firm or a company or the successors and permitted assignees of such individual, firm or Company, as the case may be.

iv) "**Site**" means the land and places including any building and erection thereon, over, under, in or

through which the Permanent works or Temporary works designed by the Engineer in Charge are to be executed and any other lands and places provided by the Employer for may be specifically designated in the Contract as forming part of the site.

v) The term "**Sub-Contractor**" as employed herein, includes those having a direct contract with

Contractor either on piece rate, item rate, time rate or any other basis and it includes one who furnishes work to a special design according to the plans or specifications of this work but does not include one who merely supplies materials.

vi) "**Accepting Authority**" shall mean the management of the company and includes an authorized

representative of the company or any other person or body of persons empowered in this behalf by the company.

vii) "**Engineer-in-charge**" shall mean the officer nominated by the company in the Civil Engineering cadre/ discipline who is competent to direct supervisors and authorised to be in charge of the works for the purpose of this contract. The Engineer in Charge /Designated Officer in Charge who is of an appropriate seniority, will be responsible for supervising and administering the contract, certifying payments due to the contractor, valuing variations to the contract, awarding extension of time and valuing compensation events. The Engineer in Charge /Designated Officer in Charge may further appoint his representatives i.e. another person/Project Manager or any other competent person and notify to the contractor who is directly responsible for supervising the work being executed at the site, on his behalf under their Delegation of Powers of the company. However, overall responsibility, as far as the contract is concerned ,will be that of the Engineer in Charge/Designated Officer in Charge.

viii) The "**Contract**" shall mean the notice inviting tender, the tender as accepted by the

Company, the work order issued to the contractor, and the formal contract agreement executed between the company and the contractor together with the documents referred to therein including general terms and conditions, special conditions, if any, scope of work, frozen terms & conditions/technical parameters/scope of work and revised offer, if any, specifications, drawings, including those to be submitted during progress of work, schedule of quantities with rates and amounts.

ix) A "**Day**" shall mean a day of 24 hours from midnight to midnight.

x) The "**Work**" shall mean the works required to be executed in accordance with the contract/work order or parts thereof as the case may be and shall include all extra or additional, altered or substituted works or any work of emergent nature, which in the opinion of the Engineer-in-charge, become necessary during the progress of the works to obviate any risk or accident or failure or become necessary for security.

xi) "**Schedule of Rates**" referred to in this conditions shall mean the standard schedule of rates prescribed by the company and the amendments issued from time to time.

xii) "**Contract amount**" shall mean: a) in the case of turnkey contracts the total sum for which tender is accepted by the company.

b) in the case of other types of contracts the total sum arrived at based on the individual rates quoted by the tenderer for the various items shown in the "Schedule of Quantities" of the tender document as accepted by the Company with or without any alteration as the case may be.

xiii) "**Written notice**" shall mean a notice or communication in writing and shall be deemed to have been duly served if delivered in persons to the individual or to a member of the contractors firm or to an office of the company for whom it is intended, or if delivered at or sent by registered mail to the last business address known to him who gives the notice.

xiv) "**The constructional plant**" means all appliances, tools, plants or machinery or whatsoever nature required in or about the execution, completion or maintenance of the works but does not include materials or other things intended to form part of the permanent work.

xv) "**Letter of Acceptance of Tender**" means letter giving intimation to the tenderer that his tender has been accepted in accordance with the provisions contained in that letter.

xvi) "**Department**" means the Civil Engineering Department of South Eastern Coalfields Limited

represented by the appropriate authority.

xvii) "**Act of insolvency**" means as it is designed by Presidency Town Insolvency Act or Provincial Insolvency Act or any act amending such originals.

xviii) The words indicating the singular only also include the plural and vice-versa where the context so requires.

2. Contract Documents:

The following documents shall constitute the contract documents :

i) Notice Inviting Tender/Detailed Tender Notice / Tender Evaluation & Bid Assessment /Tender

Memorandum.

ii) Articles of Agreement / Letter of Acceptance of Tender/ Work Order.

iii) General Terms & Conditions of contract/ Commercial Terms & Conditions of contract.

iv) Additional Terms & Conditions of contract, if any.

v) Specifications.

vi) Schedule of quantities (or Bill of Quantities)/ Schedule of work/ Scope of work and schedule of deviation (*to be provided by the contractor.*)

vii) Frozen terms & conditions / technical parameters/ scope of work and revised offer, if any.

- viii) Contract drawings and work programme.
- ix) Safety Code etc. forming part of the tender.

2.1. The contractor shall enter into and execute contract agreement in the prescribed form (ref. format at **ANNEXURE X**). The cost of the stamp papers for the contract agreement shall be borne by the contractor. Two sets of contract document/agreements shall be prepared and signed by both the parties One of the sets shall be stamped "Original" and the other "Duplicate". The duplicate copy will be supplied to the contractor free of cost and the original is to be retained by the company. For any additional copies required by the contractors the price to be charged would be that of the cost of the Tender Document (Application Fee). All additional copies should be certified by the Engineer in Charge. The contractor shall keep copy of these documents on the site/place of work in proper manner so that these are available for inspection at all reasonable times by the Engineer-in-charge, his representatives or any other officials authorised by the company for the purpose.

2.2 The contract document shall not be used by the contractor for any purpose other than this contract & the contractor shall ensure that all persons employed for this contract strictly adhere to this and maintain secrecy, as required of such documents.

3. Discrepancies in contract documents & Adjustments thereof

The documents forming part of the contract are to be treated as mutually explanatory of one another and in case of discrepancy between schedule of quantity, the specifications and/or drawing, the following order of preference shall be observed;

- a) Description in Bill of Quantities of work.
- b) Particular specification and special conditions, if any
- c) Drawings.
- d) General specifications.

3.1 In the event of varying or conflicting provision in any of the document(s) forming part of the contract, the Accepting Authority's decision/clarification shall hold good with regard to the intention of the document or contract as the case may be.

3.2 Any error in description, quantity or rate in Bill of Quantities or any omission there from, shall not

vitate the contract or release the contractor from discharging his obligations under the contract including execution of work according to the Drawings and Specifications forming part of the particular contract document.

3.3 Any difference detected in the tender/ tenders submitted resulting from :

- a) discrepancy between description in words and figures, the rate which corresponds to the amount

worked out by the contractor shall be taken as correct.

- b) discrepancy in the amount quoted by the contractor due to calculation mistake of the unit rate and quantity, the unit rate shall be regarded as firm and amount corrected.

- c) discrepancy in totaling or carry forward in the amount quoted by the contractor shall be corrected.

The tendered sum so corrected and altered shall be substituted for the sum originally tendered and

considered for acceptance instead of the original sum quoted by the tenderer alongwith other tender/tenders. Rounding off to the nearest rupee should be done in the final summary of the amount instead of in totals of various sections of the offer.

4. 1 Security Deposit:

Security Deposit shall consist of two parts:

- a) Performance Security to be submitted at award of work and

b) Retention Money to be recovered from running bills

The first part of security deposit in/c the earnest money already deposited shall be 5% of the contract value and should be submitted within 28 days of receipt of LOA by the successful bidders in any of the form given below

- a Bank Guarantee in the prescribed form
- Govt. securities, FDR or any other form of deposit stipulated by the company
- Demand Draft drawn in favour of the company on any Scheduled Bank

The Earnest money /Bid Security deposited in the form of Bank Guarantee shall be discharged when the Bidder has signed the Agreement and furnished the required performance Security/ security Deposit. The bid security deposited in the form of Demand draft/ cash shall be adjusted against the security deposit.

In case, where agreements are not required to be executed, security deposit should be deposited within the period to be mentioned in the work order/(LOA) and under all circumstances the period should be prior to commencement of any payment made to the contractor.

4.2 All running on account bills shall be paid at 95% (ninety five percent) of work value. This 5% (five percent) deduction towards retention money will be the second part of security deposit.

5% Performance Security should be refunded within 14 days of the issue of defect liability certificate (tanking over certificate with a list of defects). Retention Money should be refunded after issue of No. Defect Certificate..

4.3 The Bank Guarantee towards security deposit shall be acceptable only for values above

Rs.50, 000/-and the Bank Guarantee shall also be valid for a minimum period of one year or the period of contract plus the period of retention of security deposit (as described hereafter) or six months whichever is more. Bank Guarantee is to be submitted in the format prescribed by the company. Bank Guarantee shall be irrevocable and will be from amongst the list of Banks (Scheduled / Nationalized Banks) provided in the bid document.

4.4 The Company shall be at liberty to deduct/appropriate from the security deposit such sums as are due and payable by the contractor to the company as may be determined in terms of the contract, and the amount appropriated from the security deposit shall have to be restored by further deduction from the contractors subsequent on account running bills, if any. The refund of security deposit shall be subject to company's right to deduct/appropriate its due against the contractor under this contract or under any other contract.

4.5 On completion of the entire work and certified as such by the Engineer-in-charge and on passing of the final bill by the Department, one half of the security deposit lying with the company shall be refunded to the contractor. The other half shall be refunded to the contractor on the expiry of six months from the date of completion as certified by the

Engineer-in-charge subject to the following conditions:

- a) Any defect/ defects in the work, if detected after issue of completion certificate is / are rectified to the satisfaction of the Engineer-in-charge within the said period of six months.
- b) In the case of building work/other work of similar nature, the refund shall be made on the expiry of the said six months period or at the end of one full monsoon period i.e. June to October, whichever is later in point of time and any defects such as leakage in roof, efflorescence in walls, dampness, defects in drainage etc. should be rectified to the satisfaction of Engineer In Charge

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 to provide a uniform basis for tendering and any variation either by addition or omission shall not vitiate the contract.

5.1 The company through its Engineer In Charge or his representative shall, without radically changing the original scope and nature of the work, under contract, have power to make any alterations in or additions to or substitution of 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 Engineer In charge or his representative on behalf of the company. Such altered or additional or substituted work, which shall form part of the original contract, shall be carried out by the contractor on the same terms and conditions in all respects on which they agreed to do the main work and at the same rate/rates as are specified in the contract/ work-order.

5.2 The right is reserved to cancel any items of work included in the contract agreement or portion thereof in any stage of execution if found necessary to the work and such omission shall not be a waiver of any condition of the contract nor invalidate any of the provisions thereof.

5.3 If the additional, altered or substituted work includes any class of work for which rate/rates is/are not specified in the contract/work order, rates for such items shall be determined by the Engineer In Charge as follows:

a) In case of percentage tenders, if the rate for the item of work executed is available in the company's approved SOR, it will be paid at the schedule rate plus or minus the accepted percentage as per contract,

b) In case of item rate tenders, the rate for extra item shall be derived from the rate for similar item or near similar item of work available in the agreement schedule of work or by analysis of rates as at (c) below and the lower rate out of the above two shall be considered.

c) In case the rate for extra item is to be derived by analysis of rate, the same shall be done by analysis on prevalent market rate of materials and labour based on standard norms of analysis of rate of N.B.O./C.P.W.D.

d) In case of combined tender with partly item rate for non-schedule items & partly percentage tenders for SOR items, the rate for extra item shall be derived as at (b) above in case of non-schedule items rates and in case of percentage rates for SOR items the rate for extra item shall be derived as at (a) above.

In case of any difference between the contractor and the Engineer-In Charge as to the fixation of rates, the matter shall be referred to the accepting authority of the company i.e. CGM(C)/GM(C)/CE(C) of the company or Staff Officer(C) for

the work awarded at Company Hqrs. level and Area level respectively, whose decision shall be final and binding on the contractor.

5.4 Abnormally High Rate (AHR) & Abnormally Low Rate (ALR) Items.

Abnormally High Rates & Abnormally Low Rates, if quoted by the contractor, in item rate tenders will be identified & dealt with as under:

i) For identification of AHR & ALR items the ceiling of +/- 20% respectively, when compared with the updated estimated rate, will be considered.

ii) Variation in Quantity on quoted rate during execution for AHR & ALR items shall be permitted upto +/-25% (+25% for AHR & - 25% for ALR) of the quantity provided for items of work below plinth level & +/- 5% of the quantity provided for items of work above plinth level respectively.

iii) Quantity variation beyond the limit mentioned at above shall be dealt by arriving at new rate based on prevalent market rates of materials & labour analysed as per standard analysis of rate of N.B.O./ C.P.W.D. Payment of extra quantity over the permitted quantity of +/- 25% and +/-5%(as the case may be) would be made on the basis of the new analyzed rate.

iv) For identified abnormally low rate (ALR) items, the contractor will be required to deposit with the company the difference in amount calculated between the departmental justified rate multiplied by the quantity of a particular ALR item and the ALR rate quoted by the contractor multiplied by the quantity of the same item. The total amount to be deposited will be the sum total of all the identified ALR items calculated as per the method outlined above. The amount so retained will be refunded on successful completion of individual ALR items of work.

5.5 Payment for such deviated items (additional/ altered / substituted items of work or excess quantities of work beyond +/- 25% of the agreement schedule) shall be made in the contractors running on account bills, till the revised estimate regularizing these items are sanctioned by the competent authority of the company, at the provisional rates and shall not exceed:

a) 75% of the rate recommended by the Engineer In Charge to the accepting authority of the company i.e. CGM(C)/GM(C)/ CE(C) of the company or SO(C) of the Area, if the rate is directly available in the SOR of the company.

b) 50% of the rate recommended by the Engineer In Charge to the accepting authority of the company, i.e. CGM(C)/ GM(C)/ CE(C) of the company or SO(C) of the Area, if it is analyzed item rates based on prevalent market rates of materials and labour following NBO/CPWD norms.

5.6 The time for completion of the originally contracted work shall be extended by the company in the proportion that the additional work (in value) bears to the original contracted work (in value) plus 25% of the time calculated as explained above or such further additional time as may be considered reasonable by the Engineer in Charge.

5.7 The company through its Engineer In Charge or his representative, on behalf of the company, shall have 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 Engineer In Charge. No claim from the Contractor shall be entertained/ accepted on these grounds.

5.8 In the event of any deviation being ordered which in the opinion of the contractor changes radically the original scope/nature of the contract, the contractor shall under no circumstances suspend the work, either original or altered or substituted, and the dispute/disagreement as to the nature of deviation and the rate/rates to be paid for such deviations shall be resolved separately with the company as per the procedures/ norms laid down hereafter.

6. Time for Completion of Contract, Extension thereof, Defaults and Compensation for Delay

Time is the essence of the contract and as such all works shall be completed within the time stipulated in the contract/ work order. Immediately after the contract is executed/the work order is issued, the Engineer In Charge and the contractor shall agree upon a detailed time and progress chart prepared based on BAR CHART/ PERT CPM techniques on the basis of a construction schedule submitted by the contractor at the time of executing contract showing the order in which the work is proposed to be carried out within the time specified in the contract document/work order. For the purpose of this detailed time and progress chart, the work shall be deemed to have commenced on the expiry of 10 (ten) days from the issue of Letter of Acceptance of Tender/Work Order or handing over the site of work or handing over reasonable number of working drawings to the contractor or the period of mobilization allowed in the work order for starting the work in special circumstances, whichever is later.

6.1 If the contractor, without reasonable cause or valid reasons, commits default in commencing 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, to forfeit the Earnest Money deposited by him and to rescind the Letter of Acceptance of Tender/Work Order. Additionally, the Company will reserve the right to debar such defaulting Contractors from participating in future Tenders for a minimum period of 1 (One) year.

6.2 If the contractor fails to maintain the required progress in terms of the agreed time & progress chart or to complete the work and clear the site on or before the scheduled date or extended date of completion, he shall, without prejudice to any other right or remedy available under the law to the company on account of such breach, pay as agreed compensation the amount calculated at the rates stipulated below or such smaller amount as the Engineer in Charge (whose decision in writing shall be final & binding) may decide on the amount of contract value of unfinished work for every completed week that the progress remains below that specified in the agreed time & progress chart or that the work remains incomplete. This will also apply to items or group of items for which separate period of completion has been specified: -

i) Completion period (as originally stipulated) @ 1% per week Not exceeding three months

ii) Completion period (as originally stipulated) @ 1% per week. exceeding three months.

Provided always that the total amount of compensation for delay to be paid under this condition shall not exceed 15% of the contract value of work or of the contract value of the item or group of items of work for which a separate period of completion is originally given.

The amount of compensation may be adjusted or set-off against any sum payable to the contractor under this or any other contract with the company.

6.3 a) The company may at its sole discretion, waive the payment of compensation on request received from the contractor indicating valid and acceptable reasons if the entire work is completed within the date as specified in the contract/work order or as validly extended date without stipulating any compensation for delay. **or** b) If the progress of the work or of any portion of the work is unsatisfactory, the Engineer In-charge shall be entitled, after giving the contractor 15 days' notice in writing, to employ another Agency for executing the job or to carry out the work departmentally either wholly or partly debiting the contractor with the cost involved in engaging another Agency or the cost involved in executing the work departmentally, as the case may be. The certificate to be issued by the Engineer In-charge for the cost of the work so done shall be final and conclusive and the extra cost, if any, shall be borne by the contractor.

6.4 Extension of date of completion: On occurrences of any events causing delay as stated here-under, the contractor shall intimate immediately in writing to the Engineer In Charge.

a) **Force Majeure:**

i) Natural phenomena, including but not limited to abnormally bad weather, unprecedented flood and draught, earthquakes & epidemics.

ii) Political upheaval, civil commotion, strikes, lockouts, acts of any Govt. (domestic/foreign) including but not limited to war, properties, quarantine embargoes The successful bidder/ contractor will advise in the event of his having to resort to this clause by a registered letter duly certified by the local chamber of commerce or statutory authorities, the beginning and end of the cause of delay, within fifteen days of the occurrence and cessation of such Force Majeure condition. In the event of delay due to Force Majeure for more than one month the contract may be terminated at the discretion of the company. Termination under such circumstances will be without any liability on either side.

b) Serious loss or damage by fire

c) Non-availability of stores, which are the responsibility of the company to supply as per contract

d) Non-availability of working drawings in time, which are to be made available by the company as per contract during progress of the work

e) Delay on the part of the contractors or tradesmen engaged by the company not forming part of the contract, holding up further progress of the work

f) Non-availability or breakdown of tools and plant to be made available or made available by the company

g) The execution of any modified or additional items of work or excess quantity of work.

h) Any other causes which, at the sole discretion of the company, is beyond the control of the contractor.

6.4.1 A HINDRANCE REGISTER shall be maintained by both department and the contractor at site to record the various hindrances, as stated above, encountered during the course of execution. Hindrance register will be signed by both the parties. The contractor may also record his observations in the Hindrance Register. In case the contractor has a different opinion for hindrance and a dispute arises then the matter would be referred to the EIC and or the next higher authority whose decision would be final & binding on the contractor & the decision to be communicated within 15 days.

6.4.2 The contractor shall request the company in writing for extension of time within 15 days of happening of such event causing delay stating also, the period for which extension is required. The company may, considering the genuinity of the request, give a reasonable extension of time for completion of the work. Such extension shall be communicated to the contractor in writing by the company through the Engineer In Charge within 1(one) month of the date of receipt of such request.

6.4.3 The opinion of the Engineer-in-charge, whether the grounds shown for the extension of time are or are not reasonable, is final. If the Engineer-in-charge is of the opinion that the grounds shown by the contractor are not reasonable and declines to the grant of extension to time, the contractor can not challenge the soundness of the opinion by reference to arbitration. The opinion of the Engineer-in-charge that the period of extension granted by him is proper or necessary is not, however, final. If the contractor feels that the period of extension granted is inadequate he can appeal to the CGM (Civil)/ GM (Civil)/ CE (Civil) of the company for consideration on the question whether the period of extension is or is not proper or necessary.

