MISHRA DHATU NIGAM LIMITED
P.O.KANCHANBAGH, HYDERABAD

Part-I (TECHNICAL BID)

ANNUAL MAINTENANCE CONTRACT FOR

MAINTENANCE AND MINOR WORKS AT MIDHANI PLANT

2017-18

Mishra Dhatu Nigam Limited
Kanchanbagh, Hyderabad

Tender Notice No: MDN/AP2071037/EADVT/146/17-18 Date: 06-09-2017

Two part tenders are invited on behalf of Mishra Dhatu Nigam Ltd Hyderabad, (MIDHANI) for the work of "ANNUAL MAINTENANCE CONTRACT FOR MAINTENANCE & MINOR WORKS AT MIDHANI, KANCHANBAGH, HYDERABAD-58.

Particulars of the tender at are:

Estimate cost for AMC works : Rs.30.0 lakhs

Earnest money deposit: Rs. 1,00,000/-

Contract Period: 365 DAYS

Tender document Fee: Rs 1000/-.

The tender document can be obtained in person from the office of the A.G.M (Civil), Mishra Dhatu Nigam Limited, Kanchanbagh, Hyderabad on any working day from 06-09-2017 to 25-09-2017.Tenders will be received up to 10.30 hrs on 25-09-2017 and part-1 (Technical Bid) will be opened 26-09-2017 at 11.00 hrs. & price bid will be opened later on. Tender documents are also available at our website www.midhani.com. Interested parties may download the documents and participate in the tender. Along with the Tender Enquiry for the above work you are requested to furnish your offer through online http://eprocuremidhani.nic.in before last date of submission, along with Tender Fee Rs. 1000/- , pay online through link http://ebs.in/midhani/public or visit midhani website www.midhani.com> purchase > Tenders > Tender fee,–ONLINE PAYMENT. Competent Authority of "MIDHANI" reserves the rights to reject any or all tenders without assigning any reasons thereof.

AGM (I/C Purchase)
Mishra Dhatu Nigam Ltd., Hyderabad.

Section-1

Mishra Dhatu Nigam Limited
Kanchanbagh, Hyderabad.

Tender Notice No: MDN/AP2071037/EADVT/146/17-18 Date: 06-09-2017

Two part tenders are invited on behalf of Mishra Dhatu Nigam Ltd.,

Hyderabad, (MIDHANI) for the work of "**ANNUAL MAINTENANCE CONTRACT FOR MAINTENANCE & MINOR WORKS AT MIDHANI, KANCHANBAGH, HYDERABAD-58.**

To be submitted by 10.30 hrs on 25-09-2017

Part-1 (Technical Bid) will be at 11.00 hrs on 26-09-2017in the office of Addl. General Manager (Purchase), 2nd Floor, corporate office, Mishra Dhatu Nigam Ltd., Hyderabad.

Signature of the Office issuing the document

Name& designation

Date:

*Fill the name of the Contractor.

Mishra Dhatu Nigam Limited
Kanchanbagh, Hyderabad.

Tender Notice No : MDN/AP2071037/EADVT/146/17-18 Date:06.09.2017

Two part tenders are invited on behalf of Mishra Dhatu Nigam Ltd., Hyderabad, (MIDHANI) for the work of **"ANNUAL MAINTENANCE CONTRACT FOR MAINTENANCE & MINOR WORKS AT MIDHANI , KANCHANBAGH, HYDERABAD-58** from reputed contractors who are qualified, proven Having similar experience.

1. The estimated cost of work is Rs. 30 Lakhs. However, this estimated cost Rs. 30 Lakhs for contract works. Also, this estimate is only indicated & serves as rough guide to the tender.
2. Contract period - Total period 365 days from the date of handover of site.
3. Chairman & Managing Director, MIDHANI shall be the accepting authority of this Contract.
4. **Eligibility Criteria**:

The Pre-qualification requirements for the works are as under:

a) Constitution and legal Status.

b) Registration with MIDHANI/ other organization if any.

c) Copy of PAN/GIR no. Registration issued by Income Tax Authority.

d) Certificate of GSTN Number.

e) Average Annual Financial Turnover during the last 3 years, ending 31st March 2017, should be at least 30% of the approximate estimated cost of the work.(Audited financial statement duly attested shall be attached).

f) Earnest Money Deposit (EMD): Earnest Money Deposit Rs 1,00,000/- is to be submit online through link http://ebs.in/midhani/public or visit midhani website www.midhani.com> purchase > Tenders > EMD fee (Earnest Money Deposit)–ONLINE PAYMENT. The tenders without EMD/tender fee amount will be rejected; request for adjustment from pending bill will not be entertained. Please confirm whether you are MSME Unit or MSME Unit owned by SC/ST Entrepreneur. If yes, please submit latest valid documentary proof for extending benefits as per government guidelines

g) Tender document Fee: The cost Rs. 1000 is to be online through link http://ebs.in/midhani/public or visit midhani website www.midhani.com> purchase > Tenders > EMD fee (Earnest Money Deposit)–ONLINE PAYMENT. The tenders without EMD/tender fee amount will be rejected; request for adjustment from pending bill will not be entertained, Deposit through any other form will not be accepted.

h) Latest Bankers Solvency Certificate for Rs 10 lakhs from Nationalized / Schedule Bank issued not earlier than 12 months from the date of this NIT.

i) Details of works carried out during the last 7 years in any Government/ Public Sector Unit/ Large Private Organizations with Certificate.

j) Income Tax Returns for past Three years.

k) Experience of having successfully completed similar works during last 7 years from the date of tender notice should be either of the following:

i) Three similar completed works each costing not less than the amount equal to 40% of the estimated value mentioned in the tender notice / Or

ii) Two similar completed works each costing not less than the amount equal to 50% of the estimated value mentioned in the tender notice / Or

iii) One similar completed works each costing not less than the amount equal to 80% of the estimated value mentioned in the tender notice.

l) Specified minimum requirements: -The contractor shall have similar experience in maintenance works including labour oriented works.

m) The tender application and related documents will be assessed to demonstrate convincingly that the applicant possesses the required experience, together with the technical, administrative and financial capability to perform the Contract and has good performance record in

the relevant area. Applicants will not be considered if they have a poor performance record such as: abandoning of works; not properly completing /defaulting contracts, inordinate delays in completing contracts; litigation history, financial failure, etc. Midhani reserves the right to approach its previous clients for the purpose of this Contract.

n) The successful bidders shall submit PF/ESI number before commencement of the work and shall fulfill all the requirements as per PF/ESI acts.
o) The contractor shall be liable for any loss caused to MIDHANI due to financial or any other irregularities committed by self or the employee/ labour working under their contract.

5. Tender document will be issued on payment of towards Tender fee of Rs. 1000/-
Documents. The tender document will be available from 06-09-17 to 25-09-2017.

6. The tenders shall be submitted online only.

7. **Technical Bid (Online)** will contain mainly:
   a. Credentials of contractor (as specified in the above clause –4(a)-eligibility criteria) along with "Technical bid".
   b. EMD of Rs 1,00,000/- is to be submit online through link http://ebs.in/midhani/public or visit midhani website www.midhani.com> purchase > Tenders > EMD fee (Earnest Money Deposit)–ONLINE PAYMENT.
   c. Latest Original Bank solvency (not older than one year from the date of this NIT) worth Rs. 10 Lakhs from any Nationalized/ Scheduled Bank shall be enclosed. (Also period of validity to be mentioned for one year).
   d. Details as indicated in enclosed technical bid format.
   e. Details of credentials of prospective tie up , sub- contractors along with proof.
   f. Any other additional information, which is thought to be necessary by the tenderer.
   g. MIDHANI employee sons/ daughter /near relatives are not to participate in tender.

8. **"Price Bid" (Online)**: The tenderer shall indicate his offer in percentage BOQ format and the bidder shall quote for all the tendered items.

9. **The TECHNICAL BID** will be opened at 11.00 hrs on 26-09-2017,

   PRICE BID of the eligible and qualified in technical bid only will be opened at a later stage for which the date and time will be intimated to them.

10. The tenderers, at his own cost are advised to inspect and survey the site and its surroundings , specifications & drawings etc and satisfy themselves before submitting their tender .As to the form and nature of the site, means of access to the site, accommodation that may be required etc. In general, tenderer shall themselves obtain all necessary information as to risk contingencies and other circumstances which may influence or affect their tender. The tenderer shall be deemed to have full knowledge of the site, specifications & drawings etc, whether he inspects it or not and no extra claims due to any misunderstandings or otherwise shall be allowed.

11. Submission of a tender by a tenderer implies that he has read this notice and all other contract document and has made himself aware of the scope and specifications for the work to be done and conditions of MIDHANI and local conditions and other factors bearing on execution of the work. No extra claim will be entertained on account of misunderstandings or what so ever.

12. (a)This is an percentage pre price bid format and the quoted in figures as well as in words for executing works indicated in scope of work, salient features mentioned elsewhere in tender.

    (b) The estimated value of work is Rs 30 lakhs, the item wise payment of the work will be made as indicated elsewhere in this document, quantities in BOQ are indicative; however payment will be made as per actual work done at site based on the joint measurements.

13. Tenders shall be received online only up to 10.30 hrs on 25-09-2017 and Technical Bid will be opened 26-09-2017 11.00hrs.

14. On acceptance of tender, the earnest money will be adjusted in Security Deposit of successful bidder.

15. The tenderer shall submit the tender, which satisfies each and every condition laid down in the tender document, failing which; the tender is liable to be rejected.
16. MIDHANI reserve to themselves right of accepting the whole or any part of the tender and the tenderer shall be bound to perform the same at his quoted rates.
17. GST or any other tax and duties prevailing at the time of submission of tender in respect of this contract shall be payable by the contractor and it is deemed that the rates / amount quoted for this work is inclusive of above mentioned taxes. MIDHANI will not entertain any claim whatever in this respect. Tenderer should clearly make a declaration to this effect in his quotation failing which his tender will not be qualified for Price bid opening.

18. The tender submitted shall remain valid for a period of 90 days from the date of opening of the tender. The tenderer shall not be entitled, during the said period of validity, to revoke or cancel his tender or vary the tender given or any item/ conditions thereof, failing which the earnest money paid by the tenderer along with the tender shall be forfeited by MIDHANI.
19. The bidder shall bear all costs associated with preparation and submission of his Bid, and MIDHANI will in no case be responsible or liable for those Costs
20. All documents relating to the Bid shall be in the English language
21. MIDHANI does not bind itself to accept the lowest or any tender or to give any reasons for their decision and to cancel the bidding process and reject all Bids, at any time prior to the award of Contract, without thereby incurring any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders of the grounds for MIDHANI's action. This notice inviting tender shall form the part of the contract document.
22. The tenderer may contact the office of Addl.G.M (I/c Purchase), mob-8978885173 for commercial & traghuram@midhani.com & for technical Mob.no-9177304937, gmadanmohan@midhani.com.

23. Bid clarifications

a) The Bidder or his officially authorized representative may contact personally or through mail/phone for any clarification in the tender.
b) The purpose is to clarify issues and to answer questions on matters that may be raised before bid submission.
c) The Bidder is requested to submit their questions / queries / clarifications in writing or by email / fax to reach the MIDHANI not later than one week before the tender submission.
d) Clarification given will be transmitted without delay to all tenderers of the bidding documents. Any modification of the bidding documents which may become necessary as a result of the clarifications shall be made by MIDHANI exclusively through issue of an Addendum only and by circulation on our website.
e) All bidders are advised to visit the site & understand the complete

scope of work, failing which it is deemed that he has understood all the terms &conditions & complete tender. No further queries will likely be entertained afterwards.

24. *Amendment of Bid Documents*

24.1 Before the deadline for submission of bids, MIDHANI may modify the bidding documents by issuing corrigendum.

24.2 Any corrigendum so issued shall be part of the bid documents as well as Contract document and shall be communicated in writing by email / fax/post to all the purchasers of the bidding documents. Prospective Bidders shall acknowledge receipt of each addendum by email / fax to MIDHANI.

24.3 All the bidders must check the web site of MIDHANI for any changes/addendums/ corrigendum before the date of submission of the tender. No excuse will be entertained in this regard. Thereafter no extra claim will be entertained on account of misunderstandings or what so ever.

24.4 To give prospective Bidders reasonable time to take an addendum into account in preparing their bids, MIDHANI may extend the date for submission of bids, if necessary.

25. Language of the Bid

25.1 All documents relating to the bid shall be in English language.

P.S:- This notice inviting tender shall form the part of the contract document.

For and on behalf of
Mishra Dhatu Nigam Limited

(T.Raghuram)
AGM (I/c Purchase)

FORMS OF BID AND QUALIFICATION INFORMATION
CONTRACTOR'S BID

SUB: BID for the Work _____

To:

_____

_____

_____

Dear Sir,

We offer to execute the Works described above in accordance with the Conditions of Contract accompanying the Bidding Document issued to us. The Earnest Money amounting to RS …….. (in figures) …… …… (in words) in accordance with the NIT is enclosed herewith (to be filled in by the Bidder).

This Bid and your written acceptance of it shall constitute a binding contract between us. We understand that MIDHANI is not bound to accept the lowest or any Bid receive.

We hereby confirm that this Bid complies with the Bid validity. We also confirm that E.M.D. and other required documentary evidences related to this part of the Bid are enclosed (As listed below) herewith either in original/ copies attested by Gazetted Officer/ copies duly authenticated by us with signature and seal along with affidavit as per the format provided in the bid document.

Yours faithfully,

Authorized Signature: _____

Name and Title of the Signatory: _____

Name of the Bidder : _____

Address: _____

Date: _____

(To be filled in by the Bidder)

Encl: i) E.M.D of Rs _____ Vide _____ dt

FORMS OF BID AND QUALIFICATION INFORMATION

QUALIFICATION INFORMATION

(The information to be submitted by all the Bidders)

1. **Individual Bidders or Individual Members of Joint Ventures/Consortium**

1.1 **Constitution or Legal status of Bidder (attach copy)**

Place of registration: _____
Principal place of business: _____
Power of Attorney of signatory Bid: (attach)

1.2 **Detail of the turnover during last 3 (three) years:**

Annual Turnover Data (Construction only)		
Year	**Turnover in Rs.**	Remarks

1.3 **Joint Venture /consortium details (if any):**

Name of all partners of a joint venture/consortium
1. Lead Partner
2. Partner
3. Partner

NOTES: Joint Ventures/consortium must comply the following requirements:

I. Following are the minimum qualification requirements for joint ventures:

   a. The lead partners shall meet not less than 40% of all the qualifying criteria stated in the bid document.
   b. The other partners shall meet not less than 30% of all the qualifying criteria stated in the bid document.

II. The formation of joint venture/consortium or change in the joint venture character / partners after submission of the bid and any change in the bidding regarding joint venture will not be permitted.

III. Any bid shall be signed so as to legally bind all partners jointly and severally and bid shall be submitted with a copy of the Joint Venture /consortium providing the joint and several liabilities with respect to the contract.

IV. The pre-qualification of a joint venture/consortium does not necessarily pre-qualify of its partners individually or as a partner in any other joint venture or association. In case of dissolution of a joint venture, each one of the firms may pre-qualify if they meet all the pre-qualification requirements, subject to written approval of the MIDHANI.

V. The bid submission must include documentation evidence to the relationship between joint venture partners in the form of JV / consortium to legally bind all partners jointly and severally for the proposed agreement which should set out the principles for the constitution, operation, responsibilities regarding work and financial arrangements, participation (percentage share in the total) and liabilities (joint and several) in respect of each and all of the firms in the joint venture. Such JV/Consortium must evidence the commitment of the parties to bid for the facilities applied for (if pre-qualified) and to execute the contract for the facilities if their bid is successful.

VI. One of the partners responsible for performing a key component of the contract shall be designated as Lead Partner. This authorization shall be evidenced by submitting with the bid a Power of Attorney by legally authorized signatories of all the partners.

VII. The JV/Consortium must provide that the Lead Partner shall be authorized to incur liabilities and receive instructions for and on behalf of any and all partners of the Joint Venture and the entire execution of the contract shall be done with active participation of the Lead Partner.

VIII. The contract agreement should be signed jointly by each Joint Venture Partners.

IX. An entity can be a partner in only one Joint Venture Bid submitted by Joint Ventures including the same entity as partner will be rejected.

1.4 **Details of experience for similar nature and complexity of work in last 05(five) years:**

Use a separate sheet for each contract (Attach performance certificates from concerned customer).

1.	Number of contract:
2.	Name of the MIDHANI:
3.	Employees address:
4.	Nature of work and special features if any:
5.	Contract role (check one) 1. Sole contractor 2. Partner in Joint venture
6.	Value of the total contract:
7.	Date of award:
8.	Date of completion with original schedule and slippage, if any.
9.	Specified minimum requirements: The contractor shall have similar experience in maintenance works including labour oriented works.

1.5 **Information on Bid Capacity:** (Works for which bids have been submitted and work which are yet to be completed) as on the date of this bid:

1.6 **Evidence of access to financial resources to meet the qualification requirements:** Cash in hand, lines of credit and other financial means etc. sufficient to meet the construction cash flow (copies to be submitted and the following format to be filled up)

Source of Financing	**Amount in Rs.**
1.	
2.	

1.7 **Evidence reports of the last three years: balance sheets, profit and loss statement, auditor's report etc.** (Copies to be submitted and the following format be filled up) enclosed.