6.4.4 Provisional extension of time may also be granted by the Engineer In Charge during the course of execution, on written request for extension of time within 15(fifteen) days of happening of such events as stated above, reserving the company's right to impose/ waive penalty at the time of granting final extension of time as per contract agreement.

6.4.5 When the period fixed for the completion of the contract is about to expire, the question of extension of the contract may be considered at the instance of the Contractor or the Department or of both. The extension will have to be by party's agreement, express or implied. In case the contractor does not apply for grant of extension of time within 15(fifteen) days of the hindrance occurring in execution of the work and the department wants to continue with the work beyond the stipulated date of completion for reason of the work having been unavoidably hindered, the Engineer-in-charge can grant extension of time even in the absence of application from the contractor. Such extension of time granted by the Engineer In Charge is valid provided the contractor accepts the same either expressly or implied by his actions before and subsequent to the date of completion. Such extension of time shall be without prejudice to Company's right to levy compensation under the relevant clause of the contract. The contractor shall however use his best efforts to prevent or make good the delay by putting his endeavors constantly as may be reasonably required of him to the satisfaction of the Engineer In Charge.

7. Material Supply & other facilities

7.1* The company does not undertake any responsibility for supply of any materials to the contractor.

7.2 If the steel is issued by the department, the wastage of steel shall be the barest minimum. The wastage allowed from theoretical quantity will be upto a maximum of 5% to cover the wastage due to cutting into pieces, bending and other factors. No cut pieces or scrap less than 2 mtr. in length will be taken by the department. Efforts should be made to use the cut pieces of 2 mtr. or above length as far as possible. If the wastage of steel is more than the permissible variation mentioned above the cost of excess wastage made by the contractor shall be recovered at double the issue rates indicated above, or 115% of prevailing market rate including sales tax and general tax during the period of work, whichever is more. No allowances shall be entertained on account of Rolling Margin for the steel either issued by the department or procured by the contractor.

7.3 If the cement is issued by the department, the variation of 5% will be permitted over the theoretical consumption of cement for value of work upto Rs.10.00 lakhs and 3% for value of work above Rs.10.00 lakhs.

In the event of cement consumed is more/less than specified above, the recovery for the quantity of cement consumed in excess or less than the specified quantity shall be made at double the issue rate or 115% of prevailing market rate including sales tax and general tax during the period of work, whichever is more.

7.4 In case the department is not able to supply cement/steel as per the provisions of the contract, the Engineer In Charge may allow, with the approval of CGM(Civil)/ GM(Civil)/ CE(Civil) of the company, the contractor in writing for procurement of cement/ steel from the approved sources and the extra on this account including transport charges, if any, over the issue rate shall be reimbursed to the contractor on production of authentic documents. Transportation of cement/ steel from the place of purchase to the site of work and proper storage of cement/steel at site shall be contractor's responsibility. He should maintain proper account of cement/steel issued/procured by him and should allow inspection of his godown and his cement/steel account by the concerned Engineer-in-charge or any other authorised officers of the company. Contractor should draw materials from the company on the basis of actual requirement as assessed by the Engineer In Charge on "as and when required" basis.

7.5 Recovery of cost of materials issued on sale A/c will be made as per actual consumption basis but the Engineer In Charge will have the discretion for making full recovery while processing a particular bill or asking for the return of the balance materials if the work is not progressing satisfactorily. The contractor shall keep accurate record of materials issued by the company, maintain proper account for the materials received and consumed in the work and shall be open to check by the Engineer In Charge or his authorised representative. The contractor shall ensure that such materials are consumed for the contract works only and the Register for the aforesaid account shall be signed both by the representatives of Engineer In Charge and the contractor.

7.6 All materials, tools and plants brought to site by the contractor including the materials supplied by the company shall be deemed to be held in lien by the company and the contractor shall not have the right to remove the same from the site, without the written permission of the Engineer In Charge. The company shall not however be liable for any loss, theft or damage due to fire or other cause during this period of lien, the responsibility for which shall lie entirely on the contractor.

7.7 The contractor shall bear the cost of loading, transportation to site, unloading, storing under cover as required etc. as may be necessary for the use and keeping the materials in good condition.

7.8 Any surplus materials issued by the company, remaining after completion or termination of the contract, shall be returned by the contractor at his cost to the place of issue and the Engineer In Charge shall accept the same at the rate not exceeding the rate at which these were originally issued taking into consideration the deterioration or damage, if any, that may have been caused during the custody of the contractor. In the event, the contractor fails to return the surplus materials out of those supplied by the company, the Engineer In Charge may, in addition to any other liability which the contractor would incur in this regard, by giving notice in writing require the contractor to pay the amount at double the issue rate for such unreturned surplus materials or 115% of the prevailing market rate including Sales Tax & General Tax during the period of work, whichever is more.

7.9 On completion or on termination of the contract and on complete recovery of secured advance paid by the company, if any, in respect of materials brought to site, the contractor with due permission of the Engineer In Charge shall be entitled to remove at his expenses all surplus materials originally supplied by him and upon such removal, the same shall become the property of the contractor.

7.10 All charges on account of octroi, terminal or sales tax and other duties on materials obtained for the works from any source (excluding materials supplied by the company) shall be borne by the contractor.

7.11 The contractor shall arrange necessary electricity at his own cost for the work and his own establishment. However, if available and feasible the company may arrange electricity at one point near the work site and necessary recovery of cost of energy consumed will be made at rates prescribed by the company from time to time. Energy meter for this purpose shall be provided by the contractor.

7.12 The contractor shall arrange necessary water for the work and his own establishment. However, if available and feasible the company may arrange water at one point near the work site for which recovery @ 1% of the contract value of work done will be made from the contractor's bills.

7.13 Coal required for manufacturing of bricks to be used in the work will be issued @ 25 tonnes per one lakh of bricks on payment at the rate prevailing on the date of issue. Requirement of coal may vary depending on the quality of coal. Transportation of coal and the charges thereof shall be contractor's responsibility.

7.14 Explosives, detonators and other inflammable materials shall not be used in the execution of the work at site by the contractor without prior written permission of the Engineer In Charge. Transportation and storage of such materials shall be

done in specified manner in accordance with the law in force. The contractor shall also obtain licence under such laws for, transportation, storage, use and all other operations, connected with the handling of the same.

8. Quality Assurance - Materials and Workmanship

The contractor shall carry out and complete the work in every respect in accordance with the contract and shall ensure that the work conforms strictly to the drawings, specifications, instructions of the Engineer In Charge. The Engineer In Charge may issue, from time to time, further drawings, detailed instructions/ directions in writing to the contractor. All such drawings, instructions/directions shall be consistent with the contract documents and should be reasonably inferable therefrom, alongwith clarifications/ explanations thereof, if necessary.

8.1 For Quality Assurances of all the Civil Engineering Works the norms/ guidelines laid down by the company herein and elsewhere will form part of the contract for the purpose of quality of works.

8.2 The contractor shall be responsible for correct and complete execution of the work in a workman like manner with the materials as per specification which shall be subject to the approval of the company. All work under execution in pursuance of the contract shall be open to inspection and supervision by the Engineer In Charge or by his authorised representative or any other official of higher rank or any other person authorised by the company in his behalf & the contractor shall allow the same.

8.3 All materials to be provided by the contractor shall be in conformity with the specifications/schedule of work as per the contract and the contractor shall furnish proof, if so required by the Engineer In Charge to his satisfaction that the materials do so comply.

8.4 The contractor shall immediately after the award of work draw up a schedule giving dates for submission of samples as required or necessary as per the specification for approval of Engineer In Charge who shall approve, if found acceptable, promptly so that there is no delay in the progress of the work of the contractor or of the work of any of the sub-contractor. On receipt of samples as per schedule, the Engineer In Charge shall arrange to examine/test with reasonable promptness ensuring conformity of the samples with the required specification and complying with the requirements as per contract documents keeping in view that the work shall be in accordance with the samples approved by him. The contractor shall not start bringing materials at the site unless the respective samples are approved. Materials conforming to approved samples shall only be brought to site. Samples are to be supplied by the contractor at his own cost. The cost involved in tests shall be borne by the contractor. If any test is ordered by the Engineer In Charge which is to be carried out by any independent person or agency at any place other than the site even then the cost of materials and testing charge etc. shall be borne by the contractor. If the test shows that them materials are not in accordance with the specifications, the said materials shall not be used in the work and removed from the site at contractors cost.

8.5 The company, through the Engineer In Charge, shall have full powers to reject any materials or work due to a defect therein for not conforming to the

required specification, or for materials not being of the required quality and standard or for reasons of poor workmanship or for not being in accordance with the sample approved by him. The contractor shall forthwith remedy the defect/replace the materials at his expense and no further work shall be done pending such rectification/replacement of materials, if so instructed by the Engineer In Charge. In case of default on the part of the contractor, the Engineer In Charge shall be at liberty to procure the proper materials for replacement and/or to carry out the rectifications in any manner considered advisable under the circumstances and the entire cost & delay for such procurement/rectification shall be borne by the contractor.

8.6 The Engineer In Charge shall be entitled to have tests carried out for any materials, according to the standard practice followed for such tests, other than those for which satisfactory proof has already been furnished by the contractor who shall provide at his expense all facilities which the Engineer In Charge may require for the purpose. The cost of any other tests, if so required by the Engineer In Charge, shall be borne by the contractor only, if the test shows the workmanship or materials not to be in accordance with the provision of the contract or the instruction of Engineer In Charge, but otherwise by the company.

8.7 Access to the works: The Engineer-in-charge and any person authorised by the company shall at all times have access to the works and to all workshops and places where work is being prepared or from where materials, manufactured articles are being obtained for the works and the contractor shall afford every facility for and every assistance in or in obtaining the right to such access.

8.8 Inspection of works: i) No work shall be covered up or put out of view without the approval of the Engineer-in-charge or the Engineer-in-charge's representative or any other officer nominated by the company for the purpose and the contractor shall afford full opportunity for the EIC or EIC's representative or any other officer nominated by the company for the purpose to examine and measure any work which is about to be covered up or put out of view and to examine foundations before permanent work is placed thereon. The contractor shall give due notice to the Engineer-in-charge's representative whenever any such work or foundations is ready or about to be ready for examination and the Engineer-in-charge's representative shall, without unreasonable delay, unless he considers it unnecessary and advises the contractor accordingly, attend for the purpose of examining and measuring such work or foundations.

ii) The contractor shall uncover any part or parts of the works or making openings in or through the same as the Engineer In Charge may from time to time direct and shall reinstate and make good such part or parts to the satisfaction of Engineer-in-charge.

If any such part or parts have been covered up or put out of view after compliance with the requirement of sub-clause above and are found to be executed in accordance with the contract, the expenses of uncovering, making openings in or through and making good the same shall be borne by the Employer, but in any other cases all costs shall be borne by the contractor.

8.9 Removal of Improper Work and Materials:

i) The Engineer-in-charge shall during the progress of the works have power to order in writing from time to time:

a) The removal from the site, of any materials, which in the opinion of Engineer-in-charge, are not in accordance with the contract/ work order/, approved sample.

b) The substitution with proper and suitable materials.

c) The removal and proper re-execution, notwithstanding any previous test thereof or interim payment there from, of any work which in respect of materials or workmanship is not in accordance with the contract.

ii) In case of default on the part of the contractor in carrying out such order, the Engineer-In-charge shall be entitled to employ and pay other agency to carry out the same and all expenses consequent thereon shall be recoverable from the contractor or may be deducted from any amount due or which may become due to the contractor.

8.10 Devaluation of Work: In lieu of rejecting work done or materials supplied not in conformity with the contract/work order/approved samples , the Engineer-in-charge or any other officer nominated by the company for the purpose may allow such work or materials to remain, provided the Engineer In Charge/ the officer nominated by the company is satisfied with the quality of any materials, or the strength and structural safety of the work, and in that case shall make such deduction for the difference in value, as in his opinion may be reasonable.

8.11 Final Inspection of Work: The Engineer-in-charge and any other officer nominated by the company for the purpose shall make final inspection of all work included in the contract/work order, or any portion thereof, or any completed structure forming part of the work of the contract, as soon as practicable after notification by the contractor that the work is completed and ready for acceptance. If the work is not acceptable to the Engineer-in-charge at the time of such inspection, he shall inform the contractor in writing as to the particular defects to be remedied before final acceptance can be made.

8.12 Defects appearing after acceptance: Any defects which may appear within the defect liability period and arising, in the opinion of the Engineer-in-charge, from lack of conformance with the drawings and specifications, shall, if so required by the Engineer-in-charge in writing, be remedied by the contractor at his own cost within the time stipulated by the Engineer-in-charge. If the contractor fails to comply, the Engineer-incharge may employ other persons to remedy the defects and recover the cost thereof from the dues of the contractor.

8.13 Site Order Book: A Site Order Book is a Register duly certified by the Engineer-in-charge regarding number of pages it contains, each page being numbered, name of work, name of contractor, reference of contract/ work order and the aforesaid certificate should be recorded on its first page. Site Order Books shall be maintained on the sites of works and should never be removed therefrom under any circumstances. It shall be the property of the company. The Engineer In Charge or his authorized representative shall duly record his observations regarding any work, which needs action on the part of the contractor like, improvement in the quality of work, failure to adhere to the scheduled programme etc. as per contract/work order. The contractor shall promptly sign the site order book and note the orders given therein by the EIC or

his representative and comply with them. The contractor in writing to EIC in time shall report the compliance so that it can be checked. The Site Order Book will be consulted by the Engineer- In -Charge at the time of making both running on account and final bills of the contractor. The Engineer In Charge or his representative should give a certificate to this effect in the Measurement books.

8.14 Samples and Testing of Materials: All the materials to be procured by the contractor and to be used in work shall be approved by the Engineer In Charge in advance, and shall pass the tests and analysis required by him, which will be as specified in the specifications of the items concerned and or as specified by BIS or the IRC standard specifications acceptable to the Engineer In Charge. The method of sampling and testing shall be as per the relevant BIS, IRC and other relevant standards and practices. Minor minerals like sand, stone chips etc. shall be conforming to relevant BIS standards. All bought out items including Cement and Steel shall be procured from such manufacturers who hold valid license conforming to relevant BIS standards for manufacturing of such items.

8.15 Storage of Materials: Materials shall be so stored as to ensure the preservation of the quality and fitness for the work. When considered necessary by the Engineer-in-charge, they shall be placed on wooden platforms or other hard, clean surfaces and not directly on the ground. Materials shall be placed under cover when so directed and the contractor shall erect and maintain at his own cost temporary weather-proof sheds at the work site for the purpose. Stored materials shall be so located as to facilitate prompt inspection. All stored materials shall be inspected at the time of use in the work, even though they may have been inspected and approved before being placed in storage or during storage.

8.16 Defective Materials: All materials not conforming to the requirements of the specifications shall be considered as defective, and all such materials, whether in place or not shall be rejected. They shall be removed immediately by the contractor at his expenses and replaced with acceptable material. No rejected material, the defects of which have been subsequently corrected, shall be used on the work until approval in writing has been given by the Engineer In Charge. Upon failure on the part of the contractor to comply with any instruction of the Engineer-in-charge made under the provisions of this article within the time stipulated by the Engineer-in-charge, the Engineer-in-charge shall have authority to remove and replace defective material and recover the cost of removal and replacement from the contractor. Further all such defective material lying at site not removed and replaced within 30 days after issue of notice by the Engineer-in-charge, if the Engineer-in-charge so decides shall dispose off such material in any manner without any further written notice to the contractor.

9. Measurement and Payments

Except where any general or detailed description of the work in the Bill of Quantities or specifications of the contract/ work order provides otherwise, measurement of work done shall be taken in accordance with the relevant standard method of measurement published by the Bureau of Indian Standards(BIS) and if not covered by the above, other relevant Standards/practices shall be followed as per instructions of the Engineer In

Charge.

9.1 All items of work carried out by the contractor in accordance with the provision of the contract having a financial value shall be entered in the Measurement Book as prescribed by the company so that a complete record of the measurements is available for all the works executed under the contract and the value of the work executed can be ascertained and determined therefrom. Measurements of completed work / portion of completed work shall be recorded only in the Measurement Books.

9.2 Measurement shall be taken jointly by the Engineer-in-Charge or his authorised representative and by the contractor or his authorised representative.

9.3 Before taking measurements of any work, the Engineer In Charge or the person deputed by him for the purpose shall intimate the contractor to attend or to send his representative to attend the measurement. Every measurement thus taken shall be signed and dated by both the parties on the site on completion of the measurement. If the contractor objects to any measurements, a note to that effect shall be made in the Measurement Book / Log Book and signed and dated by both the parties.

9.4 The measurement of the portion of work/items of work objected to, shall be re-measured by the Engineer In Charge himself or the authority nominated by the company for the purpose in the presence of the contractor or his authorised representative and recorded in the M.B. which shall be signed and dated by both the parties. Measurements so recorded shall be final and binding upon the contractor and no claim whatsoever shall

thereafter be entertained. In case the contractor or his authorised representative does not attend to the joint measurements at the prefixed date and time after due notice, the measurements taken by the Engineer-In-charge or his representative shall be final and binding on the contractor. Measurement of the extra items of work or excess quantities of work duly authorised in writing by the Engineer In Charge shall also be taken and recorded in the M.B. based on the existing items in the SOR of the company and if such items do not exist in the company's SOR, the description of the work shall be as per actual execution. Payment for such extra items will be based on the rates to be derived as described in the relevant clauses of the contract/ work-order

9.5 No work shall be covered up or put out of view without the approval by the Engineer In Charge and recording of measurements and check measurement thereof duly accepted by the contractor. The contractor shall provide full opportunity to the Engineer In Charge or his representative to examine and measure all works to be covered up and to examine the foundations before covering up. The contractor shall also give notice to Engineer In Charge whenever such works or foundations are ready for examination and the Engineer In Charge shall without unreasonable delay arrange to inspect and to record the measurements, if the work is acceptable and advise the contractor regarding covering of such works or foundations.

9.6 In case of items which are claimed by the contractor but are not admissible according to the department, measurements of such items, will be taken by for

record purposes only and without prejudice so that in case it is subsequently decided by the department to admit the contractor's claims, there should be no difficulty in determining the quantities of such work. A suitable remark should, however, be made against such measurements to guard against payment in the ordinary way.

9.7 Payments: The running on account payments may be made once in a month or at intervals stipulated in the work order/ contract agreement.

9.7.01 Running on account bill/bills for the work executed/ materials supplied in accordance with the work order/ contract shall be prepared on the basis of detailed measurements recorded as described hereinbefore and processed for payments.

9.7.02 Payment of on account bill shall be made on the Engineer In Charge's certifying the sum to which the contractor is considered entitled by way of interim payment for the following:

a) The work executed as covered by the bill/bills after deducting the amount already paid, the security deposit and such other amounts as may be deductible or recoverable in terms of the work order/ contract.

b) (i) Payment for excess quantity of work done with the written instructions of the Engineer In Charge for items already appearing in the bill of quantities of work with approved rates, will be made alongwith the on account bills only up to 10% of the quantity provided in the agreement subject to overall value of work not exceeding the agreement value.