Financial information in Rs.	**Actual : Previous three years**					**Projected : Next two years**	
	1	**2**	**3**	**4**	**5**	**6**	**7**
1. Total assets							
2. Current assets							
3. Total liabilities							
4. Current liabilities							
5. Profits before tax							
6. Profits after tax							

1.8 **Details of the major construction equipment to be used for the work:**

Sl.no	**Description of equipment**	**Number**	**Any other relevant information**

GENERAL CONDITIONS OF CONTRACT

CHAPTER – I

INTERPRETATION AND DEFINITIONS:-

In these General conditions of contract the following terms shall have the meaning hereby assigned to them except where the context otherwise requires.

CLAUSE 1:

Singular and Plural

Where the context so requires, words imparting the singular only also include the plural and vice versa.

CLAUSE 2:

Headings and Marginal Notes to Clauses

Headings and marginal notes to these General Conditions shall not be deemed to form part thereof or not be taken into consideration in interpretation or construction thereof or of the contract.

CLAUSE 3:

Definitions

a. "CONTRACT" means tender and acceptance thereof, which include the following documents.

a)	Tender Notice	PAGE (02)
b)	Technical Bid format	PAGE (04)
c)	Terms of payment	PAGE (20)
d)	General Conditions of contract	PAGE (14)
e)	Special conditions of contract	PAGE (39)
f)	Specification for Structural steel & Civil work.	PAGE (45)
g)	Price Bid Format	Separate booklet enclosed

Acceptance letter and any other conditions mutually accepted by the parties after issue of acceptance letter.

b. "TENDER DOCUMENTS" means the Appendix a to g as aforesaid given to the Tenderers for the purpose of preparing their tenders.

c. "THE CONTRACT SERVICES" means the services described in the tender documents / contract and in individual work order issued including all modifications, additional services and obligations to be carried out either at site or work places or other places as required for the performance of the contract.

d. "THE SITE" means the land and other places on, in or through which the work is to be executed under the contract or any adjacent land, path or street which may be allotted to or used for the purpose of carrying out the contract.

e. "ACCEPTING OFFICER" means an authority appointed by Employer empowered to accept or to reject the tender.

f. 'ENGINEER-IN-CHARGE' means Engineer or assistant of the Employer appointed from time to time by the Employer to perform the duties like watch and supervise the works and to test and examine any material to be used or workmanship employed in connection with the works. Any written instruction or approval given by the Engineer-In-Charge or his Representative to the Contractor in connection with the works shall bind the Contractor as though it had been given by the Employer.

g. 'EMPLOYER' means the Mishra Dhatu Nigam Limited, incorporated under the Companies Act 1956, having its registered office at Kanchanbagh P.O., Hyderabad- 500 058, in the State of Telangana and includes its successors in office and assigns.

h. "Market Rate" shall be the rate as decided by the Engineer-In-Charge on the basis of the cost of materials and labour at the Site where the work is to be executed, plus the percentage mentioned in Schedule A to cover all overheads and profit. For material issued by "MIDHANI" the overheads and profit percentage shall be allowed @2.5%.

i. "In writing" or "Written" means writing, typing, printing and lithography and any other mode of representing or reproducing words in a visible form.

j. "Notice in Writing" or "Written Notice" means a notice is written, typed or printed characters sent (unless delivered personally or otherwise proved to have been received) by registered post /e-mail / Fax to the last known private or business address or registered office of the addresses and shall be deemed to have been received when in the ordinary course of post it would have been delivered.

k. “Approved” means approved in writing, including subsequent written confirmation of previous verbal approval and “Approval” means approval in writing including as aforesaid.

SCOPE AND PERFORMANCE

CLAUSE 4:

a) **Contract Documents:**

The Contractor shall furnish, free of charge, two certified true copies of the Contract Documents and the schedule of quantities and rates and of all further drawings which may be issued during the progress of the works. He shall keep one copy of these Documentation at the Site in good order, and the same shall at all reasonable times be available for inspection and use by the Engineer-in-Charge, his representative or by other inspecting Officers.

b) None of these Documents shall be used by the Contractor for any purpose other than that of this Contract.

c) The Contractor shall take necessary steps to ensure that all persons employed on any work in connection with this Contract have noticed that the Indian Official Secrets Act 1923. (XIX of 1923) applies to them and shall continue to apply even after the execution of such works under the Contract.

CLAUSE 5:

Works to be carried out

a) General:

The Contractor shall execute the whole and every part of the work in the most substantial and workmanlike manner both as regards materials and otherwise in every respect strict accordance with the specifications. The Contractor shall also conform exactly, fully and faithfully to the design, drawings and instructions in writing in respect of the work assigned by the Engineer-In-Charge.

The works to be carried out under the Contract shall, except as otherwise provided in these conditions, include all the cost of all labour, materials, tools, plant and equipment, and transport, handling, re-handling, all taxes etc which may be required in preparation of and for the full and entire execution and completion of the works. The descriptions given in the Schedule of Quantities shall, unless otherwise stated, be held also to include wastage of materials, carriage and cartage, carrying in return of empties, hoisting, setting, fitting and fixing in position and all other labour etc necessary in and for the full and entire

execution and completion as aforesaid & in accordance with technical specifications, good engineering practice and recognized principles.

In case of any class of work for which there is no such specifications as referred to above, such work shall be carried out in accordance with Bureau of Indian Standards Specifications. In case, there are no such specifications in Bureau of Indian Standards, the work shall be carried out as per manufacturer's specifications. In case there are no such specifications as referred to the above the work shall be carried out in all respects in accordance with the instructions and requirements of the Engineer-in-Charge.

b) Engineering Data

The furnishing of engineering data by the Contractor shall be in accordance with the scope of work and schedule as specified in the technical specifications. The review of these data by the Engineer will cover only general conformance of the data to the specifications and documents. This review and/or approval by the Engineer shall not be construed by the Contractor, as limiting any of his responsibilities and liabilities for mistakes and deviations from the requirements specified under these specifications and documents.

CLAUSE 6:

Inspection of Site

The Contractor shall inspect and survey the Site and its surrounding and shall satisfy himself before submitting the tender as to the form and nature of the Site, the Bill of quantities, specifications and nature of work and material necessary for the completion of the works and the means of access to the Site. The accommodation he may required if any and in general shall himself obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect his tender. No extra charges consequent on any misunderstanding or otherwise shall be allowed.

CLAUSE 7:

Sufficiency of Tender

The Contractor shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of his tender for the works and of the rate and prices quoted in the Schedule of Quantities, which rates and prices shall, except as otherwise provided, cover all his obligations under the Contract and all matters and things necessary for the proper completion and maintenance (up to defect liability period) of the works.

CLAUSE 8:

Discrepancies and Adjustment of Errors

a. The several documents forming the Contract are to be taken as mutually explanatory of one another, detailed drawing being followed in preference to small-scale drawings and figured dimensions in preference to scale and Special Conditions in preference to General Conditions.

b. In the case of discrepancy between Schedule of Quantities, the Specifications and/ or the Drawings, the following order of preference shall be observed:

I. Description in Schedule of Quantities.
II. Particular Specifications and special Conditions, if any.
III. Drawings
IV. General Specifications
V. General conditions

c. If there are varying or conflicting provisions made in any one document forming part of the Contract, the Accepting Authority shall be the deciding authority with regard to the intention of the document.

d. Any error in description, quantity or rate in Schedule of Quantities or any omission there from shall not vitiate the Contract or release the Contractor from the execution of the Whole or any part of the works comprised therein according to drawings and specifications or from any of his obligations under the Contract.

e. If on check there are found to be differences between the rates given by the Contractor in words and figures or in the amount worked out by him in the Schedule of Quantities and general summary, the same shall be adjusted in accordance with the following rules:-

I. In the event of a discrepancy between description in words and figures quoted by a tenderer, the description in words shall prevail.
II. In the event of an error occurring in the amount column of Schedule of Quantities as a result of wrong extension of the unit rate and quantity, the unit rate shall be regarded as firm and extension shall be amended on the basis of the rate.
III. All errors in totaling in the amount column and in carrying forward totals shall be corrected.
IV. The totals of various sections of Schedule of Quantities amended shall be carried over to the General Summary and the tendering sum amended accordingly. The tendered sum so altered shall, for the purpose of tender, be substituted for the sum originally tendered and considered for acceptance instead of the original sum quoted by the tenderer. Any rounding off of the Quantities or in sections of Schedule of Quantities or in General Summary by the tenderer shall be ignored.

f. If the bidder did not quote any rate for any items. The rate of the such items will be considered as zero. The bidder is bound to execute the items at a zero price as it will be deemed that the rate /amount have been loaded on the other items.

CHAPTER – II

1. ASSIGNMENT OR TRANSFER OF CONTRACT:

The contractor shall not without the prior written approval of the Accepting officer, assign or transfer the contract or any part thereof or any share, or interest therein to any other person. No sum of money which may become payable under the contract shall be payable to any person other than the contractor unless the prior written approval of the Accepting Officer to the Assignment or transfer is given.

2. SUB – CONTRACT

The contractor shall not sublet or Sub-contract any portion of the contract without the prior written approval of the Accepting Officer.

3. LAW GOVERNING THE CONTRACT:

The Indian laws shall govern this contract for the time being in force and as modified from time to time.

4. SUBMISSION OF AGREEMENTS, BANK GUARANTEES ETC.,

Any agreement, Bank guarantee required to be executed under this contract shall be made at the cost of the contractor with proper stamp duty as per the prescribed formats. However, MIDHANI have the right to alter, modify, and delete any materials in such formats as deemed fit.

5. JURISDICTION:

The contract and all questions, disputes or differences arising under or in connection with this contract, subject to Arbitration clause, shall be subject to the exclusive Jurisdiction of the courts within the local limits of Hyderabad, Telangana, India.

6. CANCELLATION OF CONTRACT FOR INSOLVENCY ASSIGNMENT, TRANSFER OR SUBLETTING OF CONTRACT:

The Accepting Officer may without prejudice to any other right or remedy, which shall have accrued or shall accrue thereafter to MIDHANI , shall cancel the contract in any of the following cases:

If the contractor:

a) Being an individual, or a firm, any partner thereof shall at any time be adjudged bankrupt or have receiving order or order for administration of his estate made against him or shall take any proceeding for liquidation of compensation under Bankruptcy laws for the time being in force or makes any conveyance or assignment

of his effects of composition or arrangement for the benefit of his creditors or proposes to do so, or if any application be made under any Bankruptcy laws for the time being in force for the sequestration of his estate or if a trust deed be granted by him or be MIDHANI of his creditors or

b) Being a company, shall pass resolution or the court shall make an order for the liquidation of its affairs, or a receiver or Manager on behalf of the Creditors shall be appointed or circumstances shall arise which entities the court or Creditor to appoint a receiver or manager or

c) Assigns, transfers, sublets/Sub-contract or attempts to assign, transfer or sublet any portion of the work without the prior written approval of the Accepting officer. Whenever the Accepting Officer exercises his authority to cancel the contract under this conditions, he may complete the work by any means at the completion (as certified by MIDHANI which is final and conclusive) being less than the contract cost, the advantage shall accrue to the MIDHANI and that if the cost of completion exceeds the money due to the contractor shall either pay the excess amount ordered by the MIDHANI or the same shall be recovered from the contractor by other means.

7. Method of measurement

a) Except where any general or detailed description of the work expressly shows to the contrary, measurement shall be taken in accordance with the procedure set forth in Specifications, not withstanding any provision in the relevant Standard Method of Measurement or any general or local custom. In the case of items which are not covered by the Schedule of Rates/Specification, measurement shall be taken in accordance with the relevant Standard Method of Measurement issued by the Bureau of Indian Standards and if for any item no such standard is available, then a mutually agreed method shall be followed. However in no case whatsoever the bidder can refuge to execute the items including extra/additional items.

b) **Payment on Account**
Generally each work order value will be up to a maximum of 3 lakhs and each work will be paid only one R/A bill & one Final bill. RA bills will be paid in 15 days and final bill 30 days from the date of certification of bill by Engineer-in-charge.

c) Interim bills shall be submitted by the Contractor for the work executed on the basis of such recorded measurement on the format of “MIDHANI” at intervals mentioned in Schedule A on or before the date fixed by the Engineer-in-Charge. The Engineer-in-Charge shall then arrange to have the bill verified.

d) Payment “On Account” for amount admissible shall be made, on the Engineer-in-Charge certifying the sum to which the Contractor is considered entitled by way of interim payment for the following:-

i. For works: All work executed, after deducting there-from the amounts already paid, the retention money and such other amounts as may be deductible or recoverable in terms of the Contract. The R.A bills for works will be paid within 15 working days from the date of submission of the verified/certified bills by the Engineer.

e) Payment of the Contractor's on account bill shall be made by "MIDHANI" within 15 days from the date of submission of the bill subject to the acceptance of the same by the Engineer-in-charge..

f) Pending consideration of extension of date of completion, interim payments shall continue to be made as herein provided, without prejudice to the right of "MIDHANI" to take action under the terms of the contract for delay in the completion of work, if the extension of date of completion is not granted by the competent authority.

g) **Time Limit for Payment of Running Bill & Final Bill**

1. Each R.A bill will be paid within 15 days from the date of certification of Engineer- in- Charge. And the bill shall be submitted by the Contractor within 90 days of physical completion of the works and payment for final bill will be made within 30 days from the date of certification of Engineer- in - Charge. No further claims shall be made by the Contractor after submission of the final bill and these shall be deemed to have been waived and extinguished Payment of those items of the bill in respect of which there is no dispute and of items in dispute, for quantities and at rates as approved by the Engineer-in-Charge, shall be made within the period of Six months specified hereunder. The period shall be reckoned from the date of receipt of the correct bill by the Engineer-in-Charge.

2. After payment of the amount of the final bill as aforesaid has been made, the Contractor may, if he so desires, reconsider his position in respect of the disputed portion of the final bill and if he fails to do so within 90 days, his disputed claim shall deemed to be waived & extinguished and will be dealt with as provided in the Contract.

h) **Suspension of Works**

1) The Contractor shall, on receipt of the order in writing of the Engineer-In-Charge suspend the progress of the works or any part thereof for such time, and in such manner as the Engineer-In-Charge may consider necessary for any of the following reasons:

I. on account of any default of the Contractor, or

II. for proper execution of the works or part thereof for reasons other than the default of the Contractor, or

III. for safety of the works or part thereof,

The Contractor shall, during such suspension, properly protect and secure the works to the extent necessary and carry out the instructions given in that behalf by the Engineer-In-Charge.

2) If the suspension is ordered for reasons (ii) and (iii) in Sub para (1) above,

the Contractor shall be entitled to an extension of the time only equal to the period of every such suspension plus 25%.

3) If the works or part thereof is suspended on the orders of the Engineer-In-Charge for more than 90 days at a time, except when suspension is ordered for reason (1) (i) above, the Contractor may after receipt of such order serve a written notice on the Engineer-In-Charge requiring permission within fifteen days from receipt by the Engineer-In-Charge of the said notice, to proceed with the works or part thereof in regard to which progress has been suspended and if such permission is not granted within that time, the Contractor, if he intends to treat the suspension, where it affects only a part of the works as an omission of such part by "MIDHANI" or where it affects the whole of the Works, as an abandonment of the works by "MIDHANI" shall within 10 days of expiry of such period of 15 days give notice in writing of his intention to Engineer-In-Charge. In the event of the Contractor treating the suspension as an abandonment of the Contract by "MIDHANI" he shall have no claim to payment of any compensation on account of any profit or advantage which he may have derived from the execution of the work in full but which he could not derive in consequence of the abandonment. He shall, however, be entitled to compensation, as the Engineer may consider reasonable, in respect of salaries and/or wages paid by him to his employees and labour at Site, remaining idle in consequence and of materials collected which could not be utilized on the works, adding to the total thereof the percentages mentioned in Schedule A to cover indirect expenses of the Contractor, provided the Contractor submits his claim supported by the details to the Engineer-In-Charge within 28 days of the expiry of the period of 90 days.

8. Over payments & under payments

a. Wherever any claim for the payment of a sum of money to "MIDHANI" arises out of or under this Contract against the Contractor, the same may be deducted by "MIDHANI" from any sum then due or which at any time thereafter may become due to the Contractor under this Contract and failing that under any other Contract with "MIDHANI" or from any other sum due to the Contractor from "MIDHANI" which may be available with "MIDHANI" or from his retention money; or he shall pay the claim on demand.

b. "MIDHANI" reserves the right to carry out post payment audit and technical examination of the final bill including all supporting vouchers, abstracts etc. "MIDHANI" further reserves the right to enforce recovery of any overpayment when detected, notwithstanding the fact that the amount of the final bill may be included by one of the parties as an item of dispute before an arbitrator appointed under of this Contract and notwithstanding the fact that the amount of the final bill figures in the arbitration award.

c. If as a result of such audit and technical examination any overpayment is discovered in respect of any work done by the Contractor or alleged to have been done by him under the Contract, it shall be recovered by "MIDHANI" from the Contractor by any or all of the methods prescribed above. If any under-payment is discovered, the amount shall be duly paid to the Contractor by "MIDHANI".

d. Provided that the aforesaid right of "MIDHANI" to adjust over payments against amounts due to the Contractor under any other Contract with "MIDHANI" shall not extend beyond the period of two years from the date of payment of the final bill or in case the final bill is a MINUS bill, from the date the amount payable by the Contractor under the MINUS final bill is communicated to the Contractor.

e. Any amount due to the Contractor under this Contract for under-payment may be adjusted against any amount then due or which may at any time thereafter become due before payment is made to the Contractor, form him to "MIDHANI" on any other Contract or account whatsoever.

f. The Contractor shall be deemed to have given its consent for adjustment of the dues payable to the contractor in other contracts of "MIDHANI", against the liability or outstanding dues in respect of this contract. Similarly, the Contractor gives its consent to adjust/set off the dues payable in this contract against the outstanding dues recoverable by "MIDHANI" from the contractor.

g. All sums payable by way of compensation under any of the conditions of contract shall be considered as reasonable compensation to be applied to the use of "MIDHANI" without referenced to the actual loss or damage sustained and whether or not any damage shall have been sustained.

9.

a) SECURITY DEPOSIT : The successful tenderers has to deposit 5% of contract value as Security Deposit at the time of agreement. This 5% Security Deposit can be submitted online through link http://ebs.in/midhani/public or visit midhani website www.midhani.com > purchase > Tenders > security Deposit –ONLINE PAYMENT or can deposit Bank Guarantee from any nationalized bank. or contractor can deposit Bank Guarantee from any nationalized bank. The validity of B.G shall be equivalent to contract period plus three months extra. The 5% Security Deposit will be released after completion of work duly certified by Engineer- In- Charge.

b) RETENTION MONEY:

A sum of 5% of each Running Bill/ Final bill be deducted from the bills payable to contractor. The EMD deposited will be adjusted against this Retention money and the same will be refunded after the issue of the No defects certificates to the contractor for all the contracts under the scope of the contract i.e after defect liability period of One year.

10. TIME and Extension for Delay:

Time is essence of contract and as such, the contractor shall strictly adhere to the time schedule specified in the tender documents / work order. Also, the contractor shall provide all documents, working drawings, employing technical experts time to time to keep the progress of work in good process enabling to complete the contract in time. Period of Completion for **"ANNUAL MAINTENANCE CONTRACT FOR MAINTENANCE & MINOR WORKS AT MIDHANI" is to be completed within 365 days from the date of hand over of site.**

10.1 The time allowed for execution of the works as specified above or the extended time shall be the essence of the Contract. The execution of the works shall commence from the 10th day after the date on which "MIDHANI" issues written orders to

commence the work or such time period as mentioned in the Letter of Award or from the date of handing over of site whichever is later. If the Contractor commits default in commencing the execution of the work as aforesaid; "MIDHANI" shall without prejudice to any other right or remedy be at liberty to forfeit the earnest money absolutely.

10.2 As soon as possible after the Contract is concluded the Engineer-In-Charge and the Contractor shall agree upon a Time and Progress Chart. The Chart shall be prepared in direct relation to the time stated in the Contract document for completion of items of the works. It shall indicate the forecast of the dates of commencement and completion of various trades or sections of the work and may be amended as necessary by agreement between the Engineer-In-Charge and the Contractor within the limitations of time imposed in the Contract documents. Such defined intermediate milestones will form the basis for monitoring the progress and to initiate such corrective/penal measures as may be decided by the Engineer-In-Charge which shall be final & binding. Further to ensure good progress during the execution of the work, the Contractor shall in all cases in which the time allowed for any work exceeds 30 days (same for special jobs) complete 1/8th of the whole of the work before 1/4th of the whole time allowed in the Contract has elapsed; 3/8th of the work before one half of such time has elapsed and 3/4th before 3/4th of such time has elapsed.

10.3 If the work(s) be delayed by:-

a. **Force majeure**:

If at any time during the continuance of this Contract, the performance in whole or in part, neither party shall be liable of performance under this Contract, any obligations under the Contract of any party, if such performance is prevented or delayed due to reasons beyond such party's control, including but not limited to acts of God, fire, flood, earthquake other natural catastrophes, any law, order, regulation, direction, action of any civil or military authority, national emergencies, insurrections, riots, war (whether declared or not), hostility, acts of the public or enemy, civil commotion, sabotage, explosion epidemic, quarantine restrictions, strikes and lock-outs, work stoppage or other labour difficulties, absence of the usual means of communication or transportation (hereinafter referred to as `eventuality`) provided however the party to which the force majeure has happened shall use commercially reasonable efforts to eliminate such an event.

Force majeure shall also be deemed in the event of any regulatory decision or government order requiring the either party to suspend its service(s) or operation(s) for any reasons whatsoever.

Notice of the happening of any such eventuality or force majeure as mentioned herein shall be given by either party to the other within fifteen (15) days from the date of the occurrence thereof along with supporting proof of the occurrence of the Force Majeure event , neither party shall, by reason of such eventuality, be entitled to terminate this Contract, nor shall either party have any claim for damages

against the other in respect of such non-performance, or delay in performance, and the work under this Contract shall be resumed as soon as practicable after such eventuality has come to an end or ceased to exist, and the decision of the Purchaser as to whether the work has been so resumed shall be final and conclusive.

The party who has given such notice shall be excused from the performance or punctual performance of its obligations under the Contract for so long as the relevant event of Force Majeure continues and to the extent that such party's performance it prevented, hindered or delayed. The time for completion shall be extended by number of days the party giving notice was prevented from performing his obligation due to Force Majeure, in accordance with Clause 10(g) hereof.

Should one or both parties be prevented from fulfilling their contractual obligations by a state of force majeure lasting continuously for a period of at least six (6) months, both the parties shall consult each other regarding the further implementation of the Contract, provided always that, if no mutually agreed arrangement is arrived at within a period within three (3) months from the expiry of the six (6) months referred to above, the Contract shall be deemed to have expired at the end of the said six (6) months referred to above. The above mentioned expiry of the Contract will imply that both the parties have the obligation to reach an agreement regarding the winding up and financial settlement of the Contract.

b. abnormally bad weather, or heavy rains, or

c. serious loss or damage by fire, or

d. Civil commotion, local commotion of workmen, strike or lockout, affecting any of the trades employed on the work, or

e. delay on the part of other contractors or tradesmen engaged by "MIDHANI" in executing work not forming part of the Contract, or

f. non-availability of stores, which are responsibility of "MIDHANI" to supply or

g. any other cause which, in the absolute discretion of the authority mentioned in Schedule A, is beyond the Contractor's control; then, upon the happening of any such event causing delay, the Contractor shall immediately give notice thereof in writing to the Engineer-In-Charge but shall nevertheless use constantly his best endeavors to prevent or make good the delay and shall do all that may be reasonably required to the satisfaction of the Engineer-In-Charge to proceed with the works.

10.4 Request for extension of time, to be eligible for consideration shall be made by the Contractor in writing within fourteen days of the happening of the event causing delay. The Contractor may also, if practicable, indicate in such a request the period for which extension is desired.

10.5 In any such case the authority mentioned in Schedule A may give a fair and reasonable extension of time for completion of the work. Such extension shall be communicated to the Contractor by the Engineer-In-Charge in writing, within 90 days of the date of receipt of such request by the Engineer-In-Charge.

11. Liquidated Damages (L.D)

If, in the opinion of the competent authority, there is a delay in completion of work due to the reasons attributable to the contractor or any failure of contractor in any way whatsoever, the contactor shall pay a sum as Liquidated Damages for completion period as originally stipulated:

k) Below 6 months @ 1% (per week) to a maximum of 10% on contract sum
l) From 6 months to 2 years @ 0.5% (per week) to a maximum of 7.5% on contract sum.
m) Exceeding 2 years @ 0.25% (per week) to a maximum of 5% on contract sum**.** or such smaller sum as decided by the competent authority per week of delay on contract sum. The decision of the competent authority in respect to levy of L.D will be final & binding on the contractor. The levy of L.D is without prejudice to any right or remedy of the company on account of breach of stipulated completion time.

However, the competent authority in his opinion felt that the work is delayed due to reasons which is solely attributable to MIDHANI and absolutely beyond the control of the contractor, shall grant the fair & reasonable extension of time to the contractor. The decision of the competent authority in this respect will be final & binding on the contractor.

i. If the Contractor fails to maintain the required progress in terms of Clause 10 or to complete the work and clear the site on or before the Contract or extended date of completion, the Contractor shall, without prejudice to any other right or remedy available under the law to the "MIDHANI" on account of such breach, pay as agreed compensation amount calculated as stipulated above or such smaller amount as be fixed by the authority mentioned in Schedule 'A' (Whose decision shall be final & binding) on the Contract Value of the work for every week that the progress remains below that specified in Clause 10 or that the work remains incomplete

   This will also apply to items or groups of items for which separate period of completion has been specified.

   For this purpose, the term 'Contract Value' shall be the value at contract rates of the work as ordered.

ii. Completion period (as originally @ 0.5% per week stipulated) not exceeding 21 months.

iii. Provided always that the total amount of damages for delay to be paid under this clause shall not exceed 7.5% of the total value of the work done or of the Contract Value of the item or group of items of work for which a separate period of completion is specified.

iv. The amount of compensation may be adjusted or set- off against any sum payable to the Contractor under this or any other contract(s) with "MIDHANI" .For the purpose of such adjustment/set off, it shall be deemed that the Contractor has given its free consent.

v. Reduction of Liquidated Damages:

If before the completion of the whole of the works or any part of the works has been certified by the Engineer- in- Charge as completed as per the time stipulated hereof and occupied or used by the employer, the value of the whole of the works for the purpose of calculating the liquidated damages shall be reduced by the value of the part so certified by the Competent Authority

12. Defects Liability Period

The Contractor shall be responsible to make good and remedy at his own expense within such period as may be stipulated by the Engineer-In-Charge, any defect which may develop or may be noticed before the expiry of the period 12 months or 1 year which ever greater from the certified date of completion and intimation of which has been sent to the Contractor within ten days of the expiry of the said period by a letter sent by hand delivery or by registered post.

13. ARBITRATION:

Except where, otherwise provided for in the contract, all questions and disputes relating to the meaning of the specifications designs, drawings and instructions herein before mentioned and as to the quality of workmanship or materials used on the work or as to any other question, claim, right, matter or thing whatsoever in any way arising out of or relating to the contract, designs, drawings, specifications, estimates, instructions, orders or otherwise concerning the works, or the execution or failure to execute the same whether arising during the progress of the work or after the completion or abandonment thereof shall be referred to the sole arbitration of the Chairman & Managing Director and if the Chairman & Managing Director is unable or unwilling to act, to the sole arbitration of some other persons appointed by the Chairman & Managing Director willing to act as such arbitrator. The arbitrator to whom the matter is originally referred being transferred or vacating his office or being unable to act for any reason, such Chairman & Managing Director as aforesaid at the time of such transfer, vacation of office or inability to act, Shall appoint another person to act as arbitrator in accordance with the terms of the contract. Such person shall entitle to proceed with the reference from the stage at which his predecessor left it.

Subject as aforesaid the Provisions of the Arbitration & Contractual Act 1996, or any statutory modification or enactment thereof and the rules made there under and for the time being in force shall apply to the arbitration proceedings under this clause.

It is a term of the contract that the party invoking arbitration shall specify the dispute or disputes to be referred to arbitration under this clause together with the amount or amounts claimed in respect of each such dispute.

14. **Contract Signing:-** The successful contractor is required to conclude a contract agreement on a non-judicial stamp paper of Rs. 100.00 on award of the contract in the prescribed format approved by MIDHANI within 10 days time from the date of receipt of work order.

a) Language shall be English: All documents relating to the bid shall be in the English language.

15. CANCELLATION OF CONTRACT FOR DEFAULT OF THE CONTRACTOR:

a) If the contractor makes default in commencing the service within the time specified, or if; the contractor in the opinion of MIDHANI during the currency of the contract makes default in proceeding with the contract services which includes construction for completion of civil construction works of the project or progress of the services is slow, or the services are poor of if the contractor fails to comply with any of the terms and conditions of the contract, or fails to complete the services in part or full or fails to achieve the progress as set out under the contract or abandons the contracts or otherwise commits any breach of contract, MIDHANI will cancel the contract as a whole or in part without any prior notice to the contractor at the sole cost, risk and expense of the contractor and get the balance services/work executed either by MIDHANI itself, or by another contractor or through any other agency/agencies as deemed fit. In such an event, the contractor shall be liable to make good and compensate all losses, expenses whatsoever, incurred or to be incurred by MIDHANI besides forfeiture of EMD / Retention Money.

b) In the event of cancellation of contract as above and the completion of the contract services either by MIDHANI or by another contractor or through any other agency / agencies, if the cost of completion works out less than the cost under this contract, the advantage shall accrue to MIDHANI.

16. CANCELLATION OF CONTRACT FOR DEATH ETC.,

Without prejudice to any of the rights or remedies under this contract, if the contractor dies or attains legal disability, MIDHANI shall have the option of canceling the contract without any compensation to the contractor or any his legal heirs / successors and without any prior notice.

16.1 **SPECIAL POWERS OF CANCELLATION OF CONTRACT / FORECLOSURE OF CONTRACT:**

If at any time after acceptance of the tender/ during award of work, during currency of contract, MIDHANI feels that for any reasons whatsoever, if the whole or any part of the contract services is not required to be carried out, notice shall be given in writing of the fact to the contractor and upon receipt of such notice the contractor shall stop the execution of such services as indicated in the notice forthwith. The contractor shall have no claim to any payment of compensation or otherwise whatsoever on account of any profit or advantage which he might have derived from the execution of the

services in full, but which he did not derive in consequence of the foreclosing of the services / contract. Contractor shall be paid at contract rates for the full amount of the work executed including such additional services as may be rendered necessary by said foreclosing.

16.2 The contractor shall accept full responsibility for the structural soundness of the structure/works. The contractor shall also compensate for any loss or damage caused to by reason of any defect or deficiency in the material furnished by them or defective construction or by reason of ambiguity or lack clarity in tender documents submitted by the tenderer.

16.3 In the event of contractor commits any breach of any terms of this contract, MIDHANI will terminate the contract and on such termination, the balance work will be got done through other agency at the cost and risk of contractor. Further, any loss occurred due to the above will be recoverable from the contractor.

16.4 The contractor shall further keep indemnified and harmless against any claims or liabilities arising out of eventualities in connection with injuries / death to the workmen or any member engaged by or under the control of contractor. MIDHANI will not have any liabilities under the Employee's compensation Act or any other provision of law statutory or otherwise. Any expenditure incurred by MIDHANI in this connection shall have to be fully indemnified by the contractor.

16.5 (a) Recoveries shall also be affected from the contractor on account of any over payment detected at any stage as a result of technical examination, audit study, vigilance inspection / investigation.

(b) Recoveries shall be affected from the contractor on account of any losses suffered under the provision of section – 73 of the Indian Contract Act 1982.

(c) The contractor will be liable for debar from the future contracts for a specified number of years or total ban depending on the gravity of the lapses.

17. ORDERS UNDER THE CONTRACT AND COMMUNICATION OF ORDERS:

All orders, notices etc. to be given under the contract shall be in writing and if sent by registered post to the contractor to any of the addresses given by the Tenderer or to the last known address of the Tenderer, shall be deemed to have been served on him. Any communication under this contract on any matter whatsoever under the signature of Senior Manager / Dy. General Manager / Engineer in-charge or any officer authorized by General Manager(PMO), MIDHANI, Hyderabad for such communication shall be deemed to have been issued with the approval of the Accepting officer.

18. DEFECTIVE SERVICE/WORK:

Any defects observed or otherwise brought to the notice of the Engineer-in charge of MIDHANI be investigated or caused to be investigated in detail by any of the reputed institutes / specialist organizations approved by the MIDHANI at the cost and risk of the contractor. The defective work/services will be rectified by the contractor immediately at his own cost.

It shall be incumbent upon the contractor to propose remedial measures thereof and obtain the acceptance of the reputed approved institute or the specialist organization to such measures before the corrective action is allowed to be undertaken.

19. Quality of materials & Workmanship and Tests

All materials & workmanship shall be of the respective kinds described in the contract & in accordance with the Engineer's-In-Charge (E-I-C's) instructions and shall be subjected from time to time to such tests as E-I-C's or his representative may direct at the place of manufacture or fabrication or on site or at all or any such places/approved laboratories. The entire cost of such tests will be borne by the contractors. For bought out items, the contractor shall produce the manufacturer's certificate or test certificate. The contractor shall provide at his own cost such assistance, instruments, machines, labour an material as are normally required for examining, measuring & testing any work and the quality, weight or quantity of any material used & shall supply samples of materials before incorporation in the works for testing, as may be selected and required by the E-I-C's or his representative.

Cost of Samples

a. All samples shall be supplied by the Contractor at his own cost.

b. The cost of making any test shall be borne by the Contractor if such test is clearly intended by or provided for(as mentioned in code & specification), in the Contract.

20. Labour

20.1 The Contractor shall employ labour in sufficient numbers to maintain the required rate of progress and of quality to ensure workmanship of the degree specified in the Contract and to the satisfaction of the Engineer-In-Charge. The Contractor shall not employ in connection with the works any person who has not completed eighteen years of age.

20.2 The Contractor shall furnish to the Engineer-In-Charge, fortnightly a distribution return of the number and description by trades of the workers employed on the works.

The Contractor shall also submit on the 4th and 19th of every month to the Engineer-In-Charge a true statement showing in respect of the preceding fortnight, (i) the accidents that occurred during the said fortnight showing the circumstances under which they happened and the extent of damage and injury caused by them and (ii) the number of female workers who have been allowed maternity benefit as provided in the Maternity Benefit Act, 1961 or Rules made there under and the amount paid to them.

20.3 The Contractor shall pay to labour employed by him either directly or through sub-contractors, wages in accordance with the rules, regulations and the law in force relating to the payment of wages for the workers and also to monitor the compliance of rules , statutory payments etc by the sub contractor.

20.4 The Contractor shall comply with the provisions of the Payment of Wages Act, 1936, the Minimum Wages Act, 1948, The Employer's Liability Act, 1938, The Employee's Compensation Act, 1923, The Industrial Disputes Act, 1947, The Maternity Benefit Act, 1961, The Factories Act 1948, The Contract Labour (Regulation & Abolition) Act, 1970, or any modification thereof or any other law relating thereto and rules framed there under from time to time.