(ii) The CGM(Civil)/ GM(Civil)/ CE(Civil) of the company and / or the Staff Officer(C) of the Area may authorise interim payment for excess work done up to 20 % of the quantity of work provided in the Bill of Quantity of the work awarded from Company level and Area level respectively subject to overall value of work done does not exceed the contract value.

c) Extra items of work executed will be paid on specific written authorisation of CGM (Civil)/ GM(C)/ CE(C) of the company or Staff Officer (Civil) of the Area provided that the value of such extra items of work when added together is not more than 10% of the contract value and the total gross payment including excess quantity does not exceed the contract value.

Balance amount on account of excess quantity and extra items of work executed shall be paid after the deviation estimate / revised estimate regularizing the extra items and excess quantities of work is sanctioned by the competent authority of the company with the concurrence of the Finance Department of the company.

d) On the Engineer In Charge's certificate of completion in respect of the work covered by the contract /final measurements of the work certified by the Engineer-In-charge or his representative.

9.7.03 The measurements shall be entered in the M.B for the work done upto the date of completion and evaluated based on the approved rates for the items in the contract agreement/sanctioned revised estimate. In case of extra items of work, the rates shall be derived as stated in the relevant clause of the contract.

The payments shall be released against the final bill subject to all deductions which may be made on account of materials supplied, water supply for construction, supply of electricity and any other dues payable by the contractor to

the company, and further subject to the contractor having given to the Engineer In Charge a no claim certificate. The contractor shall indemnify the company against proof of depositing royalty on account of minor minerals used in the work before the final bill is processed for payments. The final payment to be made will also be subject to Clause-4.5 of the General Terms & Conditions of the contract.

9.7.04 Any certificate given by the Engineer-In-charge for the purpose of payment of interim bill/bills shall not of itself be conclusive evidence that any work/materials to which it relate is/are in accordance with the contract and may be modified or corrected by the Engineer In Charge by any subsequent certificate or by the final certificate.

9.7.05 The company reserve the right to recover/enforce recovery of any over payments detected after the payment as a result of post payment audit or technical examination or by any other means, notwithstanding the fact that the amount of disputed claims, if any, of the contractor exceeds the amount of such overpayment and irrespective of the facts whether such disputed claims of the contractor are the subject matter of arbitration or not.

The amount of such over payments shall be recovered from subsequent bills under the contract, failing that from contractor's claim under any other contract with the company or from the contractor's security deposit or the contractor shall pay the amount of over payment on demand. In case of contractor's non-payment on such demand, the same should be realized from the contractor's dues, if any, with Coal India Limited or any of its subsidiaries.

9.7.06 The contractors are required to execute all works satisfactorily and according to the specifications laid down in the contract/ work order. If certain items of work, executed by the contractor, are below specifications, the contractor should re-do them according to the specifications and instructions of EIC and if the contractor fails to rectify the defect within the time and in the manner specified by the EIC, the work shall be got re-done or rectified by the department at the risk and cost of the contractor. Engineer In Charge may accept such work of below specifications provided the department is satisfied with the quality of such works and the strength/ structural safety of such works. In that case Engineer In Charge shall make such deductions for the difference in value, as in his opinion is reasonable and is approved by the accepting authority of the company i.e. CGM(C)/ GM(C)/ CE(C) of the company in this case or any other officer nominated by CGM(C)/ GM(C)/ CE(C) for the purpose.

9.7.07 Payment Stage: The payment stage involved will be as under,

i) Signature of EA (Civil)/ Sr. Overseer(C) / Overseer(C) in MB's both in pages recording

measurements, abstract of bill & the duly filled in bill form.

ii) Signature of Engineer(C)/ EE(C) with appropriate check measurements in the MB's and the bill form.

iii) Signature of Sr. EE(C)/ SE(C) with appropriate check measurements in MB's and the bill form.

iv) Signature of Engineer in Charge as per definition as at clause 1(vii) of the General Terms and Conditions, as a token of acceptance for payment of the bill.

The EIC may sign in the abstract of the bill in the MB & the bill form. In between stage iii) and iv) accountal checking may be made by the concerned Accounts Officer/ Accountant.

9.7.08 Secured Advance: Secured advance can be paid for items of materials required for execution of the work and covered under categories A & B and supplied by the contractor at work site, supported by necessary vouchers, challans, test certificates etc. after execution of indemnity bond as per prescribed Form of the company on non-judicial stamp paper of prescribed value. This advance shall be recovered in four equal installments or as per consumption whichever is higher. Engineer In Charge shall recover at his discretion all or any part of secured advance paid, if in his opinion the work is not progressing satisfactorily or the security of these materials at site is not adequately taken care of by the contractor. Secured advance shall be payable for contracts of value above Rs.10.00 lakhs only.

Secured advance for structural steel sections, reinforcement steel and cement, collected at site, will be paid upto 75% of the corresponding stock yard prices of SAIL for the corresponding steel items and Govt. approved/ D.G.S.D. prices for cement, if the same exist. In case of non-availability of Govt. approved prices of cement & steel and for the materials falling under Category - A and B the secured advance will be paid at the basic rate available in the approved schedule of rates of the company plus or minus the overall percentage on which the work was awarded, provided such rate is not more than 60% of the quoted rate of the contractor for the actual work. At any point of time the outstanding recoverable secured advance shall not be more than 10% of the contract value. Items against which secured advance can be granted:

Category-A

Civil:

1. Bricks
2. Stone and brick aggregate
3. Stones
4. Finished products of brass, iron and steel such as doors & windows frames, wire mesh, gate, GI Sheets.
5. Pre-cast R.C.C. products such as pipes, jali, water storage tanks etc.
6. Doors & Window fittings.
7. Pipes and sanitary fittings of CI, SCI & HCI

Electrical :

1. Steel conduits
2. G.I. Pipes
3. I.C. Boards
4. Switchgears (Air circuit beakers and Air break switches)
5. C.I. Boxes.
6. A.C.S.R. Conductors
7. A.C. Plant & Machinery
8. Pumps
9. Generating sets (without oil)

Items against which secured advance can be granted:

Category- B

Civil:

1. Glazed tiles, terrazzo tiles and similar articles.
2. Marble slabs
3. Asbestos cement products
4. Finished timber products such as doors, windows, flush doors, particle boards (subject to mandatory test being satisfactory) etc.
5. Bitumen in sealed drums
6. Bitumen felt
7. Polythene pipes and fittings and tanks
8. Sanitary fittings and pipes of S.W., porcelain and chinaware materials
9. Laminated / Safety, one way vision, and bullet proof glasses.
10. Chemical required for anti-termite treatment (in sealed drums)
11. Paints, varnishes, distempers, pigment spirits etc.

Electrical:

1. Transformers
2. Oil-filled switch gears.
3. L.T. & H.T. Cables

4. Fans
5. Storage and Dry Batteries
6. Insulation tapes
7. Epoxy cable compounds
8. Electric light fittings
9. Wooden battens, casing & capping and wooden boards
10. Flexible wires
11. PVC materials
12. Oil and lubricants
13. Rubber materials
14. Glass wool, thermocole & other insulating materials
15. Porcelain H.T. and L.T. insulators.

In addition to indemnity bond, for materials listed under Category-B, the contractor shall be required to provide necessary insurance cover of equivalent value of materials.

Items against which no secured advance shall be granted:

Civil:

1. Glass products other than those indicated in Category-B.
2. Sand and moorum
3. Chemical compounds other than those indicated in Category-B.

Electrical:

1. Glass gloves and shades
2. Bulbs and tubes
3. Petrol and diesel
4. Freon and other refrigeration gases.

9.8 Income tax deduction @ 2% (Two percent) of the gross value of each bill or at the rate as amended from time to time, shall be made unless exempted by the competent authority of the Income Tax Department Sales tax on works contract shall be payable by the contractor. If, however, the company is asked to make deduction from the contractor's bills, the same shall be done and a certificate to this effect shall be issued to the contractor for dealing with the State Govt. and the company does not take any responsibility to do anything further in this regard.

9.9 No interest shall be payable on the amounts withheld, under the terms of the Contract Agreement/Work-order.

10. Termination, Cancellation, Suspension and Foreclosure of Contract

The company shall, in addition to other remedial steps to be taken as provided in the conditions of contract be entitled to cancel the contract in full or in part, if the contractor :-

a) makes default in proceeding with the works with due diligence and continues to do so even after a notice in writing from the Engineer In Charge, then on the expiry of the period as specified in the notice

Or

b) commits default/breach in complying with any of the terms and conditions of the contract and does not remedy it or fails to take effective steps for the remedy to the satisfaction of the Engineer In Charge, then on the expiry of the period as may be specified by the Engineer In Charge in a notice in writing.

Or

c) obtains a contract with the company as a result of ring tendering or other non-bonafide methods of competitive tendering

Or

d) shall offer or give or agree to give any person in the service of the company or to any other person on his behalf any gift or consideration of any kind as an inducement or reward for act/acts of favour in relation to the obtaining or execution of this or any other contract for his company.

Or

e) fails to complete the work or items of work with individual dates of completion, on or before the date/dates of completion or as extended by the company, then on the expiry of the period as may be specified by the Engineer In Charge in a notice in writing.

Or

f) transfers, sublets, assigns the entire work or any portion thereof without the prior approval in writing from the Engineer In Charge. The Engineer In Charge may by giving a written notice, cancel the whole contract or portion of it in default.

10.1 The contract shall also stand terminated under any of the following circumstances :

a) If the contractor being an individual in the case of proprietary concern or in the case of a partnership firm any of its partners is declared insolvent under the provisions of Insolvency Act for the time being in force, or makes any conveyance or assignment of his effects or composition or arrangement for the benefit of his creditors amounting to proceedings for liquidation or composition under any

Insolvency Act.

b) In the case of the contractor being a company, its affairs are under liquidation either by a resolution passed by the contractor's company or by an order of court, not being a voluntary liquidation proceedings for the purpose of amalgamation or re organization, or a receiver or manager is appointed by the court on the application by the debenture holders of the contractor's company, if any.

c) If the contractor shall suffer an execution being levied on his/their goods, estates and allow it to be continued for a period of 21 (twenty-one) days.

d) On the death of the contractor being a proprietary concern or of any of the partners in the case of a partnership concern and the company is not satisfied that the legal representative of the deceased proprietor or the other surviving partners of the partnership concern are capable of carrying out and completing the contract. The decision of the company in this respect shall be final and binding which is to be intimated in writing to the legal representative or to the partnership concern.

10.2 On cancellation of the contract or on termination of the contract, the Engineer In Charge shall have powers: -

a) to take possession of the site and any materials, constructional plant, equipments, stores etc. thereon.

b) to carry out the incomplete work by any means at the risk and cost of the contractor.

c) to determine the amount to be recovered from the contractor for completing the remaining work or in the event the remaining work is not to be completed the loss/damage suffered, if any, by the company after giving credit for the value of the work executed by the contractor upto the time of cancellation less on a/c payments made till date and value of contractor's materials, plant, equipments, etc. taken possession of after cancellation.

d) to recover the amount determined as above, if any, from any money due to the contractor on any account or under any other contract and in the event of any shortfall, the contractor shall be called upon to pay the same on demand. The need for determination of the amount of recovery of any extra cost/expenditure or of any loss/damage suffered by the company shall not however arise in the case of termination of the contract for death/demise of the contractor as stated in clause 10.1(d) of the contract.

e) To give the contractor or his representative of the work 7 (seven) days notice in writing for taking final measurement for the works executed till the date of cancellation or termination of the contract. The Engineer In Charge shall fix the time for taking such final measurement and intimate the contractor in writing. The final measurement shall be carried out at the said appointed time notwithstanding whether the contractor is present or not. Any claim as regards measurement which the contractor is to make shall be made in writing within 7 (seven) days of taking final measurement by Engineer-In-charge as aforesaid and if no such claim is received, the contractor shall be deemed to have waived all claims regarding above measurements and any claim made thereafter shall not be entertained.

10.3 Suspension of Work:

i) The company shall have power to suspend the work or any part thereof and the Engineer In Charge may direct the contractor in writing to suspend the work, for such period and in such manner as may be specified therein, on account of any default on the part of the contractor, or for proper execution of the work for reasons other than any default on part of the contractor, or on ground of safety of the work ii) In the event of suspension for reasons other than any default on the part of the contractor, extension of time shall be allowed by the company equal to the period of such suspension and the contractor shall properly protect and secure the works to the extent necessary during such suspension. The contractor shall carry out the instructions given in this respect by the Engineer-In Charge & if such suspension exceeds 45 (forty five) days, the contractor will be compensated on mutually agreed terms.

10.4 The work shall, throughout the stipulated period of contract, be carried out with all due diligence on the part of the contractor. In the event of termination or suspension of the contract, on account of default on the part of the contractor, as narrated hereinbefore, the security deposit and other dues of this work or any other work done under this company shall be forfeited and brought under the absolute disposal of the company provided, that the amount so forfeited shall not exceed 10 (ten) percent of the contract value.

10.5 Foreclosure of contract:

If at any time after acceptance of the tender the company decides to abandon for any reason whatsoever the company, through its Engineer In Charge, shall give notice in writing to that effect to the contractor. In the event of abandonment the company shall be liable :-

a) to pay reasonable amount assessed and certified by the Engineer In Charge of the expenditure incurred, if any, by the contractor on preliminary works at site e.g. temporary access roads, temporary construction for labour and staff quarters, office accommodation, storage of materials, water storage tanks and water supply for the work including supply to labour/ staff quarters, office etc.

b) to pay the contractor at the contract rates full amount for works executed and measured at site upto the date of such abandonment.

c) to pay for the materials brought to site or to be delivered at site, which the contractor is legally liable to pay, for the purpose of consumption in works carried out or were to be carried out but for the foreclosure, including the cost of purchase and transportation and cost of delivery of such materials. The materials to be taken over by the company should be in good condition and the company may allow at its discretion the contractor to retain the materials in full or in part if so desired by him and to be transported by the contractor from site to his place at his own cost with due permission of the Engineer In Charge.

d) to take back the materials issued by the company but remaining unused, if any, in the work on the date of abandonment/reduction in the work, at the original issue price less allowance for any deterioration or damage caused while in custody of the contractor.

e) to pay for the transportation of tools and plants of the contractor from site to contractor's place or to any other destination, whichever is less. 10.5.01 The contractor shall, if required by the Engineer In Charge, furnish to him books of

accounts, papers, relevant documents as may be necessary to enable the Engineer In Charge to assess the amounts payable in terms of clauses 10.5(b) (c) & (e) of the contract. The contractor shall not have any claim for compensation for abandonment of the work, other than those as specified above.

11. Completion Certificate

Except in cases where the contract provides for "Performance Test" before issue of completion certificate, in which case the issue of completion certificate shall be in accordance with the procedure specified therein, the contractor shall give notice of completion of work, as soon as the work is completed, to the Engineer In Charge. The Engineer In Charge and or any other Officer, nominated for the purpose by the company, shall within 30 (thirty) days from the receipt thereof, inspect the work and ascertain the defects/deficiencies, if any, to be rectified by the contractor as also the items, if any, for which payment shall be made at reduced rate. If the defects, according to the Engineer In Charge are of a major nature and the rectification of which is necessary for the satisfactory performance of the contract, he shall intimate in writing the defects and instruct the contractor to rectify the defects/remove deficiencies within the period and in the manner to be specified therein. In such cases completion certificate will be issued by the Engineer In Charge after the above rectifications are carried out/ deficiencies are removed by the contractor to the satisfaction of Engineer In Charge. In the event there are no defects or the defects/ deficiencies are of a minor nature and the Engineer In Charge is satisfied that the contractor has already made arrangements for rectification, or in the event of contractor's failure to rectify the defects for any reason whatsoever, the defects can be rectified by the company departmentally or by other means and the 50% of the security deposit of the contractor shall be sufficient to cover the cost thereof, he shall issue the completion certificate indicating the date of completion of the work, defects to be rectified, if any, and the items, if any, for which payment shall be made at reduced rate indicating reasons therefor and with necessary instructions to the contractor to clear the site/place of work or all debris/ waste materials, scaffoldings, sheds, surplus materials etc. making it clean.

11.1 In cases where separate period of completion for certain items or groups of items are specified in the contract, separate completion certificate for such items or groups of items may be issued by the Engineer In Charge after completion of such items on receipt of notice from the contractor only in the event the work is completed satisfactorily in every respect. Refund of security deposit and payment of final bill shall, however, be made on completion of the entire contract work, but not on completion of such items of work.

12. Additional Responsibilities of the Contractor(s)

The cost on account of the "Additional Responsibilities of the Contractors" under this clause is deemed to be included in the tendered rates.

i) The company reserves the right to let other contractors also works in connection with the Project and the contractor/contractors shall co-operate in the works for the introduction and stores and materials and execution of his/their works.

ii) The contractor/contractors shall keep on the work site during the progress a competent and experienced Resident Engineer exclusively for the work and necessary assistants who shall represent the contractor(s). The contractor shall employ, on the site in connection with the execution and maintenance of the work, the following technical staff :

For Buildings Roads, Water Supply & Sanitary Works:

1) For value of work ranging from Rs.10 lakhs to Rs.20 lakhs.

1 Experienced Diploma holder.

2) For value of work above Rs.20lakhs and upto Rs.1 crore.

1 Experienced Graduate Engineer in addition to Diploma holder as per Sl.no.4 below.

3) For value of work in excess of Rs.1 crore & for every additional Rs.2 crores or part thereof.

1 Graduate Engineer extra in addition to Graduate Engineer and Diploma holder as per sl.no.1 & 4.

4) For value of work in excess of Rs.20 lakhs & for every additional Rs.50 lakhs or part thereof.

1 Diploma holder extra.

For Industrial Structures :

1) For value of work ranging from Rs.5 lakhs to Rs.15 lakhs.

1 Experienced Diploma holder.

2) For value of work above Rs.15 lakhs and upto Rs.75 lakhs.

1 Experienced Graduate Engineer in addition to Diploma holder as per sl.no.4 below.

3) For value of work in excess of Rs.75 lakhs & for every additional Rs.1.5 crores or part thereof.

1 Graduate Engineer extra in addition to Graduate Engineer and Diploma holder as per sl.no.1 & 4.

4) For value of work in excess of

Rs.15 lakhs & for every additional Rs.50 lakhs or part thereof.