20.5 The Contractor shall be liable to pay his contribution and the employees contribution to the State Insurance Scheme & Provident Fund in respect of all labour employed by him for the execution of the Contract, in accordance with the provisions of "The Employees State Insurance Act, 1948" and EPF & MP(Employee's Provident Fund & Minimum Provision act of 1952) as amended from time to time. In case the Contractor fails to submit full details of his account of labour employed and the contribution payable, the Engineer-In-Charge shall recover from the running bills of Contractor an amount of contribution as assessed by him. The amount so recovered shall be adjusted against the actual contribution payable for Employees State Insurance & EPF & MP Act.

20.6 The Engineer-In-Charge shall, on a report having been made by an Inspecting Officer as defined in the Contractor Labour (Regulation & abolition) Act 1970, have the power to deduct from the moneys due to the Contractor Labour Regulations, have the power to deduct from the moneys due to the Contractor any sum required or estimated to be required for making good the loss suffered by a worker(s) by reason of non-fulfillment of the conditions of the Contract for the benefit of worker(s), non-payment of wages or of deductions made from his or their wages which are not justified by the terms, of the Contract or non-observance of the said Contractors Labour Regulations.

20.7 In every case in which by virtue of the provisions sub-section(1) of Section 12, of The Workmen's Compensation Act, 1923, "MIDHANI" is obliged to pay compensation to a workman employed by the Contractor, in execution of the works, "MIDHANI" will recover from the Contractor the amount of the compensation so paid, and, without prejudice to the rights of "MIDHANI" under sub-section (2) of Section 12, of the said Act, "MIDHANI" shall be at liberty to recover such amount or any part thereof by deducting it from the retention money or from any sum due by "MIDHANI" to the Contractor whether under this contract or otherwise. "MIDAHNI" shall not be bound to contest any claim made against it under sub-section (1) of Section 12 of the said Act, except on the written request of the Contractor and upon his giving to "MIDHANI" full security for all costs for which "MIDHANI" might become liable in consequence of contesting such claim.

20.8 INSURANCE

20.8.1 General Requirements for Insurances

20.8.1.1 The Contractor shall provide in the joint names of MIDHANI and the Contractor, insurance cover from the date of commencement of work to the end of the Defects Liability Period. The Contractor is liable to take ***Contractor's all risk policy*** for the whole contract value. The insurance amount shall also cover third party liability to the extent, if any as specified in Schedule A. In addition to this the contractor shall also take Employee Compensation Policy for employees.

20.8.1.2 Policies /certificates of insurance shall be delivered in original by the Contractor to the Engineer-in-charge before the date of commencement of work. In case of failure by the Contractor, no payment against the running bill shall be released till the submission of the policies / certificates of insurance. All such insurances shall provide for compensation to be payable in the types and proportions for which these policies are intended.

20.8.1.3 The Contractor shall provide premium receipts to the Engineer-in-Charge from time to time, as a proof that he has paid the necessary premiums for keeping the policies alive till expiry of the Defects Liability Period.

20.8.1.4 The Contractor shall ensure that similar insurance policies are taken out by his Sub-Contractors(if any) and shall be responsible for any claims or losses to MIDHANI resulting from their failure to obtain adequate insurance protection in connection thereof. The Contractor shall produce or cause to be produced by his Sub-Contractors (if any) as the case may be, the relevant policy or policies and premium receipts as and when required by the Engineer-in-Charge.

20.8.1.5 Alterations to the terms of insurance shall not be made without the approval of the Engineer-in-charge.

20.8.1.6 Both parties shall comply with all conditions of the insurance policies.

20.8.1.7 All risks of loss of or damage to physical property and of personal injury and death which arise during and in consequence of the execution of the Contract shall be the responsibility of the Contractor. However this shall not include excepted risks which are not covered under the above said insurance policies. All consequential loss with reference to insurance claims shall be borne by the contractor.

21. Compliance and Default

1. In the event of the Contractor committing a default or breach of any of the provisions of the aforesaid Contractor's Labour (Regulation & Abolition) act 1970 as amended form time to time or furnishing any information or submitting or filling any Form/Register/Slip under the provisions of these Regulations which is materially

incorrect, then on the Report of the Inspecting Officer as defined in the Contractor Labour (Regulation & abolition) act 1970, the Contractor shall without prejudice to any other liability pay to "MIDHANI" a sum not exceeding Rs.200/- for every default, breach or furnishing, making, submitting, filling, such materially incorrect statement and in the event of the Contractor's default continuing in this respect, the penalty may be enhance to Rs.200/- per day for each day of default subject to a maximum of five percent of the estimated cost of the works put to tender. The Engineer-In-Charge shall deduct such amount from bills or retention money of the Contractor. The decision of the Engineer-In-Charge in this respect shall be final and binding.

2. Contractor shall at his own expense comply with or cause to be complied with Model Rules for Labour Welfare or rules framed by the Government from time to time for the protection of health and for making sanitary arrangements for workers employed directly or indirectly on the works. In case the Contractor fails to make arrangements as aforesaid, the Engineer-In-Charge shall be entitled to do so and recover the cost thereof from the Contractor.

3. The Contractor shall at his own expense arrange for the safety provisions as appended to these conditions (Safety Code) or as required by the Engineer-In-Charge in respect of all labour directly or indirectly employed for performance of the works and shall provide all facilities in connection therewith. In case, the Contractor fails to make arrangements and provide necessary facilities as aforesaid, the Engineer-In-Charge shall be entitled to do so and recover the cost thereof from the Contractor.

I. Failure to comply with Model Rules for Labour Welfare, Safety Code on the provisions relating to report on accidents and to grant of maternity benefits to female workers shall make the Contractor liable to pay to the "MIDAHNI" as the penalty an amount not exceeding Rs.200/- for each default or materially incorrect statement.

The decision of the Engineer-In-Charge in such matters based on reports from the Inspecting Officers as defined in the Contractor Labour Regulation(RLA) Act 1970 shall be final and binding and deduction(s) for recovery of such penalty may be made from any amount payable to the Contractor.

PROFORMA OF BANK GUARANTEE IN LIEU OF SECURITY DEPOSIT IN INDIVIDUAL CONTRACT

(ON NON JUDICIAL STAMP PAPER)
(CLAUSE NO. 9)

To,

Mishra Dhatu Nigam Ltd.
……
……

In consideration of the Mishra Dhatu Nigam Ltd. Having its registered office at …… (hereinafter called "MIDHANI" which expression shall unless repugnant to the subject or context include its administrations, successors and assigns) having agreed under the terms and conditions of the Award Letter bearing number …….. Dated …….. issued by the MIDHANI, which has been unequivocally accepted by the contractor M/s. ……
…… work …….. (hereinafter called the said contract) to accept a Dead of Guarantee as herein provided for Rs ……
……. (Rupees ……. Only) from a Nationalized Bank in lieu of the retention money to be made by the contractor or in lieu of the deduction to be made from eh Contractor's bills, for the due fulfillment by the said contractor of the terms and conditions contained in the said contract.

We, the ……. Bank (hereinafter referred to as "the said Bank" and having our registered office at …… do hereby undertake and agree to indemnify and keep indemnified "MIDHANI" from time to time to the extent of Rs ……. (Rupees …….. only) against any loss or damage, cost, charges and expenses caused to or suffered by or that may be caused to or

suffered by “MIDHANI” by reason of any breach or breaches by the said contractor of any of the terms and conditions contained in the said contract and to unconditionally pay the amount claimed by “MIDHANI” on demand and without demur to the extent aforesaid.

We …….. Bank, further agree that “MIDHANI” shall be the sole judge of and as to whether the said contractor has committed any breach or breaches of

“Refer note at the end of the proforma.

Any of the terms and conditions of the said contract and the extent of loss, damage, costs, charges and expenses caused to or suffered by or that may be caused to or suffered by “MIDHANI” on account thereof and the decision of “MIDHANI” that the said Contractor has committed the breach or breaches and as to the amount or amounts of loss, or that may be caused to or suffered by “MIDHANI” from time to time shall be final and binding on us.

1. We, the said Bank further agree that the Guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said contract and till all the dues of “MIDHANI” under the said Contract or by virtue of any of the terms and conditions governing the said contract have been fully paid and its claims satisfied or discharged and till the owner certificate that terms and conditions of the said contract have been fully and properly carried out by the said contractor and accordingly discharges this Guarantee subject, however, that “MIDHANI” shall have no claim under the Guarantee after 90 (Ninety) days from the date of expiry of the Defects Liability Period as provided in the said contract, i.e. …… (date) or from the date of cancellation of the said contract as the case may be, unless a notice of the claim under this Guarantee has been served on the Bank before the expiry of the said period in which case the same shall be enforceable against the Bank notwithstanding the fact, that the same is enforced after the expiry of the said period.

2. “MIDHANI” shall have the fullest liberty without affecting in any way the liability of the bank under this Guarantee or Indemnity, from time to time, to vary any of the terms and conditions of the said contract or to extend time of performance by the said contractor or to postpone for any time from time to time any of the powers exercisable by its against the said contractor and either to enforce or forbear from enforcing of the terms and conditions governing the said contract or securities available to “MIDHANI” and the said bank shall not be released from its liability under liberty with reference to the matters aforesaid or by reason of time being given to the said Contractor or any other forbearance act or omission on the part of “MIDHANI” or any indulgence by “MIDHANI” to the said contractor or any

other matter or thing whatsoever which under the law relating to sureties would, but for this provision, have the effect of so releasing the Bank from its such liability.

3. It shall not be necessary for "MIDHANI" to proceed against the contractor before proceeding against the Bank and the Guarantee herein contained shall be enforceable against the Bank, notwithstanding any security which "MIDHANI" may have obtained or obtain from the Contractor shall at the time when proceedings are taken against the Bank hereunder, be outstanding or unrealized.

We, the said Bank, lastly undertake not to revoke this Guarantee during its currency except with the Previous consent of "MIDHANI" in writing and agree that any change in the constitution of the said contractor or the said Bank shall not discharge our liability hereunder. If any further extension of this Guarantee is required the same shall be extended to such required periods on receiving instructions from M/s ……
…… on whose behalf this guarantee is issued.

In the presence of For and on behalf of (the Bank)

WITNESS

1. _____ Signature _____

2. _____ Name & Designation _____

_____

Authorization No: _____

Date and Place: _____

Bank's Seal _____

Accepted

(Signature of the Officer)
For and on behalf of
(Mishra Dhatu Nigam Ltd.)

SCHEDULE "A"

REFERENCE TO GENERAL CONDITIONS OF CONTRACT

Clause	Page	Item	Stipulation
1	4	Estimated cost of the works	Rs 30 lakhs
7(b)	6	Earnest Money (2 ½ of the estimated cost of the works)	Rs 1.00 lakh
		General Contract Conditions	
		Chapter I	
3(e)	15	Accepting Authority	Chairman & Managing Director, MIDHANI
3(h)	15	Market Rate-percentage addition to cover overheads and profit	10%
		Chapter II	
7(b), 7(c)	20	Each work order value will be upto a maximum of Rs. 3.00Lakhs and each work will be paid One RA bill &one Final bill	15 days from the date of certification of Engineer – In – Charge.
7(h)	21	Suspension of work	
7(h)(2)(ii)	21	Percentage payable to cover contractor's indirect expenses for suspension exceeding 30 days and not exceeding 90 days	5% maximum
7(h)(3)	22	Percentage payable cover contractor's indirect expenses for suspension exceeding 90 days.	5% maximum
9 (b)	23	Retention money shall be 5% of Contract	Rs 2.0 lakhs or Value more as per contract value

10.1	23	Time allowed for execution of work or time schedule	365 days from the date of handover of site
10.3(g)	24	Authority competent to decide if any other cause of delay is beyond contractor's control	Chairman & Managing Director
10.5	25	Authority for granting Extension of Time	Chairman & Managing Director
11(e)	26	Authority competent to reduce compensation amount	Chairman & Managing Director
12.0	27	Defects Liability Period	12months
20.8.1.1	31	Insurances , CAR policy etc	
		Special Contract Conditions	
3.1	44	Water charges	Free of issue
3.2	44	Electricity Charges	Free of issue

SPECIAL CONDITIONS OF CONTRACT

1.0 GENERAL:

The special contract conditions of contract shall be read in conjunction with the invitation to tender, General Conditions of contract, specification, Drawings and other supplementary documents detailing the work.

Provided that, where any provision of the General Conditions of Contract is repugnant to or at variance, unless a different intention appears, the provision of the Special Conditions of Contract shall be deemed to override the provision of the General Conditions of Contract and shall to the extent of such repugnance or variation, prevail.

2.0 Site and Local Conditions

2.1 Location and Works Terrain

MIDHANI plant is located at Kanchanbagh in Hyderabad, Telangana, adjacent to the existing Defence Metallurgical Research Laboratory (DMRL). The plant is about 10 km away from Hyderabad city. The nearest main railway stations are Nampally and Kachiguda stations of Hyderabad, which are about 12 Km and 9 Km respectively from this plant.

2.2 Climate Conditions

2.3 The climatic conditions at the plant are similar to the prevailing at Hyderabad city and are generally as indicated below:-

Maximum of mean daily temperature	-	40º C
Minimum of mean daily temperature	-	12º C
Absolute maximum temperature	-	45º C
Absolute minimum temperature	-	6º C
Relative humidity maximum	-	83º C
Relative humidity minimum	-	30º C
Average yearly precipitation	-	765 mm
Maximum hourly precipitation	-	about 60 mm
Maximum wind velocity	-	84 km/hr
Absolute maximum wind velocity	-	144 km/hr
Wind direction – April mainly from	-	SE and SW W and NW
May to Sept. mainly from	-	W and SW
Rest of the year mainly from	-	NE and E And SE

2.4 Earthquake:

The plant is situated in Zone 'II' as defined in latest seismic maps.

2.5 Transport Connections:

The plant is well connected by road. Important broad gauge railway stations are located nearby as stated earlier. Hyderabad has a commercial airport at Shamshabad, about 19Km from the plant.

2.6 **Communications:**

Postal, telephone and Fax facilities are available as follows: -

Name of the Company	:	MISHRA DHATU NIGAM LIMITED
Corporate Identity Number	:	U14292AP1973GOI001660
Registered Office Address	:	P.O. Kanchanbagh, Hyderabad, 500 058
Telephone	:	040-24340001 (10 lines), 040 - 24184334
Fax	:	040-2434 0764
E-mail	:	ikchaitanya@midhani.com
Website address	:	www.midhani.com

2.7 The provision of the above information is for the Contractor's general guidance only and does not relieve him of his responsibility under clauses 6 if the General Conditions of Contract to satisfy himself of the site conditions and sufficiency of his tender. No claim whatsoever shall be admissible or any extra shall be allowed on these accounts.

3.0 **Construction Facilities:**

3.1 **Construction Water:**

Water required for the Works will be made available to the Contractor free of cost at one point of site. The Contractor shall make his own arrangement for drawing water/Electricity from this point and for further distribution at his own cost, with the approval of the Engineer – In – Charge.

He shall construct a storage tank at his own cost sufficient for storing enough water for his seven days requirements. No claim for compensation for any failure or short supply of water will be admissible. The Contractor shall state the requirement of water for construction in the appendix – I herein attached.

Employer do not guarantee the maintenance of uninterrupted supply of water and in case of any interruptions of such supply of water the Contractor shall be responsible for making at his own cost alternative arrangements for water. When Contractor makes his own arrangements of water required for the work, nothing shall be paid for the same by MIDHANI.

3.2 **Construction Power:**

Electric Power from sources available near the site will be made available at free of cost (415 volts, 3 phase (4 wire) 50 cycles) to the Contractor at one point at the site. Further connections, distributions, installation of the switch board, lcvs, mcvs, meters etc. shall be arranged and maintained by the contractor at his own cost with the prior approval of the Engineer – In – Charge. The distribution system shall conform to the Indian Electricity Act 1910 and the Indian Electricity Rules, 1956 with the latest amendments. The Contractor on the completion of the Works shall remove all wiring from the switchboard and meter. He shall reinstate and make well any

work disturbed by the temporary power lines at his own cost to the satisfaction of the Engineer – In – Charge.

No claim for compensation for any failure or short supply of power will be admissible. The Contractor shall indicate his requirement of electric power for lighting and construction equipment at site.
In case of forced power cuts/short supply/fault, contractor shall make his own arrangement for lighting/fabrication works without affecting the schedule of work. Nothing shall be paid for the same by MIDHANI.

3.3 **Temporary Roads:**
The contractor shall construct and maintain at his own cost all temporary roads at the site for leading his equipment, labour, materials etc. to various places of work or otherwise deemed necessary to execute the works.

4.0 **Time Schedule of Contract:**
Time is the essence of the Contract. The Contractor shall complete the whole of works according to the Contract and to the satisfaction of the Engineer – In – Charge. Period of Completion is 364 days from the date of hand over of site.The working hours for the civil works are 24 hours with special permission and safety precautions as per standing rules of MIDHANI.

5.0 **Authorized Agent**/ official

5.1 The contractor shall have a duly authorized agent/official at site from the commencement of works to the completion of the works. Such agent/ official shall be authorized, on behalf of the contractor, to accept services of notices under the and to agree to extras, omissions and varied items of works and rates for the same. Such agent/ official shall maintain on his staff qualified engineers and such other personnel as may be required for efficient execution of the works. Any notice under the contract shall be deemed to have been served on the contractor if served upon such agent/ official or sent by registered letter to his address at site. Such agent/ official shall not be changed and shall not leave the site during the duration of the Contract unless the consent of the Engineer – In – Charge shall have been previously obtained. If the Engineer – In – Charge shall require the contractor to carry out any rectifications under the terms of the contract after the works are completed, the contractor shall have the same or another duly authorized agent at site when such rectifications are being carried out.

5.2 The contractor shall send a duly authorized competent representative to meet the Employer at his office at Hyderabad whenever called upon in writing to do so by the Employer or the Engineer – In – Charge and any instructions, directions or explanations given by the Engineer – In – Charge to such representative shall be held to have been given to the Contractor.
The contractor shall employ minimum One qualified & well experience Graduate Engineer-3 years experiance / One Diploma Engineer-5 years experienced.

6.0 **Construction Stores:**

6.1 Suitable areas at or near site will be allocated free of cost by the Employer at his discretion to the contractor for field offices, workshops, storing equipment, plant,

materials, structural steel fabrication yard etc for the duration of the contract. The contractor will be solely responsible for the watching and guarding of his stores.

6.2 The contractor shall cover all his equipment and materials at site with requisite insurance against theft, larceny, dacoit, fire, tempest, flood, earthquake etc.

7.0 **Accommodation for Labour and Supervisory Staff:**

The contractor shall make his own arrangements for the accommodation of his labour and supervisory personnel, for which the Employer will allocate no open land. The contractor shall include in his rates the cost of provision of such accommodation for the laborers and supervisory staff including suitable water supply, electricity and good sanitary arrangements. The sanitary arrangements provided must conform to the rules and regulations of local authorities or public bodies.

8.0 **Compliance with Enactments:**

The Contractor shall comply with the provisions of the following Acts and Rules:

a. The Contract Labour (Regulation & Abolition) Act 1970 or any amendment thereof and Rules made there under and all legislations and rules of the State or Other local Authority framed from time to time. The Rules and other statutory obligations with regard to wages, welfare and safety measures, maintenance of all required registers etc will be deemed to be part of the contract. Such Registers shall be produced by the Contractor for inspection as and when required by MIDHANI or Labour Department Authorities or other statutory bodies.

b. The Contractor must possess valid license obtained for RLC (central) under Contract Labour (R&A) Act and Rules for employing contract labour on the date of the submission of tender form in case of engagement of contract labour. It is mandatory to implement the GOs issued by the Government from time to time on payment of wages.

c. The Provisions of the Minimum Wages Act 1948 and Payment of Wages Act 1936 as amended from time to time and rules made there under.

d. Industrial Disputes Act

e. Employee's Compensation Act 1923 or any other law for the time being in force.

f. Equal Remuneration Act.

g. The Provisions of ESI Act and EPF & MP Act and the rules made there under in respect of the workmen engaged by him.

9.0 **Construction Equipment:**

9.1 The contractor shall make his own arrangements to procure all constructional plants and equipments for the work. He shall state in the Appendix II the type and number of different equipment in good working conditions, with their capacities, which he will use on the site to ensure the completion of the works in the specified time.

9.2 All materials, construction plants and equipment etc once brought by the contractor on the site are not to be removed from there without the written authority of the

Engineer – In – Charge. Also the contractor shall have adequate stock of spare parts for the equipment on the site and the works shall not be delayed on this account. All temporary works built by the contractor for the main construction undertaken by him are not to be dismantled and removed without written authority of the Engineer – In – Charge.

10.0 **Co-operation with other contractors:**

The contractor shall plan and execute his work in a phased manner as directed by the Engineer – In – Charge from time to time and shall fully co-operate with other agencies working at site simultaneously so as not to obstruct or retard the works simultaneously being executed by other agencies in any way. The decision of the Engineer – In – Charge on any point of dispute between the various contractors shall be final and binding on all the parties concerned.

11.0 **Safety Code:**

The contractor shall at his own expense, arrange all the requirements including safety gears for the safety provisions as appended to these conditions, or as required by the Engineer – In – Charge in respect of all labour directly or indirectly employed for the performance of the works and shall provide all facilities in connection therewith. In case the contractor fails to make the arrangements and to provide necessary facilities as aforesaid, the Employer shall be entitled to do so and recover the cost thereof from the contractor. The contractor will abide all the safety norms of MIDHANI & other statuary bodies.

12.0 **Cleaning Site:**

The contractor shall clean the site as required of grass, trees, vegetation and debris prior to the start of the work at his own cost.

13.0 **Clearing Site on completion:**

On completion of the works, the site shall be cleared by the contractor of all men, materials, temporary sheds, debris, rubbish, plants and equipments belonging to the contractor at his own cost. The site and surroundings shall be handed over in a clean and neat condition as required by the Engineer – In – Charge. In case of failure by the contractor, the Employer will get the site cleared at the risk and cost of the contractor. The work may not be considered complete till the contactor clears the site in all respect as mentioned above.

14.0 **Coverage of Contract:**

14.1 The contract is a complete one including all the cost towards labour, materials, the contractor's overhead and profit, all temporary works & all other provisions, equipments, tools tackles, transportation ,handling ,all taxes & duties etc.

14.2 Except where it is expressly provided that the cost will be borne by the Employer the various obligations of the contractor under the contract shall be at the cost of the contractor.

15.0 **Transfer of guarantees:**

All guarantees such as waterproofing, acid resisting, materials etc for the entire works as obtained from the manufacturer or specialist agencies shall be transferred to the Employer through the Engineer – In – Charge by the contractor prior to the acceptance of such works. The applicator/manufacturer also will remain the co-guarantor.

16.0 **Security Regulations:**

The contractor shall abide by all the security regulations promulgated by the Employer & all other statuary authorities from time to time. In order to facilitate the issue of entry/ exit gate permits for materials and equipment to be taken out after completion of the work the contractor shall submit a list of equipment and/or other materials that may be taken inside the protected area from time to time.

17.0 **Miscellaneous:**

17.1 **Variation Statement:**

Quantity variation (up to± 20%) statement shall be prepared by the contractor and submitted to Engineer – In – Charge for Employer approval. Such variation statement shall be submitted at the stage when the Running Account Bills value (up to date) exceeds the contract value and also for variations in scope of work.

17.2 **Part rates:**

The part rates recommended by Engineer – In – Charge in the Running Accounts Bills for the items of works in progress shall be binding on the contractor.

APPENDIX – I OF SPECIAL CONDITIONS OF CONTRACT

The contractor shall indicate in the following table the type and number of equipment he shall bring on site in good working condition for use in the works.

Sl. No.	Type of Equipment	Capacity	No. of Equipment

SPECIFICATIONS FOR – CIVIL WORKS

PREAMBLE TO SPECIFICATIONS

The conditions of contract and the drawings shall be read in conjunction with the specifications and matters referred to shown or described in one are not necessarily repeated in the other. These specifications are comprehensive and may exceed the requirements of this project. Any ambiguity between the General specifications, the Bill of quantities and contract drawings shall be referred to the Tenderer for clarification not later than 10 days before the date fixed for delivery of Tenders. Any ambiguity may be referred to the Tenderer after signing of the contract and Tenderer shall give a ruling which shall prevail. No claim for additional cost due to above, however, will be entertained.

Notwithstanding the sub-division of the specification into various headings, every part of it is to be deemed supplementary to every other part and is to be read with it, so far as it may be practicable so to do, or when the context so admits.

In this contract, reference is made to the Indian Standards and these references shall be deemed to include the latest editions or issue of standards, specifications or By-Law including all revisions up to the date of invitation of Tenders. The contractor shall ensure that all materials and workmanship in so far as they apply to this contract shall comply in every specifications or any other equivalent or specification approved by the Tenderer.

The Contractor shall kept at site copies of all relevant standards and codes of practice referred in these specifications throughout the period of contract. These shall be the latest editions and shall include all revisions/addendums thereof.

Approved Manufacturers: Name of approved manufacturers are given in the specifications.

Reference in the specifications to approved manufacturers shall be constructed as establishing standard of quality and not as limiting completion.

The Contractor shall include in his prices for supplying the item or materials from the approved manufacturers listed or equivalent approved by Engineer-incharge.

All items or materials shall be delivered to the site in the manufacturers original unopened containers with the manufacturers brand and name clearly marked on.

All items or materials shall be assembled, mixed, fixed, applied or otherwise incorporated in the works in accordance with the printed instructions of the manufacturer of the item or materials.

1.0 GENERAL

1.1 Scope

This specification applies to the CIVIL Engineering and building works to be executed by the Contractor. It is to be read in conjunction with and subjects to the general conditions of contract and in conjunction with the drawings, the schedule of rates and such other documents as may from time to time be agreed upon as comprising part of this contract. Where these specifications are not clear, CPWD specifications shall be followed.

1.2 **Clearing**

The contractor shall clear the site of all rubbish and old buildings remove all grass and low vegetation and remove all bush wood, trees, stumps of trees and other vegetation only after consultation with the Architects as to which bushes and trees shall be saved. All disused foundations, drains or other obstructions met with during excavation shall be dug out and cleared.

1.3 **Site Levels**

The contractor shall carry out the survey of the site and shall establish sufficient number of grids and level marks to the satisfaction of the Architects who shall decide on the basis of this information the general level of the plot and the plinth.

1.4 **Bench-marks**

Prior to commencement of construction the contractor shall in consultation with the Engineer, establish several site datum bench-marks their number depending on the extent of the site. The bench-marks shall be sited and constructed so as to be undisturbed throughout the period of construction.

1.5 **Site investigation**

The Architects might have got the soil investigation done and if so, the report will be handed over to the contractor for their scrutiny. The contractor shall however inspect the site and study the findings from the trial pits or bores in order to assess the problems involved in and methods to be adopted for excavation and earth work. The contractor shall ascertain for himself all information concerning the sub-soil conditions, Ground water table periods and intensity of rainfall, flooding of the site and all data concerning excavation and earth work.

1.6 **Setting out the work**

The contractor shall set out the works and during the progress of the building shall amend at his own cost any errors arising from inaccurate setting out.

During the execution of the work contractor must cross check his work with the drawings. The contractor shall be responsible for all the errors in this connection and shall have to rectify all defects and / or errors at his own cost failing which the Architect reserves the right to get the same rectified at the risk and cost of the contractor.

1.7 **Clearing up and handing over**

Upon completion of the work all the areas should be cleaned. All floors, doors, windows, surface etc. shall be cleaned down in manner which will render the work acceptable to the Architect and Employer. All and an area of up to ten meters on the outer boundaries of the premises will be cleaned by the contractor as a part of the contract. Upon completion of the project, the contractor shall return over to the employer the following.

a. Written guarantee and certificates.
b. Maintenance manual, if any and
c. Keys

1.8 **Samples**

The contractor shall submit to the Architects samples of all materials for approval and no work shall commence before such samples are duly approved. Samples of pre-cast concrete panels, masonry units, building insulation, finished hardware, metal window and door frames, terrazzo flooring, kota stone, marble etc. and every other work requiring samples in the opinion of the Architects shall be supplied to the Architects and these samples will be retained as standards of materials and workmanship. The cost of the samples shall be borne by the contractor.

Throughout this specification, types of material may be specified by manufacturers' name in order to establish standard of quality, price and performance and not for the purpose of limiting competition. Unless specifically stated otherwise, the tenderers may assume the price of 'approved equivalent' except that the burden is upon the contractor to prove such equality in writing.

A detailed programmed shall be submitted by the contractor for the material approvals, within four weeks of the Architects order to commence. The detailed program shall include but not limited to:

Date/s of submitting the various material samples.
Dates/s by which the MIDHANI's approval is required.
Date/s of placing orders on the Manufacturers/Suppliers.
Date/s of arrival of the approved material/s on to the site.

Date/s of the completion of the 'Mock-ups' wherever required, and the Date/s by which the Architects' inspection of such 'Mock-ups' should be completed and the Date/s by which the Architect should fully approve the said Mock-ups.

1.9 **Tests**

All materials and methods of tests shall conform to the latest rules, regulation and/or specifications of the following authorities where specified herein as applicable. Bureau of Indian Standards (BIS), British Standards Code of practice (BS) in case no equivalent BIS is available. The Architects will have the option to have any of the materials tested and if the test results show that the materials do not conform to the specifications, such materials shall be rejected. A reasonable number of representative tests will be deemed to be included in the rates tendered.

1.10 **Rates**

The item rates quoted in schedule of quantities are deemed to be included to execute the complete works/items in strict accordance with the relevant specifications read in conjunction with the appropriate Standard Specifications.

1.11 **Mode of Measurements**

All measurements will be taken in accordance with IS 1200 latest issue unless otherwise specified.

1.12 **Safety Code**

i) Suitable scaffolding should be provided for workmen for all works that cannot safely be done from the ground or from solid construction except such short period work as can be done safely from ladders. When ladder is used an extra mazdoor shall be engaged for holding the ladder and if the ladder is used for carrying materials as well suitable foot holds and hand holds shall be provided on the ladder shall be given an inclination not steeper than ½ to 1 (1/2 horizontal) and 1 vertical).

ii) Scaffolding or staging more than 3 Mtrs. Above the ground or floor, swung or suspended from an overhead support or erected with stationary support shall have a guard rail properly attached, bolted, braced and otherwise secured at least 0.9 Mtrs, high above the floor or platform or such scaffolding or staging and extending along the entire length of the outside and ends thereof with only such opening as may be necessary for the delivery of materials. Such scaffolding or staging shall be so fastened 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 sag unduly or unequally and if the height of the platform or the gangway or the stair way is more than 3 Mtrs. Above ground level or floor level they should be closely boarded should have adequate width and should be suitably fenced as described in Para (ii) above.

iv) Every opening in the floor of a building or in a 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 1 Mtr.

v) Safe means of access shall be provided to all working platforms and other working places. Every ladder shall be securely fixed. No portable single ladder shall be over 9 Mtrs. In length while the width between side rails in rung ladder shall in no case be less than 29 cms for ladder up to and including 3 Mtrs in length. For longer ladders this widths should be increase by at least 6 mm for each additional 30 cms. Adequate precautions shall be taken to prevent danger from electrical equipment. No materials on any of the site of work shall be so stacked or placed as to cause danger or inconvenience to any person. The contractor shall provide all necessary fencing and lights to protect the public from accident and shall be bound to bear the

expenses of defense of every suit, action or other proceeding at law that may be brought by any person for injury sustained owing to neglect of the above precautions and to pay any damages and cost which may be awarded in any such suit action or proceedings to any such persons or which may with the consent of the contractor be paid to compromise any claim by any such person.

vi) Excavation and trenching: All trenches 1 meter or more in depth shall at all times be supplied with at least one ladder for each 30 Mtrs in length or fraction thereof. Ladder shall be extended from bottom of the trench to at least 1 Mtr above the surface of the ground. The side of the trenches which are 1.5 Mtr or more in depths shall be stepped back to give suitable slope or securely held by timber bracing so as to avoid the danger of sides collapse. The excavated materials shall not be placed within 1.5 Mtrs of the edges of the trench or half of the depth of the trench whichever is more. Cutting shall done from top to bottom. Under no circumstances undermining or undercutting shall be done.

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

a. All roads and open areas adjacent to the work site shall either be closed or suitably protected in consultation with the Employer.

b. No electric cable or apparatus which is liable to be a source of danger or a cable or apparatus which is liable to be used by the operator shall remain electrically charged.

c. All practical steps shall be taken to prevent danger to persons employed from risk of fire or explosion or flooding. No floor, roof or other part of the building shall be so overloaded with debris or materials as to render it unsafe.

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

a. Workers employed on mixing asphaltic material, cement and lime mortars shall be provided with protective foot wear and protective goggles.

b. Those engaged in white washing and mixing or stacking of cement bags or any material which is injuries to the eyes shall be provided with welders' protective goggles.

c. Those engaged in welding work shall be provided with welders protective eyesight lids.

d. Stone breakers shall be provided with goggles and protective clothing and seated at sufficiently safe intervals.

e. When workers are employed in sewers and manholes which are in use the contractor shall ensure that the manhole covers are opened and are ventilated at lease for an hour before the workers are allowed to get into the

manholes and the manholes so opened shall cordoned off with suitable railing and provided with warning signals or boards to prevent accidents to the general public.

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

I. No paint containing lead or lead products shall be used except in the form of paste or readymade paint.

II. Suitable face masks should be supplied for use by the worker when paint is applied in the form of spray on a surface or when paint is dry-rubbed and scrapped.

III. Overalls shall be supplied by the contractors to the workmen and adequate facilities shall be provided to enable the working painter to wash during the cessation of work.

ix) When the work is done near any place where there is a risk of drowning all necessary equipments should be provided and kept ready for use and all
Necessary steps taken 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 and tackle including their attachments anchorage and supports shall conform to the following standards of conditions.

a. These shall be of good mechanical construction, sound material and adequate strength and free form 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 and adequate strength and free from patent defects.

2. Every crane driver or hoisting appliance operator shall be properly qualified and no person under the age of 21 years should be in charge of any hoisting machine including any scaffolding or to give signals to operator.

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

4. In case of departmental machines the safe working load shall be notified by the Electrical Engineer concerned.

xi) Motors, gearing, transmission, electric wiring and other dangerous parts of hoisting appliances should be provided with such means as will reduce to the minimum the risk of accidental descent of the load, adequate precautions should be taken to reduce to the minimum the risk of any part of a suspended load becoming accidentally displaced when workers employed on electrical installations which are already energized, insulating mats, wearing apparel, such as gloves, sleeves and hat as may be necessary should be provided. The workers should not wear rings, watches and carry keys or other materials which are good conductors 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 in use. Adequate washing facilities should be provided at or near places of work.

xiii) The safety provisions should be brought to the notice of all concerned by displaying on a notice board at a prominent place at work spot. The person responsible for compliance of the safety code shall be named therein by the Contractor.

xiv) To ensure effective enforcement of the rules and regulations relating to safety precautions, the arrangements made by the Contractor shall be open to inspection by the Labour Officer, Engineer – In – Charge or the department or their representatives.