1 Diploma holder extra.

The contractor shall intimate the Engineer In Charge in writing the names, qualifications, experience and full postal address of each and every technical personnel employed at site by him. The contractor(s) shall not be allowed to execute the work unless he/they engage the required technical staff at site as stated above. The delay on this account, if any, shall be the contractor's responsibility. Important instructions shall be confirmed to the contractor(s) in writing. If the contractor/contractors in course of the works finds/find any discrepancy between the drawing, forming part of the contract documents and the physical conditions of the locality or any errors or omissions in drawings except those prepared by

himself / themselves and not approved by the Engineer In Charge. It shall be his/their duty to immediately inform the Engineer In Charge in writing and the Engineer In Charge shall verify the same. Any work done after such discovery and without intimation as indicated above will be done at the risk of the

contractor/contractors.

iii) The contractor / contractors shall employ only competent, skillful and orderly men to do the work. The Engineer In Charge shall have the right to ask the contractor/ contractors to remove from the work site any men of the contractor/contractors who in his opinion is undesirable and the contractor/contractors will have to remove him within 3 (three) hours of such orders. The contractor shall employ apprentices in the execution of the contract work as required under Apprentices Act. The contractor shall further be responsible for making arrangements at his own cost, or accommodation and social needs of the staff and workers under his employment.

iv) Precautions shall be exercised at all times by the contractor(s) for the protection of persons (including employees) and property. The safety required or recommended by all applicable laws, codes, statutes and regulations shall be observed by the contractor(s). In case of accidents, the contractor(s) shall be responsible for compliance with all the requirements imposed by the Workmen's Compensation Act or any other similar laws in force, and the contractor(s) shall indemnify the company against any claim on this account. All scaffoldings, ladders and such other structures which the workmen are likely to use shall be examined by the Engineer In Charge or his authorised representative whenever they want and the structure must be strong, durable, and safe and of such design as required by Engineer In Charge. In no case any structure condemned by the Engineer In Charge or his authorised representatives shall be kept on the work and such structure must be pulled down within three hours of such condemnation and any certificate or instructions, however, shall in no way absolve the contractor/contractors from his/their responsibility, as an employer, as the company shall in no way be responsible for any claim. The contractor / contractors shall at all times exercises reasonable precautions for the safety of employees in the performance of his/their contract and shall comply with all applicable provisions of the safety laws drawn up by the State Govt. or Central Govt. or Municipalities and other authorities in India. The contractor/contractors shall comply with the provision of the safety hand book as approved and amended from time to time by the Government of India.

v) The contractor / contractors shall familiarise themselves with and be governed by all laws and rules of India and Local statutes and orders and regulations applicable to his/ their work.

vi) The contractor shall maintain all records as per the provision made in the various statutes including Contract Labour (Regulation & Abolition) Act, 1970 and the Contract Labour (Regulation & Abolition) Central Rules, 1971, Minimum Wages Act, Workmen Compensation Act etc. and latest amendment thereof. Such records maintained by the contractor shall be opened for inspection by the Engineer In Charge or by the nominated representative of the Employer.

vii) The contractor/ contractors shall provide facilities for the sanitary necessities of all persons employed on the work shall be constructed and maintained in the number, manner and place approved or ordered by the Engineer In Charge. The contractor/contractors shall vigorously prohibit committing of nuisance at any other place. Cost of all works under this item shall be covered by the

contractor/contractor's tendered rates.

viii) The contractor/contractors shall furnish to the Engineer In Charge or his authorised representative with work reports from time to time regarding the contractor / contractors organization and the progress made by him / them in the execution of the work as per the contract.

ix) All taxes, whether Local, Municipal, Provincial or Central etc. and cess, royalties etc. are payable or may become payable during the entire periods of contract, shall be to the contractor/contractors account and shall be deemed to have been included in the tender for the work to be executed by him/them. However, in the event of any changes in the Sales Tax on Works Contract as required by the Statutory Authority during the contract period, necessary adjustments will be made in contractual payments. For this purpose, the base date shall be the date on which the price bids/revised price bids have been opened.

Amount payable/repayable for any subsequent change in the Sales Tax on Works Contract will be made to /from the contractors after departmental verification of such changes of tax law issued by the statutory authority. In case the company land is used for manufacture of bricks or extraction of gravels etc. the contractor will have to pay compensation to the company (apart from the liability of the contractor to make the payment of royalty etc. to the State Government) at the same rates or royalty fixed by the State Government or an appropriate deduction may be made in the rate to be paid to the contractors.

x) The contractor / contractors shall make his / their own arrangement for all materials, tools, staff and labourer required for the contract, which shall include cost of lead, lift, loading, unloading, railway freight, recruiting expenses and any other charges for the completion of the work to entire satisfaction of the company.

xi) The contractor / contractors shall make their own arrangement for carriage of all materials to the work site at his/their own cost.

xii) The work shall not be sublet to any other party, unless approved by Engineer In Charge, in writing.

xii) (a) No fruit trees or valuable plants or trees with trunk diameter exceeding 150mm shall be pulled, destroyed or damaged by the contractor/contractors or any of his/their employees without the prior permission of the company, failing which the cost of such trees or plants shall be deducted from the contractor/contractors dues at the rate to be decided by the company. The rates quoted are supposed to include clearance of shrubs and jungles and removal of such trees upto 150 mm dia., as will be permitted by the Engineer In Charge in writing.

(b) Anything of historical or other interest or of significant value unexpectedly discovered on the site is the property of the employer. The Contractor is to notify the Engineer-in-charge or his nominee of such discoveries and carry out the Engineer-in-charge or his nominee's instructions for dealing with him. xiv) The contractor / contractors shall not pay less than the minimum wages to the labourers engaged by him/them as per Minimum Wages Act or such other legislation or award of the minimum wage fixed by the respective State Govt. or

Central Govt. as may be in force.

xv) All accounts shall be maintained properly and the company shall have the right of access and inspection of all such books of accounts etc., relating to payment of labourer considered necessary and the company may arrange for witnessing the payment to the labourer by its representatives.

xvi) The contractor shall in additions to any indemnity provided by the relevant clauses of the agreement or by law, indemnify and keep indemnified for the following :

a) The company or any agent or employee of the company against any action, claim or proceeding relating to infringement or use of any patent or design right and shall pay any royalties or other charges which may be payable in respect of any article or material included in the contract. However, the amount so paid shall be reimbursed by the company in the event such infringement has taken place in complying with the specific directions issued by the company or the use of such article or material was the result of any drawing and/or specifications issued by the company after submission of tender by the contractor. The contractor must notify immediately after any claim being made or any action brought

against the company, or any agent or employee of company in respect of any such matter.

b) The company against all claims, damages or compensation under the provisions of payment of Wages Act, 1938, Minimum Wages Act, 1948, Employer's Liability Act, 1938, The Workmen's Compensation Act, 1923, Industrial Dispute Act, 1947, Mines Act as applicable, Employees State Insurance Act 1948 and Maternity Benefit Act, 1961, Acts regulating P.F. or any modification thereof or any other law relating thereto and rules made thereunder from time to time, as may be applicable to the contract which may arise out of or in consequence of the construction or maintenance or performance of the work under the contract and also against costs, charges and expenses of any suit, action or proceedings arising out of any accident or injury.

c) The company against all losses and claims for injuries or damages to any third party or to any property belonging to any third party which may arise out of or in consequence of the construction or maintenance or performance of the work under the contract and against all claims/demands proceedings/damages, cost charges and expenses whatsoever in respect of or in relation thereto. xvii) The contractor is under obligation to hand over to the company the vacant possession of the completed building structures failing which the Engineer In Charge can impose a levy upon the contractor upto 5% of the total contract value for the delay in handing over the vacant possession of the completed works after giving a 15 (fifteen) days notice to the contractor.

d)

i) **(a) INSURANCE** : The contractor shall take full responsibility to take all precautions to prevent loss or damage to the works or part thereof for any reasons whatsoever (excluding act of God e.g. flood, riots, war, earthquake, etc.)

and shall at his own cost repair and make good the loss/damage to the work so that on completion, the work shall be in good order and condition and in conformity with the requirements of the contract and instructions of the Engineer In Charge. In case of construction works without limiting the obligations and responsibilities under the contract, the contractor shall take insurance policy for the total value of work for the period from commencement to completion including defect liability period against risk of loss/ damage to the extent as permissible under the law of insurance.

The contractor shall arrange necessary insurance and pledge the same in the name of the company and all moneys payable by the insurers shall be recovered by the company which shall be paid to the contractor in installments as may be certified by the Engineer In Charge for the purpose of rebuilding or replacement or repair of the works and/or goods destroyed or damaged for which payment was received from the insurers. b) Where any company building or part thereof is used, rented or leased by the contractor for the purpose of storing or using materials of combustible nature, the contractor shall take separate insurance policy for the entire building and the policy shall be deposited with the company.

c) The contractor shall at all times during the tenure of the contract indemnify the company against all claims, damages or compensation under the provision of the Workmen's Compensation Act and shall take insurance policy covering all risk, claims, damages, or compensation payable under the Workmen's Compensation Act or under any other law relating thereto.

d) The contractor shall ensure that the insurance policy/ policies is/are kept alive till full expiry of the contract by timely payment of premiums and it/they shall not be cancelled without the approval of the company and a provision is made to this effect in all policies, and similar insurance policies are also taken by his subcontractors if any. The cost of premium shall be borne by the contractor and it shall be deemed to have been included in the tendered rate.

e) In the event of contractor's failure to effect or to keep in force the insurance referred to above or any other insurance which the contractor is required to effect under the terms of the contract, the company may effect and keep in force any such insurance and pay such premium/premiums as may be necessary for that purpose from time to time and recover the amount thus paid from any moneys due to the contractor.

THE CLAUSE 12 (xviii) SHALL BE APPLICABLE FOR WORKS OF ESTIMATED VALUE OF OVER Rs. 50 LAKHS.

xix) **Setting Out:** The contractor shall be responsible for the contract and proper setting out of the works and correctness of the position, reduced levels, dimensions and alignment of all parts of the work including marking out the correct lay out in reference to the permanent bench mark and reference points. Only one permanent bench mark and basic reference lines shall be marked and shown to the contractor as basic data. The contractor shall have all necessary instruments, appliances and labour in connection therewith. If at any time during the progress of work any error is detected in respect of the position, levels, dimensions or alignment of any part of the work, the contractor on being required to do so by the Engineer In Charge or his representative shall at the

expenses of the contractor rectify such errors to the satisfaction of Engineer In Charge unless such error is due to incorrect data supplied by the Engineer In Charge. xx) On receipt of Letter of Acceptance of Tender / Work Order the contractor shall forthwith Register and obtain License from the competent authority under the Contract Labour (Regulation & Abolition) Act 1970, the Contract Labour (Regulation & Abolition) Central Rules, 1971 and submit certified copies of the same to the Engineer In Charge and the Employer. xxi) The contractor shall be registered with the concerned State Govt. and the Central Govt. in respect of Sales Tax Act and the certificate having details of Registration No., period of validity etc. should be submitted to the Engineer In Charge.

xxii) The contractor shall, in connection with works, provide and maintain, at his own cost, all lights, security guards, fencing when and where necessary as required by the Engineer In Charge for the purpose of protection of the works, materials at site, safety of workmen and convenience of the public.

xxiii) All materials (e.g. stone, moorum and other materials) obtained in the course of execution of the work during excavation and dismantling etc. shall be the property of the company and the same may be issued to the contractors, if required for use in the works at the rates to be fixed by the Engineer In Charge.

xxiv) Unless otherwise specifically provided for, dewatering of excavation pits, working areas etc. shall be the contractor's responsibility and is to be carried out at his own cost as per instructions of EIC. The rates quoted by the contractor shall be deemed to include the dewatering costs.

xxv) Approval by the Nodal Officer / Engineer-in-charge or his nominee. The contractor shall submit specifications and drawings showing the proposed temporary work to the Nodal Officer/Engineer-in-Charge or his nominee, who is to approve them if they comply with the specifications and drawings. The contractor shall be responsible for design of Temporary Works. The Nodal Officer/Engineer-in-charge or his nominee's approval shall not alter the contractor's responsibility for design of the Temporary Works.

13. Defects Liability Period:

In addition to the defect/s to be rectified by the contractor as per terms of the contract/ work order, the contractor shall be responsible to make good and remedy at his own expense the defect/s mentioned hereunder within such period as may be stipulated by the Engineer In Charge in writing: a) Any defect/defects in the work detected by the Engineer In Charge within a period of 6 (six) months from the date of issue of completion certificate.

b) In the case of building works or other works of similar nature any defect in the work detected by the Engineer In Charge within a period of 6 (six) months from the date of issue of completion certificate or before the expiry of one full monsoon period i.e. June to October whichever is later in point of time.

13.1 A programme shall be drawn by the contractor and the Engineer In Charge for carrying out the defects by the contractor detected within the defect liability period and if the contractor fails to adhere to this programme, the Engineer In Charge shall be at liberty to procure proper materials and carry out the rectifications in any manner considered advisable under the circumstances and the cost of such procurement of materials and rectification work shall be

chargeable to the contractor and recoverable from any of the pending dues of the contractors. The defect liability period can be extended by the company on getting request from the contractor only for valid reasons.

//5//

**SOUTH EASTERN COALFIELDS LIMITED
CIVIL ENGINEERING DEPARTMENT
GENERAL SPECIFICATION FOR BRICKS**

1 Bricks:-

Bricks **manufactured** in Bull a patent kiln trench only shall be used unless otherwise specified. Bricks should be of uniform size, shape and colours and must be well burnt so as to give a **clarringing** sound when struck and should not break when thrown on the ground against other bricks they shall be clean whole free from flaws Cracks and under burnt lump to any kind. Especially line and shall have sharp edges and even surface. Bricks **when** soaked in water for 24 hours absorb more **weight** than one fifth of their dry weight shall be rejected. The burnt brick shall be 10"x5"x3" & 9"x4 1/3"x3" in size with usual variation of 1/8 on either side. The bricks shall be manufactured from carefully selected goods firm load with necessary **admixture** of sand.

2. Bricks Aggregate for line Concrete -

The **brickhi** shall be from hard well burnt bricks but shall not exceed 1.1/2 size and shall be free dust, clay, grass or any other foreign matter

3 Surkhi:-

Surkhi shall be made from well burnt bricks and should pass through a sieve of 1.1/2 **mesh** in case over burnt bricks be used for the manufacture of Surkhi

4 Sand:-

Sand shall be clean sharp and coarse & free from all impurities and organic Matter and be such as to pass through a 64 mesh sieve

5 Lime:-

Lime stone shall be used in the work. It shall be slaked just **before** used All impurities, ashes of pieces improperly or carelessly burnt shall be screened or picked out before slaking and removed at once from the work, lime should pass **through** a screen 12/12 **mesh** to square Inch and stored in a dry place.

6. Aggregate for Cement Concrete:-

Aggregate for cement concrete shall be from trap **Quartzite** or hard quartz **stone** with which pass through 3/4" mesh screen. The aggregate shall be well screened and washed use and shall be free from **foreign** matter.

7. Cement Mortar:-

The mortar shall consist cement and sand mixed in the proportion defined in the relevant schedule item for the various items of work Only measured quantity shall be used and cement shall be spread on a clean dry plat form in layers one over the other mixture when mortar is required for use and than only in sufficient quantity to make the materials most

8 Lime Concrete :-

The mixture shall be slaked lime. surkhi and sand is the proportion defined in the relevant schedule items for the various item work. Ground cinder may be used when directed by Engineer-in-charge. Lime surkhi and or to be mixed dry on a plat form of masonry and than spinkid with necessary quantity of water and ground in mortar mill.

Aggregate for Reinforced Cement Concrete :-

Aggregate for R.C.C. shall be from trap. quartzite or hard quartz stone. The aggregate shall pass through an rest on 1/4' mesh screen. It well screened and washed before used and free from foreign matters.

10. Earth Work in Excavation :-

Excavation shall be strictly as shown in the plans. Botton of franchises shall be dressed level all. excavation earth will be placed not less than 5 feet from the edge of the foundation trench or as directed by the Engineer-in-charge.

All earth filling in the plinth of foundation measurement will be done in not more than 6" layers well watered and rammed,

11. Lime Concrete :-

The concrete shall consist of an aggregate of the proportion mentioned in the schedule of items of approved quantities 1 1/2 gauge and down mixed with lime mortar. The concrete shall be mixed on level platform. The aggregate shall be fist washed clean thoroughly watted, and placed to an even thicknes on platform.

Dry mortar mixed in proportion as specified in schedule of quantities shall than be evenly spreaa over the aggregate and. mixed thoroughly using sufficient water to mortar adherent each place of the aggregate when the bad for concrete is properly watted rammed and prepared the concrete shall be laid careful in position in layer not exceeding 6" The basket etc. shall never be thrown form a high but gently laid with the basket each layer shall shall be well rammed with a heavy wooden hammer till the mortar comes to the surface No. water shall be added during ramming but the surface of the each completed layer shall remain and wet after the days work such time till it is set and gives on impression of the rammer when dropped over it.

When concrete is to laid under water or in wet location hydraulic lime rendered hydraulic shall be used.

12. Cement Concrete :-

The proportion of the concrete will be the same as specified in the schedule of the quantities and will be strictly adhered to the concrete shall be mixed properly in a power driven mixer in such a manner as to avoid loss of water. The concrete shall be mixed for a minimum period to two minutes or unit it is of even colour and of uniform consistency thoroughly. Hand mixed concrete shall contain 19% extra cement and shall be made on hard clean and even surface. The cement and sand will be mixed dry until the mixture is uniform in colour. It shall than be spread evenly over the course aggregate and mixed thoroughly. The water shall then ge added and the

whole mixed thoroughly until the mass is uniform in colour and consistency concrete "shall be handled from the place of mixing to the place of final deposit as rapidly as practicable. The concrete once laid shall not be disturbed and shall be kept thoroughly damped by means of well matting and sand.

13. **Brick work in Mud Mortar:-**

The mud to be used for mortar shall be from selected nature of which sand shall be added in such quantity that the dried lump of the mixture shall not show signs of cracking. The mud shall be well trodded and variation in consistency of paste will be effected by the addition of sufficient water care being taken to remove all clods and stones.

14. **Brick work in Lime Mortar :-**

Shall be done with brick soaked in water for not less than 4 hours before use in work. The proportion mortar will be the same as per schedule of quantity which will be strictly adhered to the complete work should be perfectly in accordance with the drawing so for the lime level and vertically is concerned only mortar mixed properly in ball chaki to be used.

15. **Brick Work in Cement Mortar in Foundation Plinth & Superstructures :-**

Only selected brick approved by Executive Engineer shall be used in the masonry, the brick must be soaked in water for 6 hours before use these should be proper bonding and shall be carried through the full width of the wall each course being truly & vertically longitudinal neither horizontal nor vertical joints shall be of greater thickness than 1/4"

The proportions of mortar will be as specified in the schedule of quantities. All old work to be kept thoroughly watered for two days before any new work is put on it.

The other specification will be same as that of C.P.W.D.

16. **Damp Proof Course :-**

Damp proof course to a thickness as specified in the drawing will be laid over the plinth after cleaning on the brick work thoroughly of all its mortar sticking on the surface and wetting (thoroughly. The concrete shall be done with stone ballast of 3/4" size graded in proportion of 1:2:3 (1 cement, 2 sand, 4 Chips) Cement concrete for D.C.P. Should be cured for 5 days before a hot coat bitumen is applied on it. The bitumen painted surface should be immediately sealed with sand

17. **Lime concrete 3" thick in Floors and With brick Ballast:-**

1/2 brick aggregate and down gauge as specified by the Engineer-in-charge with 50% of lime mortar consisting of lime and 3 sand shall be used. the aggregate and mortar shall thoroughly mixed before laying and rammed consolidation shall be done unit skin or pure mortar the surface and completely side the aggregate No. Mortar or water added during ramming. The mortar shall be mixed in hand chakey.

18. **1" Patent Stone Flooring : 1 : 2 : 3**

The concrete shall consist of 1 cement: 2 sand 4 stone ballast 1/2" & down in all cases only measured quantity shall be used. In all first be

mixed dry and than mixed the aggregate. The whole shall than be laid properly with water and than laid in a layer or 1" thick over prepared sub base an beaten thoroughly with wooden straightedge. The surface be finished a floating coat of neat cement to the satisfaction of the Engineer-in-charge. The finished floors shall be kept wet for atleast 7 days.

19. **Reinforced Cement Concrete 1:2:4 Slabs, Roofing Linels, Chhajjas act.**

Reinforcement to be done with a network of M.S. rods as specified under quantity schedule or by the Engineer-in-charge. Roads and netting shall be woven by the contractor at his coast. Every alternative cross, over of M S rods shall be tied taste with binding wire of approved gauge

The proportion shall be 1 cement: 2 sand : 4 stone before laying the centering and frame worss will have to be approved by the Engineer-in-charge or his authorised officer

The concrete shall be well fixed before laying and vibrated properly till mortar come out to the surface and rain forcing rods are thoroughly embedded in concrete

Care is to be taken that specified covering it there and on reinforcing material are exposed from outside The laid concrets should not be disturbed and should be kept wet for 10 days

The centering will be removed only after 7 days of placing the concrete or as directed by the Executive Engineer

The general specification of CPWD will be followed in all respect

20. **Plaster inside outside :-**

Prior to the application of plaster the faces of the walls shall be cleaned and joints of bricks rated out to depth of 1/2" and properly watered for atleast 6 hours. The plaster shall be thoroughly smoothed and rubbed with straight edges & wooden fiats in proper workman and like manner watering shall be continued for 7 days on the finished surface

The mortar will ordinarily consist of cement and sand in the proportion as specified in the schedule of quantity which should be strictly adhered.

Where lime is also specified the cream of lime shall be prepared by thoroughly slaking rehired quantity of quick lime with minimum quantity of water in order to get a thick slurry of lime shall be screened through a cloth to remove all dirt and any unslaked like particle.

Sand shall be measured by volume insuitable size measuring boxes while cement shall be measured by weight taking 1 bags 1.20 cft.

Screened cream of lime and screened sand shall be mixed together in requisite portion and the whole than mixed with necessary quantity of cement. The minimum quantity of water to give a working consistency to the mix should only be added and more.

The plaster should be applied immediately after mixing maintaining the said precautions as for as cement mortar.

21. **1/2" Cement Plaster dado 1:3:**

All the joints of masonaty should be out 3/4" deep and the wall

should be watted at least 6 hours before the plaster is laid. The plaster shall be laid on the some what more than the thickness and levelled and finished with a row 1. The plaster shall be kept constantly watered for 3 weeks the thread lining is to be done it shall be done before the cement takes initial set.

22. White Washing three coats :-

White washing shall be prepared from burnt shall has thoroughly mixed with after it should give a thin creamy constancy if should then the screened through clean cloth gum dissolved in hot water or good cojee water shall be added in proportion of 2 ounces to 1 Cft for each coat is allowed to be applied. The new walls shall clened and brushed. Each coat of white wash should be allowed to dry before applying the next coat.

23. Thick Trell in work in cement mortar 1:3 :-

5 thick 1st class brick trellis work in cement mortar 1:3 will be done with bricks soaked in water for not a less than 4 hours before in work. Watering to be continued Trelli work for at least 2 days freshly mixed shall be used and 1/2" thick cement plaster as directed by Executive Engineer shall be applied.

24. Colour Washing :-

The colour washing shall be prepared and applied in accordance with the standard specification for white washing except that the contractors shall provide colouring matter specified and ordered by the Engineer-in-charge use. The colour wash should be stirred continuously during use. The colour should be of even tint over whole surface.

25. Lime concrete terracing on roof:-

Brick aggregate of 1" and gauge with 50% of mortar consisting of time 2 Sukhi shall be used. The brick aggregate will be well watered before mixing up the mortar. The lime should be thoroughly screened and made free from kankars. The mortar should be mixed in bailchakey separately and item mixed thoroughly with the aggregate before laying over roof. The mixture will be properly levelled before beating. The concrete shall than be thoroughly consolidated by bitumen. With wooden mallets (Thampits) Lime water shall be sprinkled at in terrace to kept it wet while beaten proper shops are to be made to wards eaves for flow of the rain water in no case shall the mixture be allowed to dry until the work is complete. The surface shall be softened by being sprinkled with clean water and the mortar which will rise to the surface during beation shall be smoothed & finished off with lime slurry on begin treatment complete No. plastering shall on any account be put on the surface watering shall be continued for 10 days after completion of the work at the cost of the contractor (s) Goondhi to be made of the same mix as a terrace along with junction of the parapat roof to the design as per the instruction of the Engineer-in-charge.

26. Salwood & windows frames :-

The frames shall be made seasoned sal wood free sap bends sum cracks soaks on belmoisher of any kind alternative kiln seasoned and treated Badan or Chugium free from sap bends falws sun cracks of any

kinds will be acceptable.

27. Door and windows shutters :-

Panelled and glazed and battened shutters to 1/4" thick shall be of 1st class, In man Teak wood and 1" to 1-1/4" battened shutters shall be of wood as specified by Executive Engineer kila seasoned and treated Badan wood or huglum wood will also be acceptable. They shall be framed and put together planed smooth in all surfaces and finished in accordance with the best class or joinery.

Panels of fully or partly paneled doors shall always be of the same class wood as the shutters. Frames styles, top fridges lock and bottom rails of shutter and post head and siris or three hold plates of frames shall be continuos throughout their length the outing being divided into as many parts as required by the position to the rails. Panel shall always be made in one place.

28. Holfasts :-

15" x1-1/2"1"8"/12"x1-1/2"x1/8" M.S. holfast shall be sent in cement mortar 1:2:4:6 nos for each door 4 nos for each window and 2 nos for clearesrory window.

29. Puccadrain :-

Each excavation for cutting for drain shall be done by the contractor and gotaproved by the Engineer-in-charge. The rain shall be made from well burnt bricks with cement concrete bed sizes shall be specified in the schedule. The surface of the top sides and bads shall be cement plastered with smooth surface Necessary earth filling by the side of the drain shall also be done.

30. Painting doors & windows:-

Painting 2 coats over coat of priming to all doors windows shall be done. The quality and shade of paint shall be approved by Engineer-in-charge. The wood surface to be painted shall be thoroughly creanced and sand prepared before painting.

31. Window Gration:-

3/4" dia M.S. round ceiling to be plastered should be thoroughly cleaned and damped before the plaster is laid part of cement and 4 parts of screened sand shall be mixed and immediately applied on the surface.

32. 2.4 Cement Plaster 1:4 in ceiling :-

The surface of the ceiling to be plastered should be thoroughly cleaned and damped before the plaster is laid part of cement and 4 parts of screened sand shall be mixed and immediately applied on the surface.

33. Construction of brick masonry chullah:-

Chullah shall be constructed on 2nd class brick masonry in cement mortar 6 with 2 holes and iron grateing complete as per design and finish sand gopri plaster.

34. Ventilators :-

Waringmeled or R.C.C. Jalli ventilators of required size shall be fixed in the walls as per specification and drawing.

35. Asbestos rain water pipe:-

In order to facilities painting will be blocked 1-1/2" from wall Asbestos heads and shoes shall be provided for the proper size rain water pipes. The shoes being fixed 6" level ground above.

36. Fan Clamp :-

5/8 dia M.S. Fan hooks shall be provided and fixed in the ceiling for Electric fans.

37. Fly proof doors:-

Galvanised iron fly proof webbing 16x16 mesh shall be used. The webbing shall be fixed securely to be the styles rails and mounting by G.I. stapes at about 6" intervals. The style rails and mounting around the fly proof webbing shall be moulded.

Items not covered by above will be guided by the specification of the CPWD or as directed by the Engineer-in-charge whose interpretation will be final.

List of Approved brand paints to be used in the work:-

1. M/s. Shalimar Paints Ltd. (Wood kots / Steel kots)

M/s. Asian Paints Ltd. (Woodrite / Lohant)

M/s. British Paints Ltd. (Castle)

M/s. Addsan Paints & Chemicals Pvt. Ltd. (Spartan Enamel)

M/s. Goodian Narrolac Paints Pvt. Ltd. (Enamel Brushing)

M/s. Johnson & Nicholson (Jhilmil)

38. List of approved firms for supply of factory made doors, window, shutters where specified as per specification given in bill of quantity.

1. M/s. Geel Brothers, Goel House, Ramkund, Raipur 492001 (C.G.)

2. M/s. Betul Wood Products Pvt. Ltd., Industrial Estate, Betul 460002 (M.P.)

3. M/s. Safe Wood, J.C. Road, 1st Floor Lalpur, Ranchi, Pin- 834001

4. M/s. Wood Preseves Pvt. Ltd., Flat 20 Mini Industrial Estate, Nagpur-440026

5. M/s. Goyal Industrial Corporation, 8743, D.B. Gupta Road, New Delhi-110055

6. M/s. Santi Timber Products Pvt. Ltd., Wanjari Layout, Kamptee Road, Nagpur 450026

7. M/s. Gopal Enterprises, P.B. No. 335, Wholesale Cloth Market, Gandhi Bagh

8. M/s. Narmada Wood Products, Industrial Area (Kheda) Itarsi 461111 (M.P.)

9. M/s. Eastern India Doors Mft. Co. Pvt. Ltd., Sri R.M.M. House 4th Floor 3B Lal Bazar Street, Calcutta 700001

10. M/s. Bagaria Timber (Pvt. Ltd.) C 41 MIDC Industrial Area, Nagpur 4028

11. M/s. Century Ply Board (I) Pvt. Ltd. 6, Lyons Range, Calcutta 700001

12. M/s. N.C. Industries Itli Road, Hohal Ranchi 834005

13. M/s. Shukla Wood, 47, Industrial Area, Rajgamar Road, Korda (C.G.) 795681

14. M/s. Shukla Wood Industries, 393/394 Station Road, Ganjpara Raipur 492001

15. M/s. Bhimsaria Doors (P) Ltd., Street No. 2 Near Shiv Mandir, Fafadih. Raipur (C.G.) 492009

16. M/s. Gujrat Timber Industries (P) Ltd. New Timber Market, Fafadih, Raipur (C.G.) 492009
17. M/s. Priya Timber Products, S/3/79 Industrial Estate, Bubneshwar, Orissa 751010
18. M/s. Susama Timber Pvt. Ltd. At & PO Tamando, Bhubaneswar, Orissa 752054
19. M/s. Surjit Wood Products, Manendragarh, Dist- Korea 497442
20. M/s. Garg Wood Product, Singhpur Road, Shahdol (C.G.) 484001

Sd/-
Addl. Chief Engineer
(Civil)
SECL Bilaspur

**SOUTH EASTERN COALFIELDS LIMITED
CIVIL ENGINEERING DEPARTMENT
SPECIFICATIONS FOR ROAD WORKS**

Non-bituminous Sub-bases / bases

401. GRANULAR SUB-BASE

401.1. Scope

This work shall consist of laying and compacting well graded material on prepared subgrade in accordance with the requirements of these specifications. The material shall be laid in one or more layers as sub-base or lower sub-base and upper sub-base (termed as subbase hereinafter) as necessary according to lines, grades and cross-sections shown on the drawings or as directed by the Engineer.

401.2. Materials

401.2.1

The Material to be used for the work shall be natural sand, moorum, gravel, crushed stone, or combinations thereof depending upon the grading required. Materials like crushed slag, crushed concrete, brick metal and kankar may be allowed only with the specific approval of the engineer. The material shall be free from organic or other deleterious constituents and conform to one of the three gradings given in Table 400-1.

TABLE 400-1. GRADING FOR CLOSE-GRADED GRANULAR SUB/BASE MATERIALS

IS Sieve percent by weight passing the IS sieve designation Grading 1 Grading 2
Grading 3

75.0 mm	100	-	-
53.0 mm	80-100	100	-
26.5 mm	55-90	70-100	100
9.50 mm	35-65	50-80	65-95
4.75 mm	25-55	40-65	50-80
2.36 mm	20-40	30-50	40-65
0.425 mm	10-25	15-25	20-35

0.075 mm 3-10 3-10 3-10

CBR Value (Minimum) 30 percent 25 percent 20 percent

Note : The material passing 425 micron sieve for all the three gradings when tested according to IS: 2720 (Part 5) shall have liquid limit and plasticity index of not more than 25 percent and 6 percent respectively.

401.2.2 Physical requirements : The material shall have a 10 percent fines value of 50 KN or more (for sample in soaked condition) when tested in compliance with BS:812 (Part 111). The water absorption value of the coarse aggregate shall be determined as per IS:2386 (Part 3); if this value is greater than 2 percent, the soundness test shall be carried out on the material delivered to site as per IS : 383. For Grading II and I II materials, the CBR shall be determined at the density and moisture content likely to be developed in equilibrium conditions which shall be taken as being the density relating to a uniform air voids content of 5 percent.

401.3. Strength of sub base : It shall be ensured prior to actual execution that the material to be used in sub base satisfies the requirements of CBR and other physical requirement when compacted and finished. When directed by the Engineer, this shall be verified by performing CBR tests in the laboratory as required on specimens remolded at field dry density and moisture content and any other test for the "quality" of materials, as may be necessary.

401.4 Construction Operations

401.4.1 Preparation of subgrade : Immediately prior to the laying of sub-base, the subgrade already finished to Clause 301 or 305 as applicable shall be prepared by removing all vegetation and other extraneous matter, lightly sprinkled with water if necessary and rolled with two pass of 80-100 kN smooth wheeled roller.

401.4.2 Spreading and compacting : The sub-base material of grading specified in the contract shall be spread on the prepared subgrade with the help of a motor grader of adequate capacity, its blade having hydraulic controls suitable for initial adjustment and maintain the required slope and grade during the operation or other means as approved by the Engineer. When the sub-base material consists of combination of materials mentioned in Clause

401.2.1, mixing shall be done mechanically by the mix-in-place method. Manual mixing shall be permitted only where the width of laying is not adequate for mechanical operations, as in small-sized jobs. The equipment used for mix-in-place construction shall be a rotavator or similar approved equipment capable of mixing the material to the desired degree. If so desired by the Engineer, trial runs with the equipment shall be carried out to establish its suitability for the work. Moisture content of the loose material shall be checked in accordance with IS: 2720 (Part II) and suitably adjusted by sprinkling additional water from a truck mounted or trailer mounted water tank and suitable for applying water uniformly and at controlled quantities to variable widths of surface or other means

approved by the Engineer so that at the time of compaction it is from 1 percent above to 2 percent below the optimum moisture content corresponding to IS : 2720 (Part VII I). While adding water, due allowance shall be made for evaporation losses. After water has been added, the material shall be processed by mechanical or other approved means like disc harrows, rotavators until layer is uniformly wet. Immediately thereafter, rolling shall start. If the thickness of the compacted layer does not exceed 100 mm, a smooth wheeled rollers of 80 to 100 kN weight may be used. For a compacted single layer upto 225 mm the compaction shall be done with the help of a vibratory roller of minimum 80 to 100 kN static weight with plain drum or pad foot-drum or heavy pneumatic tyre roller of minimum 200 to 300 kN weight having a minimum tyre pressure of 0.7 MN/M² or equivalent capacity roller capable of achieving the required compact ion. Rolling shall commence at the lower edge and proceed towards the upper edge longitudinally for portions having unidirectional crossfall and super-elevation and shall commence at the edges and progress towards the centre for portions having crossfall on both sides. Each pass of the roller shall uniformly overlap not less than one third of the track made in the preceding pass. During rolling, the grade and crossfall (camber) shall be checked and any high spots or depressions which become apparent corrected by removing or adding fresh material. The speed of the roller shall not exceed 5 km per hour. Rolling shall be continued t ill the density achieved is at least 98 percent of the maximum dry density for the material determined as per IS : 2720 (Part VIII) . The surface of any layer of material on completion of compact ion shall be well closed, free from movement under compaction equipment and from compact ion planes, ridges, cracks or loose material. All loose, segregated or otherwise defective areas shall be made good to the full thickness of layer and re-compacted.

404. WATER BOUND MACADAM SUB-BASE / BASE COURSE

404.1. Scope

404.1.1 This work shall consist of clean, crushed aggregates mechanically interlocked by rolling and bonded together with screening , binding material where necessary and water laid on a properly prepared subgrade /subbase /base or existing pavement, as the case may be and finished in accordance with the requirements of these specifications and in close conformity with the lines, grades, cross sect ions and thickness as per approved plans or as directed by the Engineer.

404.1.2 It is however , not desirable to lay water bound macadam on an existing thin black topped surface without providing adequate drainage facility for water that would get accumulated at the interface of existing bituminous surface and water bound macadam.

404.2 Materials

404.2.1 Coarse aggregates:

Coarse aggregates shall be either crushed or broken stone, crushed slag, over burnt (Jhama) brick aggregates or any other naturally occurring aggregates such as kankar, laterites of suitable quality. Materials other than crushed or broken stone and crushed slag shall be used in sub-base courses only . If crushed

gravel / shingle is used, not less than 90 per cent by weight of the gravel /shingle pieces retained on 4.75 mm sieve shall have at least two fractured faces. The aggregates shall conform to the physical requirements set forth in Table 400-6. The type and size range of the aggregate shall be specified in the contract or shall be as specified by the Engineer . If the water absorption value of the coarse aggregate is greater than 2 percent, the soundness test shall be carried out on the material delivered to site as per IS : 2386 (Par t 5).

404.2.2 Crushed or broken stone : The crushed or broken stone shall be hard, durable and free from excess flat , elongated, soft and disintegrated particles, dirt and other deleterious material.

TABLE 400-6. PHYSICAL REQUIREMENTS OF COARSE AGGREGATES FOR WATER BOUND MACADAM FOR SUB-BASE/BASE COURSES

Test Test Method Requirements

1. * Los Angeles IS : 2386 40 percent (Max)
Abrasion value (Par t-IV)

or

*Aggregate IS: 2386 30 percent (Max)

Impact value (Part- IV)or

IS : 5640**

2. Combined Flankiness IS:2386 30 percent (Max)

Elongat ion Indices (Total) (Par t-I)

* Aggregate may satisfy requirements of either of the two tests.

** Aggregate like brick metal, kankar laterite etc. which get softened in presence of water shall be tested for Impact value under wet conditions in accordance with IS : 5640.

*** The requirement of flakiness index shall be enforced only in the case of crushed broken stone and crushed slag.

404.2.3 Crushed Slag:

Crushed slag shall be made from air-cooled blast furnace slag. It shall be of angular shape, reasonably uniform in quality and density and generally free from thin, elongated and soft pieces, dirt or other deleterious materials. The weight of crushed slag shall not be less than 11.2 kN per m³ and the percentage of glossy material shall not be more than 20. It should also comply with the following requirements:-

(i) Chemical stability : To comply with requirements of appendix of BS : 1047

(ii) Sulphur content : Maximum 2 per cent

(iii) Water absorption : Maximum 10 per

404.2.4 Over burnt (Jhama) brick aggregates :

Jhama brick aggregates shall be made from over burnt bricks or brick bats and be free from dust and other objectionable and deleterious materials.

404.2.5 Grading requirement of coarse aggregates:

The coarse aggregate shall conform to one of the gradings given in Table 400-7 as specified, provided, however, the use of grading No. 1 shall be restricted to sub-base courses only.

TABLE 400-7. GRADING REQUIREMENTS OF COARSE AGGREGATES

Grading Size Range IS Sieve Designation Percent by weight No. passing

- 1. 90 mm to 45 mm 125 mm 100
90 mm 90-100
63 mm 25-60
45 mm 0-15
22.4mm 0-5
- 2. 63 mm to 45 mm 90 mm 100
63 mm 90-100
53 mm 25-75
45 mm 0-15
22.4mm 0-5
- 3. 53mm to 22.4mm 63 mm 100
53 mm 95-100
45 mm 65-90
22.4mm 0-10
11.2mm 0-5

Note : The compacted thickness for a layer with Grading | shall be 100 mm while for layer with other grading i.e. 2 & 3, it shall be 75 mm.