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

2.0 EARTH WORK

2.1 General

This specification deals with the clearance of the Site of works and preparation of the same to commence the proposed construction activities. Wherever applicable, this is deemed to include all preliminary works like Dismantling / Demolition, site Clearance, General Leveling etc.

The contractor shall visit the site, inspect the same and decide for himself the nature of the ground and the sub-soil to be excavated. No claim on account of extras will be entertained in consequences of any misunderstanding or incorrect information or ignorance's of the existing conditions.

2.2 Demolition / dismantling

Existing Buildings and structures within the boundary of the site, and as indicated in the drawings or as instructed by the Architect/EIC, shall be carefully and gradually dismantled or demolished, as the case may be.

i) The contractor shall furnish to the Architect/EIC, a detailed scheme as well as a program of these works, at least one week prior to the commencement of the actual demolition works and get the latter's approval of the same.
ii) On approval of the above program and scheme, the contractor shall serve notices to concerned authorities, owners, etc., as and wherever applicable, informing them of the proposed demolition and get their approval of the same, prior to the demolition/ dismantling.
iii) The whole of the building/structures that are to be demolished shall be evacuated and cleared off any valuable life and / or property to the satisfaction of the Architect/EIC. Where required, the employer shall provide alternative arrangements to house those who have been evacuated.
iv) The site of demolition shall be well cordoned off from the other areas to the satisfaction of the Architect/EIC, with all necessary warning and signals, erected in the vicinity.
v) Such of those parts of the building/structures that are likely to fetch some returns from the market and / or those parts which are likely to be reused elsewhere, shall be first carefully removed from the existing buildings and then stored away properly to the complete satisfaction of the Architect/EIC. Such parts shall include items like wood work, built in furniture, electrical fittings, sanitary wares etc. and all others that are listed out by the Architect/EIC.
vi) The demolition work shall then commence preferably from the top and proceed downwards, gradually. In case of buildings comprising more than one floor, the demolition shall commence from top and shall be dismantled floor by floor in such a way that all the debris are collected in the next lower floor. Dismantling of external walls / cladding shall be done from outside inwards. The dismantling of the next lower floor shall commerce only after the clearance of all debris collected in that floor from the floor above, is completed.

All dismantling / demolition works shall include excavation of the ground, wherever necessary, to dismantle the existing foundations, and back filling, including compacting to the satisfaction of the Architect. The material used for back filling shall be as per specifications and as approved by the Architect/EIC.

All dismantling / demolition works shall be carried out in such a manner , so as not to cause any damage, whatsoever, to the properties or persons in the vicinity of the site. If such damages occur, the contractor shall be liable for full reinstatement of all such damages at his own cost.

All services, like electrical, water supply and sanitary lines / connections to the existing buildings or structures that are to be dismantled and / or demolished shall be properly cut off at points as per the instructions of the Architect/EIC. If any such service lines are feeding adjacent plots / sites / premises the follow up with the Authorities concerned to provide necessary reconnections to the users of these service lines.

Wherever applicable, the contractor shall apply for the various permits for executing such works as may be required from the relevant authorities.

Disposal of demolished / dismantled materials:

Demolished / dismantled materials shall not be stacked or dumped in such a manner as to present a vehicles or pedestrians or properties or to cause blockage in drainage channels etc.

The contractor shall obtain necessary permission from the local Government Authorities pay the necessary deposits, for the location and the manner in which the debris to be disposed and then carry out the disposal as directed by the Architect/EIC.

Demolished / Dismantled debris shall be dumped / stacked in an area, primarily within the site, if required subject to the approval of the Employer and shall cart away and dispose off within the shortest possible time as directed by the Employer.

2.3 Excavation in all Soils

Excavation and / or removal of any other material on the site, shall be carried out accurately to the lines, levels and dimensions shown in the drawings or as ordered by the Architect so as to allow proper and efficient concrete work and other work in clean and dry condition. The method of excavation shall be at the discretion of the Architect/EIC but should the dimensions of any excavation exceed those shown on the drawings or ordered by the Architect or should the sides collapse the contractor shall fill such extra space with concrete or other approved material at his own expenses.

All founding levels will be inspected by the Architect before the concrete is placed. Records of all foundation levels shall be submitted by the contractor to the Architect/EIC.

The final 150 mm depth of excavation shall be taken out by hand unless otherwise permitted by the Architect. Extra depth of excavation, if any, beyond those shown in the drawings or ordered by the Engineer, shall be filled up with Grade 10 concrete.

The contractor shall excavate any soft patches or rock outcrops below the founding level and refill with M10 concrete. The founding stratum shall be leveled and rammed to the satisfaction of the Architect/EIC before concrete is placed.

Foundations within any one building shall not rest on soil strata with differential bearing capacities. Strip foundations shall not be stepped along the length of the foundations. When excavating for individual footings at different levels care shall be taken not to disturb the bearing stratum of the higher foundations. The excavations bottom shall be watered as directed by the Architect/EIC before the foundations are laid.

2.4 Excavation in Rock

Classification of Rock

Rock, which is in solid beds, which can only be removed either by blasting or by wedging or chiseling, shall be treated as hard rock. An isolated boulder or detached rock measuring one cubic meter or more shall also be treated as hard rock, if the same cannot be removed without blasting, wedging or chiseling.

All other rock formation, which can be removed without blasting, wedging or chiseling, shall be classified as soft rock. However the Engineer-in-charge decision regarding classification shall be binding.

No Blasting is allowed in case of rock interruption, however chemical or mechanical splitters are allowed.

2.5 Trimming of Slopes

All slopes shall be trimmed by hand or mechanically true to line and profile and consolidated to the Architects/EIC satisfaction. Any rock or boulders appearing on the face or likely to be unstable shall be removed and the void thereof filled with approved material and compacted.

2.6 Shoring / Earthwork support

If required, the contractor shall shore and strut the sides of excavation to the satisfaction of the Architect. Should there be any slips or settlement notwithstanding the shoring the contractor shall make good the same at his own expense with concrete or other approved material as directed by the Architect. Shoring shall be removed gradually side by side with backfilling to prevent any settlement and under no circumstances until such time as the foundation concrete has hardened enough to take any loads brought on by the removal. Under special circumstances shoring shall be left in place if so directed by the Architect/EIC.

2.7 Dewatering

All excavation shall be kept free from water from any source. The contractor shall provide and clear away on completion all drains, pumps and other equipment for this purpose. The contractor shall be responsible for preventing any subsidence of adjoining ground due to pumping.

Contractor at his own cost shall keep site dewatered till all construction works in basement and other areas are completed including waterproofing. **No amount shall be claimed by the contractor as the rates are deemed to have been included for total dewatering.**

2.8 Contractor to keep excavation clear

Should any sand, mud, weed, rubbish or other materials be deposited on excavated area by sandstorm, rain, flood, landslips or from any cause whatsoever such materials shall be removed by the contractor at his own expense.

2.9 Back filling

All materials used as fill shall be to the Architects approval. Filling materials shall be well graded clean stone, Gravel and other approved non-plastic granular material, all not more than 100 mm in any direction and shall be well consolidated in layers not more than 150 mm thick. Final compacting must be done just before concrete is to be laid.

All fill materials shall be compacted at a moisture content appropriate to the material being used. The compacted filling shall achieve a density which shall not be less than 95% of the maximum dry density obtained. Filling shall be free of any wood, organic matter or any other deleterious material.

Sand, soil, gravel etc. from the excavation may be used for back filling of pits and trenches or for making up levels subject to approval of the Engineer – in – charge and subject to selection of proper materials. The contractor shall take instructions of the Architect regarding the location in which each type of excavated material is to be used according to its quality.

In case the excavated materials are not approved for backfilling either totally or in part or if their quantity falls short of the quantity required for filling suitable materials shall be brought to site from an approved source.

2.10 Disposal of surplus

Surplus excavated materials and all excavated materials rejected for backfilling shall be carted at least 1.5km away from the site and spread where directed within the lead of one km by the local authorities / architect/EIC in layers not more than 250 mm thick each layer being adequately watered and rolled or rammed as directed.

2.11 Sweet Earth

The Sweet earth for plantation areas shall be from an approved source and shall be mixed with natural or artificial manure as directed by the Architect.

2.12 Polythene layer

Wherever directed all concrete pours resting directly over prepared soil or hardcore shall be placed over “Shivathene 1000” or equivalent heavy polythene sheeting. All joints in the sheeting shall be double welt folded joints, made by placing the edges and folding over twice.

Placing temporary weights shall hold the folds and the sheets will be protected from damage during concreting operations. All damaged sheets will be replaced. Where necessary the polythene film shall be returned to overlap the damp proof course in walls.

2.13 Measurements

i) Where excavation is in trenches or from borrow pits in firmly uniform ground measurements of cutting in trenches or borrow pits shall be made to the outer line of building wall.

ii) Diagonal ridges, cross ridges or dead man shall be left in position shown by the Engineer -in- Charge to enable accurate measurements being taken on the completion of one work where the ground is not uniform or where the site is required to be leveled levels shall be taken before the start of the work and after the completion of the work and the quantity of excavation in cutting computed from these levels.

iii) Where soil, soft rock and hard rock are mixed the measurements for the entire excavation shall be computed from the levels as described (ii) above.

iv) Wherever rock excavation is encountered contractor will be paid only up to required level and any extra excavation if carried out due to any reason no payment shall be done for the extra quantity.

3.0 CONCRETE WORKS

3.1 General

All concrete included in the works shall comply with the General requirements of this section of the specification except where those requirements are modified by the provisions of later Clause relating to specialized uses for concrete in which case the requirements of those Clauses shall take precedence.

3.2 Supervision

A competent person shall be employed whose first duty will be to supervise all stages in the preparation and placing of the concrete. All test on materials, the making and testing of cubes and the maintenance and calibration of all mixing and measuring plant shall be carried out under his direct supervision.

3.3 Materials

a. Cement

I. Types

The cement used shall be ordinary Portland cement of 53 grade conforming to relevant IS for all works except where specifically mentioned in the Drawings, Bill of Quantities and / or directed by the Engineer-in-Charge.

All cement shall be fresh when delivered. Cement shall be delivered in sound and properly secured bags or other packages ready for immediate use and shall be used direct from the bag. The contractor shall maintain for Architects/EIC inspection a record of receipts and consumption of cement indicating the source, the age and the date of receipt of cement. Cement containing lumps, which cannot be broken by a light touch of fingers, shall not be used in the works. Admixtures shall not be used without written consent of the Architect/EIC.

II. Sources

Cement shall be obtained from sources, which are approved by the Architect/ EIC. Makes and sources of cement shall generally not to be varied from those used for

trial mixes and if a change be unavoidable, the contractor shall submit this proposal for the prior approval of the Architect/EIC. Unless otherwise directed by the Architect/EIC, Cement of different kinds shall not be mixed at any stage.

III. **Manufacturers' Test Certificates for Cement**

The contractor shall supplied the certified copy/original of manufacturer certificate to the Architect/EIC within 48 hours of the arrival of cement & which shall not be later than 14 days from the day of delivery of the relevant consignment. The test certificate shall be related to the date of delivery at site of consignment. The frequency of deliveries shall be such as to ensure that no cement is more than three months old when used in the works.

IV. **Samples of Cement**

Samples of cement to be used in the works shall be deposited with the Architect/EIC for his approval together with a certificate stating the name and address of the Manufacturer the name and address of the supplier from whom it was purchased. The Architect/EIC may from time to time take samples of the cement being used in the works for testing.

V. **Storage of Cement**

The contractor shall provide a proper separate weatherproof store building with raised floor for cement on the site and shall at all times protect the cement from damp or any other deleterious influences. Each consignment of cement shall be kept separately and the contractor shall be careful to ensure the consignments are used in the order in which they are received.

b. **Aggregates**

I. All aggregates (coarse & Fine) shall be conforming to IS 383 & shall be obtained from the approved source known to produce aggregates of required size satisfactory for concrete and shall be chemically inert, strong, hard, durable of limited porosity and free from adhering, coating, clay lumps, coal residues and organic or other impurities that may cause corrosion of reinforcement or may impair the strength or durability of the concrete. Aggregates shall be tested in accordance with the requirements of IS: 383 or IS: 515 and the results of such tests shall be as hereinafter specified, the percentages being by weight unless the context indicates otherwise.

II. Fine aggregates shall be natural sand or sand derived by crushing material like gravel or stone and shall be free from coagulated lumps. Sand derived from stone unsuitable for coarse aggregates shall not be used as fine aggregates. The caustic soda test for organic impurities shall show a colour not deeper than that of the standard solution. The amount of fine particles as ascertained by the Laboratory Sedimentation test shall not exceed 5% for crushed stones. The settling test for natural sand or crushed stone shall be made and after being allowed to set in for three hours the thickness of the layer of silt deposited on the coarse material shall not exceed 10%.

The grading of a natural sand or crushed stone i.e. fine aggregate shall be such that not more than 5 (five) percent shall exceed 5 mm in size not more than 10% shall pass IS sieve No. 150 not less than 45% or more than 85% shall pass IS sive No. 1.18 mm and not less than 25% or more than 60% shall pass IS sieve No. 600 micron.

Only washed sand of quality and grading specified herein above shall be used. Admixture of sand obtained by crushing natural stone may be permitted by the Architect provided the mixture satisfies the requirements for the fine aggregates here in above specified. But not more than one part of the sand obtained by crushing natural stone may be added to two parts of washed sand.

III. **Coarse Aggregate**

Coarse Aggregates shall be crushed stone. The pieces shall be angular, rounded in shape and shall have granular or crystalline or smooth (but not glossy) non-powdery surface. Fragile, flaky and laminated pieces and mica shall not be present.
The “Aggregates Crushing Value” shall not exceed 45%. The amount of fine particles occurring in a free state or as a loose adherent shall not exceed 1%. When determined by the laboratory sedimentation test, after twenty four hours immersion in water. A previously dried sample of the coarse aggregate shall not have gained in weight more than 5%.

The grading of coarse aggregate shall b such that not more than 5% shall be larger than 20 mm and not more 10% shall be smaller than 5 mm and not less than 25% or more than 55% shall be smaller than 10%.

Maximum size of coarse aggregate shall be of 20 mm unless otherwise noted.

The grading of coarse aggregate of nominal size of 40 mm shall be such that not more than 5% shall be larger than 40 mm and not more than 5% shall be smaller than 5 mm and not less than 10% or more than 35% shall be of 10 mm size.

Aggregate (Fine and Coarse) shall be thoroughly washed with clean water if so directed by the Architect/EIC.

3.4 Steel Reinforcement

Type

Steel for bar and fabric reinforcement shall conform to mild steel of tested quality conforming to IS: 432 (Latest) or high yield strength deformed bar conforming to IS: 1786 or 1139 (Latest) or TMT as specified in the drawings or directed by EIC. The steel shall be kept clean and free from pitting, loose rust, mill scale, oil, grease, earth, paint or any material which may impair the bond between the concrete and the reinforcement or which may cause corrosion of the reinforcement or deterioration of the concrete. Fabric reinforcement (IRC weld mesh or equivalent) shall be delivered to site in flat sheets only.

Storage of Reinforcement

Before and after bending reinforcement shall be stored on raised racks in separate lots by size and type and protected from damage, contamination and the effects of the weather. For the purposes of identification each lot shall be marked plainly and securely by approved methods.

Fabrication

Fabrication shall be accurately done to the dimensions; spacing and minimum cover as per structural drawings. Spacers shall be of cement mortar (1:1&1/2) cubes. MS chairs, spacer bars shall be used in order to ensure accurate positioning of reinforcement. All joints in mild steel reinforcement
up to and including 16 mm dia shall be overlapped. The length of over lap for tension and compression joints in steel reinforcement above 16 mm diameter may be welded if permitted by the Architects/EIC in writing.

Welded Laps

Whether specified, welded laps can be provided. The welding of bars shall be carried out as per IS: 2751 – 1979, IS: 9417 -1979. Before doing welding of bars at site, the contractor shall make minimum 3 joints and get them tested in an approved laboratory at his own cost. The following precautions shall be taken;

a) If the cold twisted deformed bar has an untwisted end at lapping point then this portion shall be cut off prior to welding.

b) Bars shall be free from rust at joints to be welded.

c) Bars shall be aligned and kept in proper axis in order to minimize crookedness in bar after welding.

All the authorized laps will be measured & paid in the reinforcement item.

3.5 Water

Type

Water for mixing concrete shall be clean and free from harmful material and comply with the requirements of Clause 4.3 of IS: 456 (Latest Revision).

Water shall be brought only from sources approved by the Engineer in-charge and shall be of potable quality.

Testing of water

Prior to the commencement of the works or whenever there is a change in the source of supply or when directed by the Architect the contractor shall arrange for samples of water for mixing concrete to be submitted to an independent Government authorized testing laboratory acceptable to the Architect/EIC for tests to determine that the water complies with this specification and is satisfaction in all other respects for the manufacture of high quality concrete.

3.6 Grades and Strength Requirements of Concrete

General

Concrete shall consist of the material described under previous sections using separate coarse and fine aggregate in an appropriate combination determined in the

course of the preparation of mix design described hereinafter. The overall grading shall be such as to produce a concrete of the specified quality, which will work readily in to position without segregation and without the use of excessive water. In the case of mass concrete or blinding concrete specified by nominal mix the use of 'all – in' (20mm and down) aggregate may be approved by Architect.