404.2.6. Screenings : Screenings to fill voids in the coarse aggregate shall generally consist of the same material as the coarse aggregate. However, where permitted predominantly nonplastic material such as moorum or gravel (other than rounded river borne material) may be used for this purpose provided liquid limit and plasticity index of such material are below 20 and 6 respectively and fraction passing 75 micron sieve does not exceed 10 per cent. Screening shall conform to the gradings set forth in Table 400-8. The consolidated details of quantity of screenings required for various grades of stone aggregates are given in

in Table 400-9. The table also gives the quantities of materials (loose) required for 10 m² for subbase/ base compacted thickness of 100/75 mm. The use of screenings shall be omitted in the case of soft aggregates such as brick metal, kankar, laterite, etc. as they are likely to get crushed to a certain extent under rollers.

TABLE 400-8 GRADING FOR SCREENINGS

 Grading Size of IS Sieve Percent by weight Classification Screenings
 Designation passing the Sieve

-----A 13.2 mm 13.2 mm 100
 11.2 mm 95-100
 5.6 mm 15-35
 180 micron 0-10
 B. 11.2 mm 11.2 mm 100
 5.6 mm 90-100
 180 micron 15-35

TABLE 400-9. APPROXIMATE QUANTITIES OF COARSE AGGREGATES AND SCREENINGS REQUIRED FOR 100/75 MM COMPACTED THICKNESS OF WATER BOUND MACADAM (WBM) SUB-BASE/BASE COURSE FOR 10M2 AREA

 Classification Size Range Compacted Loose Screenings thickness Qty. Stone
 Screening Crushable Type such as Moorum or Gravel Grading For WBM
 Grading Loose Classi Sub-base Classi -Qty. fication base course fication & size (loose Qty.) & size

-----Grading 1 90 mm to 100 mm 1.21 to Type A 0.27 to Not
 0.30 to 45 mm 1.43 m3 13.2 mm 0.30 m3 uniform 0.32 m3 Grading 2 63 mm to
 75 mm 0.91 to Type A 0.12 to -do- 0.22 to 45 mm 1.07 m3 13.2 mm 0.15m3
 0.24m3 -do- -do- -do- -do- Type B 0.20 to -do- -do- 11.2 m 0.00 m3 grading 3 53
 mm to 75 mm -do- -do- 0.18 to -do- -do- 22.4 mm 0.21 m3 -do- -do-

-----**404.2.7 Binding material :**

Binding material to be used for water bound macadam as a filler material meant for preventing ravelling , shall comprise of a suitable material approved by the Engineer having a plasticity Index (PI) value of less than 6 as determined in accordance with IS: 2720 (Part-V) . The quantity of binding material where it is to be used, will depend on the type of screenings. Generally, the quantity required for 75 mm compacted thickness of water bound macadam will be 0.06-0.09 m3 /10m2 and 0.08-0.10m3 /10m2 for 100mm compacted thickness. The above-mentioned quantities should be taken as a guide only, for estimation of quantities for construction, etc. Application of binding materials may not be necessary when the screenings used are of crushable type such as moorum or gravel.

404.3. Construct ion Operations

404.3.1 Preparation of base: The surface of the sub-grade/sub base /base to

receive the water bound macadam course shall be prepared to the specified lines and crossfall (camber) and made free of dust and other extraneous material. Any ruts or soft yielding places shall be corrected in an approved manner and rolled until firm surface is obtained if necessary by sprinkling water. Any Sub-Base/base surface irregularities, where predominant, shall be made good by providing appropriate type of profile corrective course (levelling course) to Clause 501 of these specifications. As far as possible, laying water bound macadam course over an existing thick, bituminous layer may be avoided since it will cause problems of internal drainage of the pavement at the interface of two courses. It is desirable to completely pick out the existing thin bituminous wearing course where water bound macadam is proposed to be laid over it. However, in exceptional cases, where the intensity of rain is low and the interface drainage facility is efficient water bound macadam can be laid over the existing thin bituminous surface by cutting 50mm x 50mm furrows at an angle of 45 degrees to the centre line of the pavement at one metre intervals in the existing road. The directions and depth of furrows shall be such that they provided adequate bondage and also serve to drain water to the existing granular base course beneath the existing thin bituminous surface.

404.3.2 Inverted choke:

If water bound macadam is to be laid directly over the sub-grade, without any other intervening pavement course, a 25 mm course of screenings (Grading B) or coarse sand shall be spread on the prepared sub-grade before application of the aggregates is taken up. In case of fine sand or silty or clayey sub-grade, it is advisable to lay 100 mm insulating layer of screening or coarse sand on top of fine grained soil, the gradation of which will depend upon whether it is intended to act as a drainage layer as well. As a preferred alternative to inverted choke, appropriate geo-synthetics performing functions of separation and drainage may be used over the prepared sub-grade as directed by the Engineer. Section 700 shall be applicable for use of geo-synthetics.

404.3.3 Spreading coarse aggregates: The coarse aggregates shall be spread uniformly

and evenly upon the prepared subgrade / subbase / base to proper profile, by using templates placed across the road about 6m apart, in such quantities that the thickness of each compacted layer is not more than 100mm for grading 1 and 75mm for grading 2 and 3, as specified in Clause 404.2.5 Wherever possible, approved mechanical devices such as aggregate spreader shall be used to spread the aggregates uniformly so as to minimize the need for manual rectification afterwards. Aggregates placed at locations which are inaccessible to the spreading equipment, may be spread in one or more layers by any approved means so as to achieve the specified results. The spreading shall be done from stockpiles along the side of the roadway or directly from vehicles. No segregation of large or fine aggregates shall be allowed and the coarse aggregate as shall be of uniform gradation with no pockets of fine material. The surface of the aggregates spread shall be carefully checked with templates and all high or low spots remedied by removing or adding aggregates as may be required. The surface shall be checked frequently with a straight edge while spreading and

rolling so as to ensure a finished surface as per approved drawings. The course aggregates shall not normally be spread more than 3 days in advance of the subsequent construction operations.

404.3.4 Rolling: Immediately following the spreading of the course aggregate, rolling shall be started with three wheeled power rollers of 80 to 100 kN capacity or tandem or vibratory rollers of approved type. The type of roller to be used shall be approved by the Engineer based on trial run. Except on super-elevated portions where the rolling shall proceed from inner edge to the outer, rolling shall begin from the edges gradually progressing towards the centre. First the edge/edges shall be compacted with roller running forward and backward. The roller shall then move inwards parallel to the centre line of the road, in successive passes uniformly lapping preceding tracks by at least one half width. Rolling shall be discontinued when the aggregates are partially compacted with sufficient void space in them to permit application of screenings. However, where screenings are not to be applied, as in the case of crushed aggregates like brick metal, late rite and kankar, compaction shall be continued until the aggregates are thoroughly keyed. During rolling, slight sprinkling of water may be done, if necessary. Rolling shall not be done when the subgrade is soft or yielding or when it causes a wave-like motion in the sub-grade or sub base course. The rolled surface shall be checked transversely and longitudinally, with templates and any irregularities corrected by loosening the surface, adding or removing necessary amount of aggregates and re-rolling until the entire surface conforms to desired crossfall (camber) and grade. In no case shall the use of screenings be permitted to make up depressions. Material which crushed excessively during compaction or becomes segregated shall be removed and replaced with suitable aggregates. It shall be ensured that shoulders are built up simultaneously along with water bound macadam courses as per Clause 407.4.1

404.3.5 Application of screenings: After the course aggregate has been rolled to clause 404.3.4 screenings to completely fill the interstices shall be applied gradually over the surface. These shall not be damp or wet at the time of application. Dry rolling shall be done while the screenings are being spread so that vibrations of the roller cause them to settle into the voids of the course aggregate. The screenings shall not be dumped in piles but be spread uniformly in successive thin layers either by the spreading motions of hand shovels or by mechanical spreaders, or directly from tipper with suitable grit spreading arrangement. Tipper operating for spreading the screenings shall be so driven as not to disturb the course aggregate. The screening shall be applied at a slow and uniform rate (in three or more applications) so as to ensure filling of all voids. This shall be accompanied by dry rolling and brooming with mechanical brooms, hand-brooms or both. In no case shall the screenings be applied so fast and thick as to form cakes or ridges on the surface in such a manner as would prevent filling of voids or prevent the direct bearing of the roller on the course aggregate. These operations shall continue until no more screenings can be forced into the voids of the course aggregate. The spreading, rolling, and brooming of screenings shall be carried out in only such lengths of the road which could be completed within one day's operation.

404.3.6 Sprinkling of water and grouting : After the screenings have been applied, the surface shall be copiously sprinkled with water , swept and rolled. Hand brooms shall be used to sweep the wet screenings into voids and to distribute them evenly. The sprinkling, sweeping and rolling operation shall be continued, with additional screenings applied as necessary until the course aggregate has been thoroughly keyed, well-bonded and firmly set in its full depth and a grout has been formed of screenings. Care shall be taken to see that the base or sub-grade does no get damaged due to the addition of excessive quantities of water during construct ion.

404.3.7. Application of binding material : After the application of screenings in accordance with Clause 404.3.5 and 404.3.6 the binding material where it is required to be used (Clause 404.2.7) shall be applied successively in two or more thin layers at a slow and uniform rate. After each application, the surface shall be copiously sprinkled with water the resulting slurry swept in with hand brooms, or mechanical brooms to f ill the voids properly, and rolled during which water, shall be applied to the wheels of the rollers if necessary to wash down the binding material sticking to them. These operations shall continue until the resulting slurry after filling of voids, forms a wave ahead of the wheels of the moving roller .

404.3.8 Setting and drying : After the final compact ion of water bound macadam course, the pavement shall be allowed to dry overnight. Next morning hungry spots shall be filled with screenings or binding material as directed, lightly sprinkled with water if necessary and rolled. No traffic shall be allowed on the road until the macadam has set, The Engineer shall have the discrete ion to stop hauling traffic from using the completed water bound macadam course, if in his opinion it would cause excessive damage to the surface. The compacted water bound macadam course should be allowed to completely dry and set before the next pavement course is laid over it .

501. PREPARATION OF SURFACE

501.1 Scope :

This work shall consist of preparing an existing granular or black-topped surface to specified lines, grades and cross-sect ions in advance of laying a bituminous course. The work shall be performed on such widths and lengths as shown in applicable drawing and consist of scarifying and re-laying the granular base course and / or scarifying the existing surface, filling of potholes, sealing of cracks and / or application of a profile corrective course (levelling course)as necessary.

501.2. Materials:

501.2.1. For scarifying and re-laying the granular surface: The materials used shall be coarse aggregates salvaged from scarification of the existing granular base coarse supplemented by fresh coarse aggregate and screenings so that aggregates and screenings thus supplemented correspond to Clause 404: Water Bound Macadam or Clause 406: Wet Mix Macadam, as the case may be.

501.2.2. For Patching potholes and sealing cracks: For patching potholes, approved material having same specification as that of profile corrective course

shall be used. For sealing small cracks finer than 3 mm, a fog seal conforming to section 3000 shall be applied while larger cracks wider than 3 mm shall be treated with an emulsion slurry seal, conforming to Clause 516.

501.2.3. For profile corrective course: A profile corrective course (leveling course) is essentially a pavement base material course for correcting the existing pavement profile which has either lost its shape or has to be given a new shape to meet the requirement of specified lines, grades and cross-sections. It shall be different from the strengthening course or other type of structural pavement course needed for upgrading as a remedial measure against inherently deficient and / or distressed pavement. It is meant to remove the irregularity in the existing road profile only.

501.2.4. Profile corrective course and its application : The type of material for profile corrective course shall be as shown on the drawing. If it is to be laid as part of the overlay /strengthening course, the profile corrective course material shall be of the same specification as that of the overlay / strengthening course. However, if provided as a separate layer, it may be of the same specification as the layer over which it is to be laid or intermediate between under laying and over laying layers, as shown on the Drawing.

(i) Wherever isolated high spots projecting over the pavement surface do exist, the same shall be cut by milling machine or any other approved method, to minimize the profile corrective course requirement. If, in the process, the bottom layer gets disturbed, the local area shall be cut and filled with profile corrective course material.

(ii) Where the maximum profile corrective course thickness works out to be not more than 40 mm, it shall be done as an integral part of the overlay course. In other cases, the profile corrective course shall be provided as a separate layer adopting such construction procedures and using such equipment as may be appropriate to the specified type of material and thickness of the course to be provided.

501.3. Construction Operations

501.3.1 Preparing existing granular surface: Where the existing surface is granular, all loose and disintegrated materials shall be removed and the surface lightly watered if the profile corrective course to be provided as a separate layer is also granular. If, however, over the existing granular surface, a profile corrective course of bituminous is to be laid, the existing granular surface shall be primed as per Clause 502.

501.3.2. Scarifying existing bituminous surface: Where necessary, the existing bituminous layer in the specified width shall be removed with care without causing undue disturbance to the under laying layer by suitable method approved by the Engineer. After removing it, all loose and disintegrated materials of underlaying layer which might have been disturbed in the process of removal shall, before laying of the overlay course, be reset properly by spreading / hand packing of aggregates and compacting with suitable roller / heavy hand rammers / approved mechanical tamper so that the level of the top surface of such scarified area shall be even and properly graded with respect to adjoining surface. Where applicable, the granular surface, after removal of the existing

bituminous layer , shall be primed as per Clause 502 to receive a bituminous profile corrective course. Reusable materials shall be stacked as directed by the Engineer with all lift and lead of 1000 m.

501.3.3. Patching of potholes and sealing of cracks : Before providing profile corrective course on the existing pavement , potholes, if any, shall be drained of water , cut to regular shape with sides vertical upto the affected depth and slightly beyond the limits of affected area and dried. All loose and disintegrated materials from it shall be removed. The potholes shall then be filled with material as per Clause No. 501.2.2 in layer not exceeding 75 mm after painting the sides and bottom with a thin layer of hot straight-run bitumen / emulsion and each layer shall be compacted with approved mechanical tampers / small vibratory roller and the top layer shall be flush with the existing bituminous surface. All loose and / or surplus materials on the surface after making good the potholes, shall be removed. The cracks in the old pavement surface shall be sealed with a fog seal if cracks are small (less than 3 mm width); fog seal shall consist of a spray of a bituminous cutback or a slow-setting bitumen emulsion diluted with an equal amount of water , the rate of spray being 0.5 to 1.0 litre / sq.m. depending upon the texture and dryness of the existing bituminous surface. The spray is allowed to set to a firm condition and traffic is allowed only thereafter so as to ensure that the material is not picked up by traffic. For large cracks, the sealing shall be done with emulsion slurry seal as per Clause 516 of these Specifications.

501.3.4. Laying the profile corrective course

501.3.4.1. After preparing the granular surface as in Clauses 501.3.1 and 501.3.2, the profile corrective course with material as per Clause 501.2.3/501.2.4 shall be laid and compacted to the requirement of particular Specification clause. Where a bituminous profile corrective course is to be laid over a primed granular surface, a tack coat conforming to Clause 503 shall be applied prior to laying profile corrective course.

501.3.4.2 An existing bituminous surface shall be prepared as per Clause 501.3.3 and after applying a tack coat conforming to Clause 503, the bituminous profile corrective course shall be laid and compacted to the requirement of particular Specification clause.

503. TACK COAT

503.1 Scope :

This work shall consist of application of a single coat of low. Viscosity liquid bituminous material to an existing road surface preparatory to another bituminous construction over it.

503.2. Materials :

Binder : The binder used for tack coat shall be bituminous emulsion or cutback as specified in the Contract.

503.3. Construction Operation

503.3.1 Preparation of base : The surface on which the tack coat is to be applied shall be cleaned of dust and any extraneous material before the application of the binder, by using a mechanical broom or any other approved equipment/method as specified by the Engineer.

503.3.2 Application of binder : Binder may be heated to the temperature

appropriate to the grade of cutback used and approved by the Engineer and sprayed on the base at the rate specified in Table 500-2. The normal range of spraying temperature for a bituminous emulsion shall be 20oC-60oC and for a cutback 50oC-80oC if RC-70/MC-70 grade is used. It shall be the responsibility of the Contractor to carefully handle the inflammable bituminous cutback material so as to safeguard against any fire mishap. The binder shall be applied uniformly with the aid of either self-propelled or towed bitumen pressure sprayer with self-heating arrangement and spraying bar with nozzles having constant volume or pressure system, capable of spraying bitumen at specified rates and temperature so as to provide a uniformly unbroken spread of bitumen. Work should be planned so that no more than the necessary tack coat for the day's operation is placed on the surface. After application and prior to succeeding construction allow the tack coat to cure, without being disturbed, until the water / cutter has completely evaporated, as determined by Engineer.

TABLE 500-2. RATE OF APPLICATION OF TACK COAT

Type of surface	Qty. of liquid bituminous Material in Kg per 10 sq.m. area
-----------------	--

- i. Normal bituminous surfaces 2.0 to 2.5
- ii. Dry and hungry bituminous surfaces 2.5 to 3.0
- iii. Granular surfaces treated with primer 2.5 to 3.0
- iv. Non bituminous surfaces
 - a) Granular base (not primed) 3.5 to 4.0
 - b) Cement concrete pavement 3.0 to 3.5

Note : There is no need to apply a tack coat on a freshly laid bituminous course if the subsequent bituminous course is over laid the same day without opening it to traffic.

504. BITUMINOUS MACADAM

504.1. Scope: The work shall consist of construction, in a single course, of 50mm/75mm thickness of compacted crushed aggregates premixed with a bituminous binder, to serve as base / binder course, laid immediately after mixing, on a base prepared previously in accordance with the requirement of these specifications and in conformity with the line, grades and cross sections shown on the drawing or as directed by the Engineer .

504.2. Materials

504.2.1 Bitumen: The bitumen shall be paving bitumen of suitable penetration grade (30/40 to 80/100) as per IS: 73. The actual grade of bitumen to be used shall be decided by the Engineer, appropriate to the region, traffic, rainfall and other environmental conditions.

504.2.2 Aggregates

504.2.2.1: The aggregates shall consist of crushed stone, crushed gravel/shingle or other stones. They shall be clean, strong, durable of fairly cubical shape and free from disintegrated pieces, organic or other deleterious matters and adherent coating.

If crushed shingle / gravel is used, not less than 90 per cent by weight of the gravel / shingle pieces retained on 4.75 mm sieve shall have at least two fractured faces. The aggregates shall preferably be hydrophobic and of low porosity. If hydrophilic aggregates are to be used the bitumen shall preferably be treated with antistripping agents of approved quality in suitable dose as per appendix-5. The aggregates shall satisfy the physical requirements set forth in Table 500.3.

TABLE 500.3. PHYSICAL REQUIREMENTS OF AGGREGATES FOR BITUMINOUS MACADAM

S.No. Test Test Method Requirement

- 1. Los Angles Abrasion Value* IS:2386 (Part- IV) 40% Maximum
- 2. Aggregates Impact Value* IS:2386 (Part- IV) 30% Maximum
- 3. Flakiness and Elongation Index** IS:2386 (Part- I) 30% Maximum
- 4. Coating & Stripping of bitumen AASHTO T 182 Minimum retained aggregate mixtures coating 95 %
- 5. Soundness : IS:2386 (Part V)
 - i) Loss with Sodium Sulphate 5 cycles 12% Maximum
 - ii) Loss with Magnesium Sulphate 5 cycles 18% Maximum
- 6. Water absorption IS:2386 (Part I II) 2% Maximum

* Aggregates may satisfy requirements of either of the two tests.