Slump

Only sufficient water shall be added to the cement and aggregate during mixing to produce concrete having a sufficient workability to enable it to be well consolidated to be worked in to the corners of the shuttering and around the reinforcement to give corners of the shuttering and around the reinforcement to give the specified surface finish and to have the specified strength. Water cement ratio shall be maintained as per IS: 456-1978 when a suitable amount of water has been determined, the resulting consistency shall be maintained through out the corresponding parts of the work and tests shall be conducted to ensure the maintenance of this consistency according to the standard method of test for consistencies of concrete (slump test) as below:

Description of work	**Maximum slump in mm**
Beams and slabs	25 to 75 mm
Columns & Walls	50 to 100 mm
Slabs & Staircase	up to 25 mm
Footings	up to 25 mm

Concrete Grades

Grades of concrete used in the works shall be shown on the drawings or as directed by the Architect/EIC. For each grade of concrete the requirement will be as per IS 456 latest revision.

3.7 Batching and Mixing

The quantity of cement, the quantity of fine aggregate and the quantities of the various sizes of coarse aggregate should be measured by weight.

A separate weighting device should be provided for weighting the cement. Alternatively, the cement may be measured by using a whole number of bags in each batch, 50 kg. Bag cement contains 35 Ltrs.

The amount of water should be measured by volume or by weight. Any solid admixtures may be measured by volume or weight.

The batch weights of aggregate should be adjusted to allow for moisture content typical of the aggregate being used.

The accuracy of the measuring equipment should be within plus or minus 3% of the quantity of cement, water or total aggregates being measured and within plus or minus 5% of the quantity of any admixture being used. All measuring equipment should be maintained in a clean, serviceable condition.

The mixing time should not be less than that used by the manufacturer in assessing the mixer performance. In the case of mixes of low workability or high cement content this may not ensure maximum strength, and it may be advisable to determine a satisfactory mixing time by comparing the strength of samples mixed for different times. However in no case shall it be less than 2 minutes.

A mixer shall be cleaned out before any further concrete is mixed.

a. When it has been out of use for more than 10 minutes, of
b. When the class of concrete to be nixed is changed.

Hand mixing will only be permitted in exceptional circumstances and then with the specific arrangement of the Architect.

No water shall be added to mixed concrete other than the quantity of water allowed for in the mix design and incorporated in batching, unless with the approval of the Architect.

Concrete or mortar which has commenced to set shall not be remixed with additional water and in no circumstances shall such concrete or mortar be used in the work.

3.8 Transporting Concrete:

Concrete and mortar shall be transported speedily in watertight skips, trucks or barrows, and deposited in its place in the works without contamination, loss of ingredients or segregation. If segregation has never the less occurred during transport, the materials shall be remixed before deposit. Skips shall be large enough to contain an integral number of batches from the mixer. Any trucks or barrows shall have pneumatic tyres. In no case shall a period of more than 30 minutes elapse between the first wetting of cement in a batch and the completed use of the concrete or mortar in the works, the contractor shall arrange his mixing, transporting, placing, compacting and finishing techniques accordingly. No concrete shall be placed in the works until the contractors proposed method of transporting concrete have been approved. When chutes convey concrete the equipment shall be of such size and design as to ensure a continuous flow in the chute. The chute shall be of metal or metal lines and if two or more length are used they all shall have approximately the same slope. If the distance of the discharge end of the chute above the surface of the concrete is more than 1 meter, a spout or “elephant trunk” shall be used and the lower end positioned as near to the surface of deposit as practicable. The chute or “elephant trunk” shall be thoroughly cleaned before and after each run. The debris and any water used shall be discharged outside the forms.

3.9 Concrete placement

General

Concrete when deposited shall have a temperature of not less than 5º C (41 º F) and not more than 32 º C (90º F).

The concrete shall be placed in the positions and sequences indicated on the drawings in this specification and or as directed by the Architect/EIC.

Contractor shall give adequate notice to the Architect of his intention to concrete any section of the works.

Except where otherwise directed concrete shall not be placed unless the representative of the Architect is present and has previously examined and approved the positioning, fixing and condition of the reinforcement or any other items to be embedded and the cleanliness, positioning and suitability of the concreting surface.

The concrete shall be deposited as nearly as possible in its final position. It shall be placed in such a manner as to avoid segregation of the concrete and displacement of the reinforcement, other embedded items, or formwork. It shall be brought up in horizontal layers not exceeding 45 dia mm in compacted thickness unless otherwise authorized or directed by Architect. Concrete shall not be placed simultaneously on each side of large horizontal specified or approved construction joints.

Shuttering for walls or thin sections of considerable height shall be provided with openings or other devices that will facilitate the cleaning of the accumulation of hardened concrete on the shutters or on the metal reinforcement above the level of the concrete and the removal of concrete in the case of segregations.

Placing concrete in cold/Hot weather

No concrete shall be mixed or placed while the temperature is above 40º C on a rising thermometer or below 4º C. on a falling thermometer. The contractor shall supply an accurate maximum and minimum thermometer and hang it in an approved position on the works. Aggregates that have been exposed to frost shall not be used until completely thawed. Concrete shall be maintained by approved means at a temperature of not less than 4º C. during placing, and for a period of three days thereafter. All concrete placed during cold weather or when a frost is predicated or is likely to occur or occurs contrary to expectation shall be protected from freezing by approved means.

Placing of concrete in wet weather

Concrete shall not be mixed and or placed in rainy weather or when there is likelihood of impending heavy showers. If it becomes necessary to place concrete during rainy weather the contractor shall provide adequate protection by means of tarpaulin or similar other water proof material to immediately cover fresh concrete to prevent rain failing over it. This protection shall be left on the concrete for a period of 24 hours after placing of concrete.

3.10 Concrete placement under water

Concrete placed under water shall be deposited through a Tremmie pipe the diameter of which shall be at least 8 times the size of the largest aggregate used in the concrete mix.

The Architect shall approve the construction of and the method of handling the tremmie pipes. The pipes shall be waterproof and sufficiently strong to withstand severe handling conditions and any joints must be sealed with adequate gaskets.

At the commencement of Tremmie work the bottom of the pipe shall be sealed before being lowered in to position. The concrete being placed shall only break the seal. The concrete placed in contact with a horizontal construction joint shall have a lower proportion of coarse aggregate and a higher proportion of cement than the remainder of the concrete. The proportion shall be agreed with the Architects' Representative.

All underwater concrete shall be placed in still water within a cofferdam or formwork, which shall extend above water level.
The proportions of the mixes shall be agreed in accordance with the strength and workability required by the specification. To allow for losses an addition of 10% of cement shall be added to mixes of concrete scheduled to be placed under water.

3.11 Maintenance of plant and Equipment

The contractor shall keep all weight batching machines, mixing machines, compressors, vibrators and other plant and equipment for concrete and mortar work clean well maintained and adjusted and where appropriate, shall check the accuracy of the measuring devices at regular intervals, all to the approval of the architects'. Representative Mixer blades shall be replaced when worn down by 20 min.

3.12 Night Work

Concrete shall not be mixed, placed, compacted or finished during the hours of darkness, except where necessary to complete a pour. However, concreting in darkness for these exceptions shall be only after obtaining the express permission in writing from the Architects' representative and in his presence only.
Immersion vibrator shall be of approved type and shall have frequency of not less than 10000 oscillations per minute. They shall penetrate the full depth of the concrete to be vibrated and be immersed at sufficiency close spacing so that the whole volume of the concrete is satisfactorily and uniformly compacted.
Where the underlying layer is of fresh concrete, immersion vibrators shall also penetrate that layer to ensure homogeneity. Immersion vibrators shall be withdrawn slowly to prevent formation of voids. Vibrators shall not be used to work the concrete along the moulds or in such a way as to damage or other embedded items. Those who have received proper instruction and training in their use shall only operate immersion vibrators.

External vibrators shall be of approved type and shall have a frequency of not less than 3000 oscillations per minute. They shall be securely and rigidly clamped to the shuttering. External vibrators shall only be used on shuttering which is strong enough to withstand the vibration without displacement, distortion or other damage.

The contractor shall ensure that sufficient standby vibrators and ancillary equipment are available during concreting operations.

3.13 Quality Control

i) In order to ensure that the quality of materials and the mix proportions are suitable for the particular grade of concrete required are so maintained, sampling and testing shall be carried out regularly during the course or the works.

ii) As frequently as the Architects'/EIC representatives may require and in any case at least once a day while concreting is in progress the contractor shall sample and carryout a determination of the moistures content and a mechanical analysis of the fine aggregate and each nominal size of coarse aggregate shall lie within the respective limits specified and should be fraction of aggregate in the sieve differ from the corresponding fraction of aggregate in the approved mix by more than 2% of the total quantity of fine and coarse aggregate the Engineer-in-charge may instruct the contractor to modify the relative proportions of the aggregates in the mix immediately to allow for such differences.

iii) Workability testing shall be carried out in accordance with IS: 456. The results shall lie within the range up on which the accepted mix design is based. Testing shall be carried out at such a frequency that the required workability is consistently achieved.

iv) Samples of concrete shall be taken at random in accordance with IS: 516 at the time and place of deposition of the concrete at a frequency of sampling for each grade of concrete and from each concrete mixing plant at six cubes of 150 mm nominal size per 50 cubic meters of concrete placed in the works or twice per week.

v) Notwithstanding the foregoing additional samples shall be taken by the contractor when directed by the Architect. The test cube procedure shall be in accordance with IS: 516 throughout.

vi) Compliance with the specified characteristic strength shall be assumed if:

a. Each of the six cubes in a group has a test strength no less than the characteristic strength or,

b. Not more than one cube has test strength less than the specified characteristic strength but not less than 85% of the specified characteristic strength and the average strength of the group of four test results is not less than the specified characteristic strength plus the standard deviation of the group.

3.14 Seven day cube tests:

Acceptance of concrete is based on the 28^{th} day results. However, the contractor shall establish a relationship between 7 days and 28 days strengths by carrying out 7 days tests at the time of performing the laboratory testing and from subsequent quality control testing. This relationship shall be used in interpreting any further test results to predict the probable value of the corresponding 28 days cube strengths. The contractor shall without delay advice the Architect of any sample that appears likely to fail to meet the specification and the contractor shall take any necessary action to minimize the effect of such failure.

P.S:- Cube test shall be done at JNTU/NCBC/O.U, Hyderabad

3.15 Acceptance Criteria

The general Acceptance Criteria of any and all of the concrete work shall be as per the relevant Clauses of IS: 456.

If any of the works test are not up to the standard, the Architect/EIC shall have the power to stop the work until the reason is investigated and steps taken to prevent further low results. The contractor shall not be entitled to any claims on account of such delays. Any concrete carried out from the batch that is afterwards found to be faulty, will be liable for rejection and if so directed, the contractor shall at his own expenses dismantle and replace the detective work and any work built thereon or shall take such other measures as may be deemed necessary by the Architect. At the discretion of the Architect, the contractor may be allowed to prove by means of a load test to be carried out at his own expense that the concrete is capable of safely with standing the loads as specified in test.

3.16 Construction joints:

Construction joints shall be provided in the position described on the drawings or elsewhere and where not so described on the drawings or else shall in accordance with the following.

a. A joint shall be formed horizontally at top of a foundation and 75 mm below the slowest soffit of the beams meeting at the head of a column.
b. A joint shall be formed in the rib of a large tee beam and all beams 25 mm below the soffit of the slab.
c. Concrete in a haunch or a splay on beam or a brace and in the head of a column where one or more beams meet shall be placed without a joint at the same time as that in the beam or beams or brace.
d. Concrete in the splay at the junction of a wall and slab shall be placed throughout without a joint but if the provisions of a joint are unavoidable the joint shall be vertical and the middle of a span.
e. A joint in a slab shall be vertical and parallel to the principal reinforcement where it is unavoidable at the right angles to the principal reinforcement the joint shall be vertical and at the middle of the span.
f. Expansion joints, hinges or other permanent structural joints shall be provided in the positions and of the form described in the drawings or elsewhere. Before placing new concrete against concrete that has already hardened the face of old concrete shall be cleaned and roughened and scrubbed and loose aggregate removed from the form. Immediately before placing the new concrete the face shall be thoroughly wetted and a coating of neat cement grout applied thereto.

The new concrete shall be well rammed against the prepared face before the grout sets.

3.17 READY MIXED CONCRETE (as per IS 4926)

3.17.1 Materials

3.17.1.1 ***Selection and Approval of Materials*** **:** Materials used should satisfy the requirements for the safety, structural performance durability and appearance of the finished structure, taking full account of the environment to which it will be subjected. The selection and use of materials shall be in accordance with IS 456. Materials used shall conform to the relevant Indian Standards applicable. Where materials are used which are not covered by the provisions of the relevant Indian Standard, there should be satisfactory data on their suitability and assurance of quality control. Records and details of performance of such materials should be maintained. Account should be taken of possible interactions and compatibility between IS 4926 and materials used. Also, prior permission of the purchaser shall be obtained before use of such materials.

3.17.1.2 ***Cement*** : Cement used for concrete shall be in accordance with the requirements of IS 456.

3.17.1.3 ***Mineral Admixtures :*** Use of mineral admixtures shall be permitted in accordance with the provisions of IS 456.

3.17.1.4 ***Aggregates :*** Aggregates used for concrete shall be in accordance with the requirement of IS 456. Unless otherwise agreed testing frequencies for aggregates in plant shall be as given IS 4926.

3.17.1.5 ***Chemical Admixtures***

(i) Use of chemical admixtures shall be permitted in accordance, with the provisions of IS 456 and IS 9103.

(ii) It shall be the responsibility of the producer to establish compatibility and suitability of any admixture with the other ingredients of the mix and the determine the dosage required to give the desired effect.

(iii) Admixtures should be stored in a manner that prevents degradation of the product and

consumed within the time period indicated by the admixture supplier. Any vessel containing an admixture in the plant or taken to site by the producer shall be clearly marked as to its content.

(iv) When offering or delivering a mix to a purchaser it should be indicated if such a mix

contains an admixture or combination of admixtures or not. The admixtures may be identified generically and should be declared on the delivery ticket.

(v) The amount of admixture added to mix shall be recorded in the production record. In special circumstances, if necessary, additional dose of admixture may be added at project site to regain the workability of concrete with the mutual agreement between the producer and the purchaser.

3.17.1.6 ***Water :*** Water used shall be in accordance with the requirement of IS 456. Unless otherwise agreed, the testing frequencies for water shall be as given in Annex A. The use of re-cycled water is encouraged as long as concrete of satisfactory performance can be produced and steps are taken to monitor the build up of chlorides in any re-circulated water and that any subsequent adjustments to the mix design are made to ensure that any overall limit on chloride contents is satisfied. The addition of any recycled water shall be monitored and controlled to meet these requirements. The total amount of water added to the mix shall be recorded in the production record. The water content of concrete shall be regulated by controlling its workability or by measuring and adjusting the moisture contents of its constituent materials. The producer's production staff and truck-mixer, drivers shall be made aware of the appropriate responses to variations in concrete consistency of a particular mix caused by normal variations in aggregate moisture content or grading.

3.17.2 General Requirements

3.17.2.1 ***Basis of Supply*** : Ready-mixed concrete shall be supplied having the quality and the quantity in accordance with the requirement agreed with the purchaser or his agent. Notwithstanding this, the concrete supplied shall generally comply with requirements of IS 456. All concrete will be supplied and invoiced in terms of cubic metres (full or part) of compacted fresh concrete. All proportioning is to be carried out by mass except water and admixture, which may be measured by volume.

3.17.2.2 ***Transport of Concrete :*** Ready-mixed concrete shall be transported from the mixer to the point of placing as rapidly as practicable by methods that will maintain the required workability and will prevent segregation, loss of any constituents or ingress of foreign matter or water. The concrete shall be placed as soon as possible after delivery, as close as is practicable to its final position to avoid re-handling or moving the concrete horizontally by vibration. If required by the purchaser the producer can utilize admixtures to slow down the rate of workability loss, however this does not remove the need for the purchaser to place the concrete as rapidly as possible. The purchaser should plan his arrangements so as to enable a full load of concrete to be discharged within 30 minutes of arrival on site. Concrete shall be transported in a truck-mixer unless the purchaser agrees to the use of non agitating vehicles. When non-agitating vehicles are used, the mixed concrete shall be protected from gain or loss of water.

3.17.2.3 ***Time in Transport*** : The general requirement is that concrete shall be discharged from the truck-mixer within 2 h of the time of loading. However, a longer period may be permitted if retarding admixtures are used or in cool humid weather or when chilled concrete is produced. The time of loading shall start from adding the mixing water to the dry mix of cement and aggregate or of adding the cement to the wet aggregate whichever is applicable. Ready-mixed concrete plant shall have test facilities at its premises to carry out routine tests as per the requirement of the standard.

3.17.3 Sampling and Testing of Ready-Mixed Concrete

3.17.3.1 ***Point and Time of Sampling*** **:** For the assessment of compliance of ready-mixed concrete, the point and time of sampling shall be at discharge from the producer's delivery vehicle or from the mixer to the site or when delivered into the purchaser's vehicle. It is critical that the sampling procedure and equipment used enables as representative a sample as possible to be taken of the quantity of concrete delivered. The sampling may be carried out jointly by the purchaser and the supplier with its frequency mutually agreed upon. However, it will not absolve the supplier of his responsibility from supplying in concrete as per the requirement given in this standard or otherwise agreed to where so permitted in the standard.