** To determine this combined proportion, the flaky stone from a representative sample should first be separated out . Flakiness index is weight of flaky stone metal divided by weight of stone sample. Only the elongated particles be separated out from the remaining (non-flaky) stone metal . Elongation index is weight of elongated particles divided by total non-flaky particles. The value of flakiness index and elongation index so found are added up.

Note : If crushed slag is used Clause 404.2.3. shall apply.

504.2.2.2 The aggregate for bituminous macadam shall conform to one of the two gradings in Table 500-4, depending on the compacted thickness; the actual grading shall be as specified in the contract .

TABLE 500-4. AGGREGATE GRADING FOR BITUMINOUS MACADAM

IS Sieve Designation (IS) Percent by weight passing the sieve Grading 1 Grading 2

- 45.0 mm 100 -
- 26.5 mm 75-100 100
- 22.4 mm 60-95 75-100
- 11.2 mm 30-55 50-85
- 5.6 mm 15-35 20-40

2.8 mm 5-20 5-20
90 micron 0-5 0-5

504.2.3 Proportioning of materials: The bitumen content for premixing shall be 3 to 3.5 per cent by weight of the total mix except when otherwise directed by the Engineer . The maximum compacted thickness of a layer shall be 100 mm. The quantities of aggregates to be used shall be sufficient to yield the specified thickness after compact ion.

504.2.4. Variation in proportioning of material: The contractor shall have the responsibility for ensuring proper proportioning of materials and producing a uniform mix. A variation in binder content ± 0.3 percent by weight of total mix shall, however, be permissible for individual specimens taken for quality control tests vide Section 900.

504.3. Construction Operation

504.3.1 Weather and seasonal limitations : The work of laying shall not be taken up during rainy or foggy weather or when the base course is damp or wet , or during dust storm or when the atmospheric temperature in shade is 100C or less.

504.3.2 Preparation of the base : The base on which bituminous macadam is to be laid shall be prepared, shaped and conditioned to the specified lines, grades and cross sections in accordance with Clause 501, and a priming coat where needed shall be applied in accordance with Clause 502 as directed by the Engineer .

504.3. Tack coat: A tack coat as per clause 503 shall be applied over the base.

504.3.4. Preparation and transport of mix : Bituminous macadam mix shall be prepared in a hot mix plant of adequate capacity and capable to yielding a mix of proper and uniform quality with thoroughly coated aggregates. Hot mix plant shall be of suitable capacity preferably of batch mix type. Total system for crushing of stone aggregates and feeding of aggregate fractions in required proportions to achieve the desired mix, deployed by the Contractor must be capable of meeting the overall Specifications requirements under stringent quality control. The temperature of binder at the time of mixing shall be in the range of 1500C to 1630C and that of the aggregate in the range of 1550C to 1630C, provided that the difference in temperature between the binder and aggregate at no time exceeds 140C.

Mixing shall be thorough to ensure that a homogeneous mixture is obtained in which all particles of the aggregates are coated uniformly, and the discharge temperature of mix shall be between 1300 C to 1600 C. The mixture shall be transported from the mixing plant to the point of use in suitable tipper vehicles. The vehicles employed for transport shall be clean and be covered in transit if so directed by the Engineer. Any tipper causing excessive segregation of materials by its spring suspension or other contributing factors or that which shows undue delay shall be removed from the work until such conditions are corrected.

504.3.5 Spreading: The mix transferred from the tipper at site to the paver shall be spread immediately by means of self -propelled mechanical paver with

suitable screeds capable of spreading, tamping, and finishing the mix true to the specified lines, grades and cross sections.

504.3.6

However, in restricted locations and in narrow widths where the available plant cannot be operated in the opinion of the Engineer, he may permit manual laying of the mix. The temperature of the mix at the time of laying shall be in the range of 1200 C to 1600 C. In multilayer construction the longitudinal joint in one layer shall be offset that in the layer below by about 150mm. However, the joint in the top most layer shall be at the lane line of the pavement. Longitudinal joint and edges shall be constructed true to the delineating line parallel to the central line of the road. All joints shall be cut vertical to the full thickness of the previously laid mix and the surface painted with hot bitumen before placing fresh material. Longitudinal and transverse joints shall be offset by at least 250 mm from those in the lower courses and the joint on the top-most layer shall not be allowed to fall within the wheel path. All transverse joints shall be cut vertically to the full thickness of the previously laid mix with asphalt cutter pavement breaker and surface painted with hot bitumen before placing fresh material. Longitudinal joints shall be preferably hot joints. Cold longitudinal joints shall be properly heated with joint heater to attain a suitable temperature of about 80°C before laying of adjacent material.

504.3.6 Compaction: After the spreading of mix, rolling shall be done by 80 to 100 KN rollers or other approved equipment. Rolling shall start as soon as possible after the material has been spread deploying a set of rollers as the rolling is to be completed in limited time frame. The roller shall move at a speed not more than 5 km/h. Rolling shall be done with care to avoid unduly roughening of the pavement surface. Rolling of the longitudinal joints shall be done immediately behind the paving operation. After this, the rolling shall commence at the edges and progress towards the center longitudinally except that on superlevated and uni-directional cambered portions, it shall progress from the lower to the upper edge parallel to the centre line of the pavement. The initial or break-down rolling shall be done with 80-100 KN static weight smooth wheel roller (3 wheels or tandem), as soon as it is possible to roll the mix without cracking the surface or having the mix pick up on the roller wheels. The second or intermediate rolling shall follow the break down rolling with vibratory roller of 80 to 100 KN static weight or pneumatictyred roller of 150 to 250 KN weight, with minimum 7 wheels and minimum tyre pressure of 0.7 Mpa as closely as possible to the paver and be done while the paving mix is still at a temperature that will result in maximum density. The final rolling shall be done while material is still workable enough for removal of roller marks with 60-80 kN tandem roller. During the final rolling, vibratory system shall be switched off. The joints and edges shall be rolled with a 80 to

100 kN static roller. When the roller has passed over the whole area once any high spots or depressions which become apparent shall, be corrected by removing or adding mix material. The rolling shall then be continued till the entire surface has been rolled to 95 per cent of the average laboratory density (obtained from Marshall specimens compacted as defined in Table 500-10),

there is no crushing of aggregates and all roller marks have been eliminated. Each pass of the roller shall uniformly overlap not less than one-third of the track made in the preceding pass. The roller wheel shall be kept damp if necessary to avoid bituminous material from sticking to the wheels and being picked up. In no case shall fuel lubricating oil be used for this purpose, nor excessive water poured on the wheels. Rolling operations shall be completed in every respect before the temperature of the mix falls below 100°C. Roller(s) shall not stand on newly laid material while there is a risk that it will be deformed thereby. The edges along and transverse of the bituminous macadam laid and compacted earlier shall be cut to their full depth so as to expose fresh surface which shall be painted with a thin surface coat of appropriate binder before the new mix is placed against it.

509. OPEN-GRADED PREMIX CARPET

509.1. Open-graded Premix Carpet using Bitumen

509.1.1 Scope : This work shall consist of laying and compacting an open-graded carpet of 20 mm thickness in a single course composed of suitable small sized aggregates premixed with a bituminous binder on a previously prepared base, in accordance with the requirements of these specifications, to serve as a wearing course.

509.1.2 Materials

509.1.2.1. Binder : The binder shall be bitumen of a suitable grade appropriate to the region, traffic, rainfall and other environmental conditions, as directed by the Engineer and satisfying the requirements of IS: 73, 217, 454 or other approved cut back as applicable.

509.1.2.2 Aggregates : The course aggregate shall conform to Clause 504.2.2.1. The Stone Polishing Value as measured by BS:812-(Part 114) shall not be less than 55.

The aggregates shall satisfy the quality requirements set forth in Table 500-3 except that water absorptions shall be limited to a maximum of 1 percent.

509.1.2.3. Proportioning of materials : The materials shall be proportioned as per quantities given in Table 500-16.

TABLE 500-16. QUANTITIES OF MATERIALS REQUIRED FOR 10M² OF ROAD SURFACE

FOR 20 mm THICK OPEN-GRADED PREMIX CARPET USING BITUMEN

Aggregates for Carpet

(a) Stone chippings-13.2mm size; passing 22.4mm sieve and retained on 11.2mm sieve 0.18 m³

(b) Stone chippings-11.2mm size; passing 13.2mm sieve and retained on 5.6mm sieve 0.09 m³

Total :
0.27 m³

Binder for Premixing (quantities in terms of straight run bitumen)

(a) For 0.18 m³ of 13.2mm size stone chippings at 52 Kg. per m³ 9.5 Kg

(b) For 0.09 m³ of 11.2mm size stone chippings at 56 Kg per m³ 5.1 Kg.

Total : 14.6 Kg.

509.1.3. Construction operations

509.1.3.1. Weather and seasonal limitations: Clause 504.3.1 shall apply.

509.1.3.2 Preparation of base : The underlying base on which the bituminous carpet is to be laid shall be prepared, shaped and conditioned to the specified lines grade and cross section in accordance with Clause 501. A primer coat where needed shall be applied in accordance with Clause 502 as directed by the Engineer.

509.1.3.3. Tack Coat: complying with Clause 503, shall be applied over the base preparatory to laying of the carpet .

509.1.3.4. Preparation of premix: Hot mix plant of appropriate capacity and type shall be used for the preparation of mix material. The hot mix plant shall have separate dryer arrangement for heating aggregates and pugmill for mixing aggregate and binder. The temperature of binder at the time of mixing shall be in the range of 150oC to 163oC and that of the aggregates in the range of 155oC to 163oC provided that the difference in temperature between the binder and aggregates at no time exceeds 14oC. Mixing shall be thorough to ensure that a homogeneous mixture is obtained in which all particles of the aggregates are coated uniformly and the discharge temperature of mix shall be between 130oC and 160oC. The mix shall be immediately transported from the mixer to the point of use in suitable vehicles or wheel barrows. The vehicles employed for transport shall be clean and the mix being transported covered in transit is so directed by the Engineer .

509.1.3.5 Spreading and rolling : The mixed material shall be spread by suitable means. As soon as sufficient length of bituminous material has been laid, rolling shall commence with 80- 100 kN rollers, preferably of smooth wheel random type, or other approved equipment. Rolling shall begin at the edge and progress toward the center longitudinally, except that on the super elevated and un-directional cambered portions, it shall progress from the lower to upper edge parallel to the centerline of the pavement When the roller has passed over the whole area once. any high spots or depressions which become apparent shall be corrected by removing or adding premixed materials. Rolling shall then be continued until the entire surface has been roller to compaction and all the roller marks eliminated. In each pass of the roller, preceding track shall be over lapped uniformly by at least 1/3 width. The roller wheels shall be kept damp to prevent the premix from adhering to the wheels and being picked up. In no case shall fuel/ lubricating oil be used for this purpose. Excess use of water for this purpose shall also be avoided. Rollers shall not stand on newly laid material while there is

a risk that it will be deformed thereby. Rolling operations shall be completed in every respect before the temperature of the mix falls below 100°C. The edges along and transverse of the carpet laid and compacted earlier shall be cut to their full depth so as to expose fresh surface which shall be painted with a thin surface coat of appropriate binder before the new mix is placed against it.

509.1.3.6. Seal coat: A seal coat conforming to Clause 513 shall be applied to the surface immediately after laying the carpet .

509.1.4. Opening to traffic: No traffic shall be allowed on the road till the seal coat has been laid. After the seal coat is laid, the road shall be opened to traffic according to Clause 513.4.

509.2.3. Quantities of materials required: The materials shall be proportioned as per quantities given in Table 500-17 and Table 500-18.

TABLE 500-17 QUANTITIES OF AGGREGATES

SNo. Particulars per 10 m² area

(A) For Premix Carpet

(a) Coarse aggregate-13.2mm size passing IS 22.4mm sieve and retained on IS 11.2mm sieve 0.18 m³

(b) Coarse aggregate 11.2mm size passing IS 13.2mm sieve and retained on IS 5.6mm sieve 0.09 m³

(B) For Seal Coat

(a) Liquid Seal Coat: Crushed fine aggregates 6.7mm size passing IS 9.5 mm sieve and retained on IS 2.36mm sieve 0.06 m³

(b) Premix Seal Coat ; Coarse sand or stone grit passing 2.36mm sieve and retained on 180 Micron sieve 0.06 m³

TABLE 500-18. QUANTITIES OF BINDER

(A) For Tack Coat For 10m³ area

(i) Normal bituminous surface 2.0 to 2.5 Kg

(ii) Dry and hungry bituminous surface 2.5 to 3.0 Kg.

(iii) Granular surface treated with primer 2.5 to 3.0 Kg

(iv) Non bituminous surface:

(a) Granular base (not primed)

(b) Cement concrete surface

3.5 to 4.0 Kg

2.5 to 4.0 Kg

(B) For Premix Carpet : 20 to 23 Kg

(C) For Seal Coat:

- (a) For liquid seal coat 12 to 14 Kg.
- (b) For premix seal coat 10 to 12 Kg.

510. MIX SEAL SURFACING

510.1. Scope:

510.1.1. This work shall consist of laying and compacting mix seal surfacing in a single course compacted of suitable aggregates premixed with a bituminous binder on a previously prepared base, in accordance with the requirements of those Specifications, to serve as a wearing course.

510.1.2. Mix seal surfacing shall be of Type A or Type B as specified.

510.2 Materials

510.2.1. Binder: Clause 509.1.2.1 shall apply.

510.2.2. Coarse aggregates: Clause 509.1.2.2 shall apply.

510.2.3. Fine aggregates: The fine aggregates shall consist of crusher run screening, natural gravel / sand or a mixture of both. These shall be clean, hard, durable, uncoated, dry and free from injurious, soft or flaky pieces and organic or deleterious substances.

510.2.4. Aggregates gradation: The coarse and fine aggregates shall be so graded or combined as to conform to the grading set forth in Table 500-19.

TABLE 500-19 AGGREGATES GRADATION FOR MIX SEAL SURFACING.

IS Sieve Designation	Per cent by weight passing the sieve
For Type A Mix	For Type B mix
Seal Surfacing	Seal Surfacing

13.2 mm	--	100
11.2 mm	100	88-100
5.6 mm	52-88	31-52
2.8 mm	14-38	5-25
90 micron	0-5	0-5

510.2.5. Proportioning of materials: The total quantity of aggregates used for Type A or B mix seal surfacing shall be 0.27 cubic metre per 10 square metres area. The quantity of binder used for premixing in terms of straight-run bitumen shall be 22.0 kg and 19.0 kg per 10 square metres area for Type A and Type B surfacing respectively.

510.3. Construct ion Operations: Clause 509.1.3.1 through 509.1.3.5 shall apply.

513. SEAL COAT

513.1. Scope

513.1.1. This work shall consist of application of a seal coat for sealing the voids in a bituminous surface laid to the specified levels, grade and cross fall (camber).

513.1.2. Seal coat shall be of either of the two types as specified below:

- (a) Liquid seal coat comprising of an application of a layer of bituminous binder

followed by a cover of stone chippings

(b) Premixed seal coat comprising of a thin application of fine aggregate premixed with bituminous binder.

513.2. Materials

513.2.1. Binder: Clause 509.1.2.1 shall apply.

The quantity of bitumen shall be 9.8 kg and 6.8 kg per 10 square meter area for Type A and Type B seal coat respectively.

513.2.2. Stone chippings for type A seal coat : The stone chippings shall consist of angular fragments of clean hard, tough and durable rock of uniform quality throughout. They should be free of elongated or freaky pieces, soft or disintegrated stone, organic or other deleterious material. Stone chippings shall be of 6.7mm size defined as 100 percent passing through 11.2 mm sieve and retained on 2.36mm sieve. The quantity, used for spreading shall be 0.09 cubic metre per 10 square metre area. The chippings shall satisfy the quality requirements spelt out in Table 500-3 except that the upper limits water absorption values shall be 1 percent .

513.2.3. Aggregate for type B seal coat: The aggregate shall be sand or grit and shall consist of clean, hard, durable, uncoated dry particles and shall be free from dust, soft or flaky/ Elongated material, organic matter or other deleterious substances. The aggregate shall pass 2.36mm sieve and be retained on 180-micron sieve. The quantity used for premixing shall be 0.06 cubic meter per 10 square meter area.

513.3. Construction Operations :

513.3.1. Preparation of base: The seal coat shall be applied immediately after the laying of bituminous course, which is required to be sealed. Before application of seal coat materials, the surface shall be cleaned free of any dust or other extraneous matter .

513.3.2. Construction of Type A seal coat: The binder shall be heated in boilers of suitable design to the temperature appropriate to the grade of bitumen approved by the Engineer, and the seal coat applied in accordance with the construction operations described in clauses 508.1.3.3. through 508.1.3.5.

513.3.3. Construction of Type B seal coat : Mixers of appropriate capacity and type shall be used for preparation of mix material. The plant shall have separate dryer arrangement for heating aggregate and pugmill for mixing aggregate and binder. The binder shall be heated in boiler of suitable design to the temperature appropriate to the grade of bitumen approved by the Engineer. Also the aggregates shall be dry and suitably heated to a temperature directed by the Engineer before the same are placed in the mixer . Mixing of binder with aggregates to the specified proportions shall be continued till the latter are thoroughly coated with the former. The mix shall be immediately transported from the mixing plant to the point of use and spread uniformly on the bituminous surface to be sealed. As soon as sufficient length has been covered with the premixed material. The surface shall be rolled with 80-100 kN smooth wheeled rollers. Rolling shall be continued till the premixed material completely seals the voids in the bituminous course and a smooth uniform surface is obtained.

Note : All other related items of Road work will be executed as per MOST

specifications.

QUALITY CONTROL FOR ROAD WORKS

901. GENERAL

901.1 All material incorporated and all works performed shall be strictly in conformity with the specification on requirements and the contractor shall be responsible for the quality of the work in the entire construction within the Contract. He shall, therefore, have his own independent and adequate set up for ensuring the same. For this purpose, the contractor should set up his own laboratory at locations approved by the Engineer. The laboratory should be equipped with sufficient number of modern and efficient equipment suitable to carry out the tests prescribed for different materials and work according to the specification. The list of equipments to be procured and facilities to be provided shall be got approved by the Engineer. 901.2 The contractor's laboratory should be manned by a qualified Material Engineer assisted by experienced Technicians, and the set-up should be got approved by the Engineer. 901.3 The contractor shall carry out quality control tests on the materials and work to the frequency stipulated in subsequent paragraphs. In the absence of clear indications about method and or frequency of tests for any item, the direction of the Engineer shall be followed. 901.4 For satisfying himself about the quality of the materials and work, quality control tests will also be conducted by the Engineer (by himself, by his Quality Control Units or by any other agencies deemed fit by him), generally to the frequency set forth herein under. Additional tests may also be conducted where in the opinion of the Engineer need for such tests exists. 901.5 The contractor shall provide necessary cooperation and assistance in obtaining the sample for test and carrying out the field test as required by the Engineer from time to time. This may include provision of labour, attendance, assistance in packing and dispatching and any other assistance considered necessary in connection with the test. 901.6 For the work of embankment, subgrade and pavement, construction of subsequent layer of same or other material over the finished layer shall be done after obtaining permission from the Engineer. Similar permission from the Engineer shall be obtained in respect of all other items of works prior to proceeding with the next stage of construction. 901.7 The contractor shall carry out modification in the procedure of work, if found necessary, as directed by the Engineer during inspection. Works falling short of quality shall be rectified by the contractor at his own cost as directed by the Engineer. 901.8 The contract rate quoted for various items of works in the Bill of Quantities or the lump sum amount tendered shall be deemed to be inclusive of all costs of the quality control test and operations necessary for ensuring quality of the material and work so as to be in conformity with the Specification requirement.

902. CONTROL OF ALIGNMENT AND SURFACE REGULARITY

902.1 General

All works performed shall conform to the lines, grades, cross sections and

dimensions shown on the drawings, or as directed by the Engineer subject to the permitted tolerances described hereinafter.

902.2 Horizontal Alignments

Horizontal alignments shall be reckoned with respect to the centerline of the carriage way as shown on the drawings. The edges of the carriage way as constructed shall be correct within a tolerance of + 25mm therefrom. The corresponding tolerance for edges of the roadway and lower layers of pavement shall be + 40mm.

902.3 Longitudinal Profile

The levels of the subgrade and different pavement courses as constructed, shall not vary from those calculated with reference to the longitudinal and cross-profile of the road shown on the drawings or as directed by the Engineer beyond the tolerances mentioned below:

Subgrade + 25mm

Sub-base + 20mm

Base course + 15mm

Wearing course + 10mm

Provided, however, that the negative tolerance for wearing course shall not be permitted in conjunction with the positive tolerance for base course if the thickness of the former is thereby reduced by more than 6mm.

902.4 Surface Regularity of subgrade & pavement courses

The surface regularity of completed subgrade, sub-bases, base courses and wearing surfaces in the longitudinal and transverse directions shall be within the tolerance indicated in Table 900-1. The longitudinal profile shall be checked with a 3 meter long straight edge, at the middle of each traffic lane along a line parallel to the centerline of the road. The transverse profile shall be checked with a set of three camber boards at intervals of 10 meters.

902.5 Rectification

Where the surface irregularity of subgrade and the various pavement courses fall outside the specified tolerances, the contractor shall be liable to rectify these in the manner described below and to the satisfaction of the Engineer.

(i) Subgrade:

Where the surface is high, it shall be trimmed and suitably compacted. Where the same is low, the deficiency shall be corrected by adding fresh material. The degree of compaction and the type of material to be used shall conform to the requirements of Clause 305.

(ii) Granular Sub-base:

Same as at (i) above except that the degree of compaction and the type of material to be used shall conform to the requirements of Clause 401.

TABLE 900-1, PERMITTED TOLERANCE OF SURFACE REGULARITY FOR SUBGRADE AND PAVEMENT COURSES

S. No.	Type of construction	Maximum permissible undulation (mm)	Maximum permissible variation from specified profile under camber template (mm)			
			1	2	3	4
18	Longitudinal profile with 3 metre straight edge	3	3	3	3	3
12	Cross profile	3	3	3	3	3
10	Maximum number of undulations permitted in any 300 metres length	3	3	3	3	3
6	exceeding (mm)	3	3	3	3	3

6 7 8

1. Ear then subgrade 24 30 - - - 15
2. Granular / Lime / Cement / stabilised sub-base 15 - 30 - - 12
3. Water Bound Macadam with over size metal (45-90mm size) 15 - 30 - - 12
8686
4. Water Bound Macadam with normal size metal (22.4-53mm & 45-63mm size) wet mix macadam Bituminous penetration macadam or built -up spray grout 12 - - 30 - 8
5. Surface dressing ** (two coat) over WBM ((22.4-53mm or 45- 63mm size metal) Bituminous penetration macadam or built -up spray grout 12 - - 20 - 8
6. Open graded premix carpet , mixseal surfacing 10 - - - 30 6
7. Bituminous Macadam 10 - - - 20 @@ 6
8. Dense bituminous macadam 10 - - - 20 @@ 6
9. Semidense bituminous concrete 10 - - - 20 @@ 6
10. Bituminous concrete (Asphalt ic concrete) 8 - - - 10 @@ 4

1. *For surface dressing in all other cases, the standards of surface evenness will be the same as those for the surface receiving the surface dressing.

2. @@These are for machine laid surfaces. If laid manually due to unavoidable reasons, tolerance upto 50% above these values in the column may be permitted at the discretion of the Engineer . However, this relaxation does not apply to the value of maximum undulation for longitudinal and cross profile mentioned in columns 3 and 8 on the table.

3. Surface evenness requirements in respect of both the longitudinal and cross profiles should be simultaneously satisfied.

(iii) **Lime/Cement Stabilized Soil Sub-base:**

For lime/cement treated materials where the surface is high, the same shall be suitably trimmed while taking care that the material below is not disturbed due to this operation. However, where the surface is low, the same shall be corrected as described herein below. For cement treated material, when the time elapsed between detection of irregularity and the time of mixing of the material is less than 2 hours, the surface shall be scarified to a depth of 50mm supplemented with freshly mixed material as necessary and recompact to the relevant specification. When this time is more than 2 hours, the full depth of the layer shall be removed from the pavement and replaced with fresh material to specification. In either case, the area treated shall not be less than 5 meter long by 2 meter wide. This shall also apply to lime treated material except that the time criterion shall be 3 hours instead of 2 hours.

(iv) **Water Bound Macadam/Wet mix macadam Base:**

Where the surface is high or low, the top 75mm shall be scarified, reshaped with added material as necessary and recompact to Clause 404. The area treated at a place shall not be less than 5 metres long and 2 meter wide. This shall also apply to wet mix macadam to clause 406.

(v) **Bituminous Constructions:**

For bituminous construction other than wearing course, where the surface is low, the deficiency shall be corrected by adding fresh material and recompact to specifications. Where the surface is high, the full depth of the layer shall be

removed and replaced with fresh material and compacted to specifications. For wearing course, where the surface is high or low, the full depth of the layer shall be removed and replaced with fresh material and compacted to specification in all cases where the removal and replacement of a bituminous layer is involved, the area treated shall not be less than 5 metre long and not less than 1 lane wide.

//7//

SOUTH EASTERN COALFIELDS LIMITED
SAFETY CODE

Additional Safety Measures to be taken by the Contractor :-

i) Suitable scaffold should be provided for workmen for all works that can not be safely done from the ground or from solid construction except such short period of work as can be done safely from ladders. When ladder is used an extra Mazdoor shall be engaged for holding the ladders and if the ladder is used in carrying materials as well suitable foot holds and hand hold shall be provided on the ladder and the ladder shall be given an inclination not steeper than 1/4 to 1 (1/4

horizontal and 1 vertical)

ii) Scaffolding or staging more than 12 feet above the ground or floor suspended from an overhead support or erected with stationary support shall have a guard rail properly attached bolted braced and otherwise secured at least 3 f t above floor or platform of such scaffolding or staging and ends thereof with only such opening may be necessary for the delivery of materials. Such scaffolding or staging shall be so fast ended as to prevent it from swaying from the building or structure.

iii) Working platform gangways and stairways should be so constructed that they should not sequely or unequally and if the height of the platform or the gangway or the stairway is more than 12 ft. above ground level or floor level they should be closely board should have adequate width and should be suitable fenced as described in (i) above.

iv) Every opening in the floor of building or in working platform be provided with suitable means to prevent the fall of persons or materials by providing suitable fencing or railing whose minimum height shall be 3 f t.

v) Safe means of access shall be provided to all working platforms and other working places. Every ladder shall be provided securely fixed . No portable single ladder shall be over 30f t. in length while the width between side rails in rung ladder shall in no case be less than 11-1/2" for ladder up to and including 10 f t .in length. For longer ladder this width should be increased at least 1/4% for each additional foot of length Uniform step spacing shall not be exceeding 12" Adequate precautions shall be taken to prevent danger

from electrical equipment. No materials on any of the side work shall be stacked or placed as to cause danger or inconvenience to any person or the public. The contractor shall also provide all necessary fencing and light to protect the public from accident and shall be bound to bear the expenses of defense of every suit. act ion or other proceedings at all that may be brought by any person for injury sustained owing to neglect of the above precautions and to pay damages and cost which may be brought awarded in any such suit, act ion or proceeding to any such person or which may with the consent of the contractor he has paid to compromise any claim by any such person.

vi) All trenches four feet or more in depth shall at all times be supplied with at least one ladder for each 100 f t. in length or fraction there of Ladder shall be extended from bottom of the trench to at least 3' above surface of the ground. The side of trenches, which are 5ft or more in depth shall be stepped back to give suitable slope or security held by timber bracing so as to avoid danger of side to collapse. The excavated materials shall not be placed within 5 f t. of the edge, of the trench or half of the trench whichever is more

Cutting shall be done from top to bottom and under no circumstances, under mining or under cutting shall be done.

vii) Before any demolition work is commenced and also during the progress of work :-

(a) All roads & open areas adjacent to the work site shall either be closed or suitably protected.

(b) No electric cable or apparatus which is liable to be a source of danger over a

cable or apparatus used by operator shall remain electrically charged.

(c) All practical steps shall be taken to prevent danger to persons employed from risk of fire explosion or flooding. No floor, roof or other part of building shall be so over loaded with debris or material as to tender it unsafe.

viii) All necessary safety equipment, as considered adequate by the Engg- In-charge should be kept available for the use, of the person employed on the site and maintained in a condition suitable for immediate use and contractor should take adequate steps to ensure proper use of equipment by those concerned.

(a) Workers employed on mixing asphaltic materials, cement & lime mortar shall be provided with protective footwear and protective goggles.

(b) Those engaged in welding, washing and mixing or stacking of cement bags or any materials which is injurious to the eye shall be provided with protective goggles.

(c) Those engaged in welding work shall be provided with protective goggles etc.

(d) Stone breaker shall be provided with protective goggles and protective clothing & seated at sufficient ly safe intervals.

(e) When workers of employed in sewers and manholes, which are in use, the contractor shall ensure that the manhole covers are opened and are ventilated at-least for an hour before the workers are allowed to get into the manholes and the manholes so opened shall be condoned of with suitable railing and provided with warning signals or boards to prevent accident to the public.

(f) The contractor shall not employ man below the age of 18 years and women on the work of painting with products containing lead in any form Whenever man above the age 18 years are employed for the work of lead painting, the following precautions should be taken.

(1) No paint contained lead or lead products should be used except in the form of Paste or readymade paint.

(2) Suitable face masks should be supplied for the use of workers when paint is applied in the form of spray or a surface having lead paint dry rubbed and scraped .

(3) Overall shall be supplied by the contractors to the workman and adequate Facilities shall be provided to enable the working painters to wash during the process of work.

ix) When the work is done near any place where there is risk of drowning, necessary equipment should be provided and kept ready for prompt rescue of any person in danger and adequate provision should be made for prompt first aid treatment of all injuries likely to be sustained during the course of work.

x) Use of hoisting machines & tackle including their attachments, anchors and supports shall conform to the following standard or conditions :-

(1) (a) Those shall be in good mechanical condition of sound materials and adequate strength and free from patent defect and shall be kept in good working order.

(b) Every rope used in hoisting or lowering materials or as a means of suspension shall be of durable quality, adequate strength and free from patent defect.

(2) Every crane driver or hoisting appliance operator shall be properly qualified

and no person under an age of 21 years should be in charge of any hoisting machine including any scaffold, or give signals to the operators.

(3) In case of every hoisting machine and of every chain ring hood shackle swivel and pulley block used in hoisting or lowering or as means of suspension of the safe working loads shall be ascertained by adequate means of Every hoisting machine and all gear referred to above shall be plainly marked with the safe working load in case of hoisting machine having a variable safe working load or the conditions under which it is applicable shall be clearly indicated. No part of any machine or any gear referred to above in the paragraph shall be loaded beyond the safe working load except for the purpose of testing.

(4) In case of department machines the safe working load shall be notified by the Electrical Engineer-in-charge. As regards contractors machine the contractor shall notify the safe working loads of machine to Engineer- in-charge. Whenever he brings any machinery to site of the work he should get it verified by the Electrical Engineer concerned.

xi) Gearing, Transmission, Electric wiring and other dangerous parts of hoisting appliance shall be provided with efficient safeguard. Hoisting appliance should be provided with such means as will reduce to minimum risk of accident independent of the load. Adequate precaution should be taken to reduce to the minimum risk of any part of suspended load becoming accidentally displaced. When workers employed on electrical installation which are already energized insulating mats wearing apparel such as Gloves, Sleeves and boots as may be necessary should be provided. The workers should not wear any ring, watch & carry key or other materials which are good conductor of electricity.

xii) All scaffolds, ladders and other safety devices mentioned or described herein shall be maintained in safe condition and no scaffold, ladder or equipment shall be altered or removed while it is used Adequate washing facilities shall be provided at or near place of work.

xiii) These safety provisions shall be brought to notice to all concerned by display on a Notice Board at a prominent place at work spot. The persons responsible for compliance of the safety codes shall be named therein by the contractor.

xiv) To ensure effective enforcement of rules & regulations relating to safety precautions the arrangements made by the contractor shall be open to inspection by the Labour Officer , Engineer-in-charge of the department or their representatives.

xv) Notwithstanding to above clause from (i) to (xiv) there is nothing in those to exempt the contractor from the operations of any other Act . or Rule in force in Republic of India.

CERTIFICATE

(Only for tenderer using downloaded tender document from Website)

We undertake that the tender submitted by, is downloaded from SECL website (<http://www.secl.nic.in/>) and is same in content and form (verbatim), and any deviation, if detected, at any state, would entitle SECL to reject our bidding/offer without assigning any reason or recourse to any penal action and would be legally binding on us.

Signature: (Of tenderer) _____

Seal: _____

IN THE OFFICE OF THE EXECUTIVE MAGISTRATGE
MANENDRAGARH DISTT: KOREA CG

I _____ aged _____ years, S/O Shri/Late _____ village
/PO: _____ Distt: _____, propriotor of M/s

_____ solemnly declare that:

1. I am submitting tender for the
work _____

_____ against NI No. CGM/HSD/Civil/_____ dated _____

2. I shall abide by CMPF Clause of tender document and ensure implementation of CMPF and Mise. Provisions Act 1948 and allied scheme framed there- under in respect

of the workers deployed by me/us

3. I have not been banned or de listed by any Govt. Or Quasi Govt. agencies or PSUs.

That the above noted facts are true to the best of my knowledge and belief.

Identified by me
deponent

Signature of the

Advocate

The above named deponent who is identified by Shri _____
advocate, Manendragarh , appeared before me inl my court and stated on oath on
this _____ day of _____ 2009 at _____ AM/PM and that the
contents of this affidavit are true to the best of his knowledge and belief.

Solemnly affirmed and declared before me on identification :

Mgistrate/NOTARY

Executive

Manendragarh

Govt. of CG

Distt: Korea CG

IN THE OFFICE OF THE EXECUTIVE MAGISTRATGE
MANENDRAGARH DISTT: KOREA CG

I _____ aged _____ years, S/O
Shri/Late _____ village /PO: _____ Distt:
_____, proprietor of M/s _____ solemnly declare that:

- 1 I am submitting tender for the work _____
against NI No. CGM/HSD/Civil/ _____ dated _____

2. None of the partner of our firm is relative of employee/ officer bearer of any of the Trade Union s of South Eastern Coalfields Limited.
3. All information furnished by us in respect of fulfillment of Eligibility criteria and qualification information of this Trader is complete, Correct and true.
4. All documents/ credentials submitted along with this tender are genuine , authentic true and valid.
5. If any information and document submitted is found to be false/ incorrect at any time, department may cancel my tender and action as deemed fit any be taken against us, including termination of the contract forfeiture of all dues including Earnest Money and banning/ delisting of our firm and all partners of the firm etc.

That the above noted fact are true to the best of my knowledge and belief .

Identified by me
deponent

Signature of the

Advocate

The above named deponent who is identified by Shri _____ advocate, Manendragarh , appeared before me inl my court and stated on oath on this _____ day of _____ 2009 at _____ AM/PM and that the contents of this affidavit are true to the best of his knowledge and belief.

Solemnly affirmed and declared before me on identification :

Mgistrate/Notary

Executive

Manendragarh

Govt. of CG

BILL OF QUANTITY

Leveling of Area ,Construction of retaining wall , buffer wall ,flooring of area and making of Shed for Installation of main Riding structure at Sheetaladhara Mine of Kurja Sub Area.

<u>SN</u>	<u>Item Description</u>	<u>Qty</u>	<u>Unit</u>	<u>Rate</u>	<u>Unit</u>	<u>Amnt</u>
1	Earth work in excavation over areas (exceeding 30 cm in depth, 1.5m in width as well as 10 sqm on plan) including disposal of excavated earth, lead upto 50 m and lift upto 1.5 m, disposed earth to be leveled and neatly dressed. Ordinary rock	240.52	cum	98.35/cum		23655.14
2	Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering - All work upto plinth level :1:4:8 (1 cement : 4 fine sand : 8 graded stone aggregate 40 mm nominal size)	6.91	cum	1156.65/cum		7992.45
3	Providing and laying cement concrete in retaining walls, return walls, walls (any thickness) including attached pilasters, columns, piers, abutments, pillars, posts, struts, buttresses, string or lacing courses, parapets, coping, bed blocks, anchor blocks, plain window sills, fillets etc. upto floor five level, excluding the cost of centring, shuttering and finishing :1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size).	23.76	cum	1590.65/cum		37793.84
4	Cement concrete flooring 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate) finished with a floating coat of neat cement including cement slurry, but excluding the cost of nosing of steps etc. complete. 50mm thick with 20mm nominal size stone aggregate.	120.00	sqm	118.45/sqm		14214.00
5	Providing and laying in position specified grade of reinforced cement concrete excluding the cost of centring, shuttering, finishing and reinforcement - All work upto plinth level : 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size)	18.16	cum	1737.75/cum		31557.54
6	Reinforced cement concrete work in walls (any thickness), including attached pilasters, buttresses, plinth and string courses, fillets, columns, pillars, piers, abutments, posts and struts etc. upto floor five level excluding cost of centring, shuttering, finishing and reinforcement :1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size).	38.54	cum	1907.65/cum		73520.83
7	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. Mild steel and Medium Tensile steel bars.	5670.00	Kg	20.10/Kg		113967.00
8a	Centring and shuttering including strutting, propping etc. and removal of form work for : Foundations, footings, bases for columns.	42.14	Sqm	53.65/Sqm		2260.81

8b	Centring and shuttering including strutting, propping etc. and removal of form work for : Retaining walls, return walls, walls (any thickness) including attached pilasters, buttresses plinth and string courses fillets etc.	237.40	Sqm	88.25/Sqm	20950.55
9	Providing corrugated G.S. sheet roofing fixed with G.I. J or L hooks, bolts and nuts 8 mm diameter with bitumen and G.I. Limpet washes or with G.I. Limpet washers filled with white lead and including a coat of approved steel primer and two coats of approved paint on overlapping of sheets complete (upto a pitch of 60 degrees) excluding the cost of purlines, rafters and trusses. 0.63 m thick with zink coating not less then 275 gm/m2	115.40	sqm	292.50/sqm	33754.50
10	Structural steel work welded in built up sections, trusses and framed work including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer all complete:	3145.00	Kg	21.45/Kg	67460.25
11	Extra for providing and fixing wind ties of 40x6mm flat iron section.	39.00	mtr	35.35/mtr	1378.65
<hr/>					
Total Rs					428505.56
Deduct 20 % As per Circular					(-) 85701.11
Total Estimated Cost					342804.45

Note: (i) If quoted rate below more than 20% of the updated cost then difference of cost will be deposited by the tenderer before commencement of work as special performance Security in addition to other condition in NIT ie. Updated cost (-) updated rate.

(ii) Tenderers are requested to quote percentage (%) rate on estimated cost only. (Not on updated cost)

Signature