2\3.17.3.2 ***Workability :*** The test for acceptance is to be performed upon the producer's delivery vehicle discharge on site or upon discharge into the purchaser's vehicle. If discharge from the producers' vehicle is delayed on site due to lack of preparedness on behalf of the purchaser then the responsibility passes to the purchaser after a delay of more than 30 min. The workability shall be within the following limits on the specified value as appropriate:
Slump ± 25 mm or 1/3 of the specified value, whichever is less.
Compacting factor : ± 0.03, where the specified value is 0.90 or greater,
± 0.04, where the specified value is less than 0.90 but more than 0.80,
± 0.05, where the specified value is 0.80 or less.
Flow table test may be specified for concrete, for very high workability (see IS 9103) Acceptance criteria for spread (flow) are to be established between the supplier and the purchaser.

3.17.3.3 ***Specified Strength***
(i) Compliance shall be assessed against the requirements of IS 456 or other agreed Indian Standard. The purchaser may perform his sampling and testing or may enter into an arrangement with the producer to provide his testing requirements. (ii) Unless otherwise agreed between the parties involved, the minimum testing frequency to be applied by the producer in the absence of a recognized ready- mixed concrete industry method of production control should be one sample for every 50 m3 of production or every 50 batches, whichever is the greater frequency. Three test specimens shall be made up for each sample for testing at 28 days (see also IS 456). In order to get a relatively quicker idea of the quality of concrete, optional test on beams for modulus of rupture at 72 ± 2 h or at 7 days or compressive strength test at 7 days may be carried out in addition to 28 days compressive strength test. For this purpose the value should be arrived at based on actual testing. In all cases 28 days compressive strength shall alone be the criteria for acceptance or rejection of the concrete.
(iii) The purchaser shall inform the producer if his requirements for sampling and testing are higher than one sample every 50 m3 or 50 batches, whichever is the greater frequency.
3.17.3.4 ***Additional Compliance Criteria*** *:* Any additional compliance criteria shall be declared to the producer by the purchaser prior to supply and shall be mutually agreed upon in terms of definition, tolerance frequency of assessment, method of test and significance result.

3.17.3.5 ***Non-Compliance :*** The action to be taken in case of non-compliance shall be declared and mutually agreed upon.

3.17.4 Information to be Supplied by the Purchaser

3.17.4.1 The purchaser shall provide to the producer the details of the concrete mix or mixes required by him and all pertinent information on the use of the concrete and the specified requirements. Prior to supply taking place, it is recommended that a meeting is held between the purchaser and the producer. Its objective to clarify operational matters such as notice to be given prior to delivery, delivery rate, the name of the purchasers authorized representative who will coordinate deliveries, any requirements for additional services such as pumping, on site testing or training, etc.

3.17.4.2 ***Designed Mixes :*** Where the purchaser specifies a designed mix to be supplied it is essential that all relevant information is conveyed to the producer.

3.17.4.3 ***Prescribed Mixes :*** The concrete mix shall be specified by its constituent materials and the properties or quantities of those constituents to produce a concrete with the required performance. The assessment of the mix proportions shall form an essential part of the compliance requirements.

3.17.5 Information to be Supplied by the Producer

When requested, the producer shall provide the purchaser with the following information before any concretes is supplied:
(a) Nature and source of each constituent material,
(b) Source of supply of cement,
(c) Proposed proportions or quantity of each constituent/ m3 of fresh concrete.
(d) Generic type(s) of the main active constituent(s) in the admixture;
(e) Whether or not the admixture contains chlorides and if so, the chloride content of the admixture expressed as a percentage of chloride ion by mass of admixture;
(f) Where more than one admixture is used, confirmation of their compatibility and
(g) Initial and final setting time of concrete when admixture is used at adopted dosage (tested as per IS 8142).

3.18 Form Work

Form work construction

i) The contractor should submit detailed drawing of the centering & shuttering and get the same approved from the Architect / Client and before laying concrete also he should get the centering shuttering approved in writing before start of concreting. The concreting should be done in the scientific and methodical manner so as to give a uniform finish in line and level, so that minimum rendering manner so as to give a uniform finish in line and level, so that minimum rendering or plastering is done. The fork found defective should be dismantled & redone and site cleared. For removal of centering and shuttering, the span of beam & slab has not been give, which should have been done as given on.

ii) Form work shall be so constructed that concrete can be properly placed and thoroughly compacted. Form work shall be firmly supported and adequately strutted, brace or tied. It shall be capable of adjustment to the lines and dimensions of the finished concrete and it shall be sufficiently strong to resist without excessive distortion under the influence of the weather.

iii) All form work shall be constructed to be rigid during the casting of concrete and constructed so that the surfaces adjacent to the concrete are with plus minus 6mm or the required surfaces when supporting the concrete and sufficiently watertight to prevent loss of liquid from the concrete and it shall be capable of being removed without shock or vibration to the concrete. Forms shall be cleaned with compressed air immediately before placing concrete to remove all rubbish. The inside faces of the form work shall be treated with a mould oil of type to be approved by the Architect and every care shall be taken to prevent mould oil from getting on to the reinforcement.

iv) Shuttering shall be braced and strutted to prevent deformation under the weight and pressure of the wet concrete, constructional loads, wind and other forces. The deflection shall not exceed 3 mm bottoms of beams boxes shall be erected with an upward camber of 6 mm for each 3M. of span.

Removal of Form work (Stripping Time)

Unless certainly specified in the drawing or directed by the Architect the following shall be minimum intervals of time, which should be allowed between the placing of the concrete and the striking of the mould where ordinary Portland cement is used.

a. Walls, columns & vertical faces of all structural members — 24 to 48 hours as may be decided by the Engineer-in-Charge.

b. Slab

i)	Spanning up to 4.50 M	7	days
ii)	Spanning over 4.50 M	14	days

c. Beams and arches

i)	Spanning up to 6 M	14	days
ii)	Spanning up to 6 M & up to 9 M	12	days
iii)	Spanning over 9 M	28	days.

Note: 1. For other types of cement the stripping time recommended for ordinary Portland cement may be suitably modified. If Portland pozzolona or low heat cement has been used for concrete the stripping time will be 10/7 of the period stated above.

2. The number of props left under their sizes and disposition shall be such as to be able to safely carry the full dead load of the slabs, beam or arch as the

case may be together with any live load likely to occur during curing or further construction.

However, the contractor shall delay the removal of shuttering as long as necessary in order to avoid damaging the work. Where shuttering to soffit is removed prior to the props this is only permissible if the design of the shuttering allows such a sequence of operations without the props being in any way disturbed. If the shuttering and propos are not independent both must be left in place until propping is no longer required.

Where shuttering to sides is removed prior to the shuttering soffit, the side shuttering shall be removed without disturbing the shuttering to the soffit.

No concrete structure shall be loaded until the concrete is at least 21 days old and only then with the approval of the Architect and subject to such condition as may be imposed.

The contractor may be required to produce evidence that the concrete has attained a strength sufficient to support the live and dead loads to which that part of the structure may be subjected. This evidence shall consist of reports of compression tests made on job cured test cubes. The foregoing provisions of the this clause shall not relieve the contractor of his responsibility to ensure that the stability and strength of any structure of part of a structure is not impaired by the release of shuttering.

Proposals for form work

Not less than 8 days before the contractor proposes to construct any form work his detailed proposals thereof shall be delivered to the Architect. Proposals shall comprise all relevant information including calculations, detailed drawings, rates of placing of concrete, sequence placing of concrete and details of any external vibrators which are proposed to be used.

No form work shall be constructed until the contractors' proposals have been received and approved by the Architect.

Type of form work

Two quantities of form work shall be used i.e. Rough form work and wrought form work, as noted on the Architects drawings or described hereafter.

Rough form work may be constructed of sawn timber or other materials as agreed by the Architect. The edges of the boards shall be planned or otherwise rendered grout tight. Provided it remain grout tight, rough form work may be used any number of time.

Wrought form work, to all surfaces for which a smooth fair faced finish is required shall be constructed of purpose made metal, fiber glass, waterproof ply wood panel,

hardboard lined form work or of planed timber with edges shot so that tight joints can be formed which will prevent loss of liquid from the concrete. The use of a particular material for wrought form work shall be consistently maintained throughout the structure. The surfaces of the form work in contact with the concrete shall be smooth and free form all blemishes. The number of times wrought form work may be used shall be subject to the surfaces, joints and edges being clean and undamaged.

Surfaces of concrete

The contractor shall ensure that the finished face of concrete offers a suitable keyed surface for the application of the finishing media, e.g. plaster, sand and cement screed etc. The contractor shall also ensure that where thin films of finished, e.g. skim coats “Snowcem”, paint etc. are to be applied that the previous provisions regarding supporting of form work are complied with, so that the concrete faces to be treated are left smooth, unblemished and true to line both vertically and horizontally and require no making good before applying the finish.

Should the contractor fail however, to comply with the provision of this Clause, he shall submit details of his proposed method of redoing the situation to the Architect and must obtain written consent from the Architect to the proposals before continuing with any further work on the affected surfaces.

Tolerances in concrete surfaces.

The permissible tolerance in the surface of the hardened concrete shall not exceed the following limits:

Type of irregularity:		
Departure of member planes from position and level	±	12mm
Variation in cross – sections	±	6mm
Sharp changes in planed	±	2mm
Departure from 3 M. template of any part of planes	±	3mm

3.19 Curing

Canvass, Hessian or other approved screens shall be erected at all points where concrete is being placed to shade the concrete from the direct sun or from drying winds and such screens shall be kept in position until the surface of the concrete has been protected as specified in the following Clauses. The contractor shall be responsible for removing such screens and preparing surface of concrete.

As soon as possible after it has been placed and concrete shall be covered with Hessiah or other approved material to protect it from the sun all concrete surfaces shall be kept visibly wet continuously for 14 days after placement, the Hessian being kept in position throughout this period. Surfaces cast against forms shall also be kept moist and covered with Hessian for these periods if the form work is removed before the periods have elapsed.

The top surface of slab shall be kept flooded with water at all times till the curing period of 14 days is over. Columns, wall and beam sides and other surface shall be completely covered by gunny bags and kept thoroughly wet continuously for the

period specified for curing. The ceiling of slabs shall be frequently sprayed with water until the end of curing period.

The contractor shall ensure that all times there is an adequate supply of fresh water available for curing the concrete.

3.20 **Examinations and Repairs**

The contractor shall not proceed with the surface finish or making good of concrete surfaces until he has received the Architects' written permission to do so and he shall not apply cement slurry or mortar or any other coating to the concrete surfaces as struck form the shuttering or do anything else which would hinder the proper inspection of the concrete by the Architect.

Concrete which is defective has honeycombs or which contains defective parts shall be cut out completely unless the Architect agrees that a repair may be satisfactorily effected. This agreement shall not preclude

Subsequent condemnation of the repaired work.

The method of repairing defective concrete, which the contractor proposes to adopt, shall be submitted to the Architect for his prior written agreement in each particular case.

No repairs or remedial work shall be carried out without prior inspection and instructions of the Architect. (No extra shall be paid to the contractor for the repair works).

3.21 Fair face finish to concrete surfaces

Concrete surfaces shall be finished smooth fair faced where indicated as such on the drawings. These areas shall be entirely free from honey combing, stains, fins, lapping, nail or screw marks, raised grain marks, air holes or any other imperfections. They shall also be of even texture throughout. Very slight variations between member and member may be acceptable but any such variations within a single member cannot be tolerated. The concrete faces shall not be marked with mould oil.

The form work to these areas shall be wrought form work as specified herein.

Following inspection by the Architect the whole surface shall be rubbed down by hand. Any surfaces with major imperfections, i.e. greater than can be easily, completely and permanently obliterated by rubbing down shall be reported immediately to the Architect.

Remedial work is not normally possible to the above fair faced finish surfaces and the contractor will be required to demolish and recast defective works.

3.22 Reinforcement Fabrication

Bending Schedules

The Contractor shall submit to the Engineer – in – charge (E.I.C), for the E.I.C approval, bending schedule for all the works not less than Ten days before the contractor intends to bend the reinforcing steel.

The approval of the E.I.C shall in no way absolve the contractor of his responsibilities under the Contractor.

Program of reinforcement details required

The Contractor shall provide a program, which gives the E.I.C at least 28 days prior notification of any reinforcement details, required. The contractor shall justify the practicability of his program to the Architect should it seem unreasonable before the program be regarded as valid notification. If progress on site falls behind the contractor' program, the issue of reinforcement details may be delayed by a period corresponding to the delay in construction.

Bending and placing reinforcement

Reinforcement shall be cut and bent to the shapes and dimensions shown on the finally agreed bending schedules in accordance with the requirements of IS: 2502 and to the tolerances set out therein.

Bending shall be carried out with an appliance, which provides a continuous and uniform application of the bending deformation at every section of the bend. There shall be provision for the free movement of the surface of the bar during bending and the bends shall follow the contour of the former without peaking.

High Yield reinforcement must be bent without the application of artificial heating.

Mild steel reinforcement may be sent either hot or cold but shall not be heated to a temperature greater than 85º C and if heated not cooled by quenching.

Mild steel reinforcement temporary left projecting from the concrete at construction or other joints shall not be bent out of position unless shown on the drawings or agreed by the Architect. Where such bending and subsequent re-bending takes place the radius of the bend shall not be less than 4 bar diameters.

Reinforcement shall be fixed without forcing in the position shown on the drawings within a tolerance of 5 mm or 5% of the minimum dimension of cross section, whichever be the greater and maintained so that it is not displaced during concreting or other operations.

Horizontal bars shall be supported sufficiently to prevent displacement. This may be plastic spacer, chairs bent from steel bar or by concrete blocks. The method and sufficiently of the support shall be subject to the approved of the Architect.

Where concrete blocks are used, they shall be pre-cast from concrete (not mortar) of the same class as the concrete in which they are to be embedded, except that the largest size of aggregate shall be 10 mm. Each block shall be secured to the reinforcement with wire or a clip embedded in the center of the block so that, it shall not be in contact with the shuttering or subsequently cause rust marks on the concrete.

Intersections of reinforcement shall be bound together with 16 gauge annealed soft iron binding wire.

Unless otherwise noted on the drawings, no intersections of reinforcement may be fixed be welding without the permission of the Architect. High yield and cold worked steel shall in no circumstances be welded together.

Should any difficulty arise during the placing of steel in obtaining the appropriate cover, the contractor shall immediately draw the attention of the Architect to the difficulty and shall carryout such corrective measures as the Architect may suggest.

Protection of reinforcement and concrete

The contractor shall ensure that movement of men and material subsequent to steel fixing is organized so that reinforcement is not thereby displaced.

Reinforcement left projecting from and concrete shall be protected so that there is no risk of corrosion staining to any exposed concrete surface or to any other part of the works. For this purpose a stiff grout wash will normally be acceptable to the Engineer, this wash shall be wire-brushed vigorously before further concrete is placed to remove any ill-bonded material.

Pre-cast concrete units

Pre-cast concrete materials and workmanship shall be in accordance with specifications unless indicated otherwise. Where different tolerances are indicated in this specification or on the drawings from these in the more severe tolerances shall apply. The units shall all be cast in properly made strong moulds to form the shapes require. For work described as “finished fair” the mould care should be taken to ensure no damage is caused to edges or surfaces when units are removed from the moulds.

The concrete shall be of the mixes given on the drawings and shall be thoroughly vibrated in the moulds.

All pre-cast work shall be cast under cover and shall so remain for seven days and shall be kept damp in order that the units are properly matured. No units shall be lifted until 18 days have elapsed since casting and no unit shall be erected until it has been approved by the Architect as free from defects.

No cracked units will be accepted for incorporation in the works.

All reinforced structural pre-cast units shall have the tops clearly marked.

Un-reinforced pre-cast units, such as sills and copings shall be lightly reinforced as necessary to facilitate handling.

4 MASONRY WORKS

4.1 Stone Masonry

i Stone masonry shall be of hard stone obtained from approved quarry. Stone shall be of the type specified. It shall be hard, sound, free from decay, weathering and defects like cracks, flaws and holes. Stone with round surfaces shall not be used.

ii. Normally, stone used should be small enough to be lifted and placed by hand. The length of stone shall not exceed three times the height.

iii. All stones shall be wetted before use. The wall shall be carried up truly plumb. Every stone shall be carefully fitted to the adjacent stone as to form a neat and close joint. Bond or through stone shall be provided not exceeding 1.5 meter apart in each course and shall be staggered. Bond stone shall be from the front to the back of the wall.

iv. The interior filling shall be with flat bedded stones laid in mortar. Chips, spells shall be used to void thick mortar joints and shall not exceed 10% of the quantity of stone masonry.

v. Unless otherwise mentioned the mortar used shall be 1:5 (1 cement: 5 coarse sand). All surface joints will be raked & filled with cement mortar 1:3 (1 cement: 3 coarse sand).

4.2 Brick works

i) The building bricks are to be the good quality table moulded kiln/Brick field burnt, bricks, hard sound, square with sharp arises, even and uniform in shape and colour free from cracks, stones, flaws and other defects conforming to BIS 1077 having minimum compressive strength of 3.6N/sq mm or 36 kg/ sq cm. Samples of bricks are to be submitted to the Architect/EIC for approval before full quantity is ordered. All supply of brick to conform to the sample approved. No brick after 24 hours immersion in water shall absorb water more than 20% of its own height.

ii) The cement and sand shall be as described under 'Cement Concrete' and the mortar unless specified otherwise in BOQ is to be composed of one part cement to four parts of coarse sand by volume, thoroughly mixed by hand. Hydrophobic cement used in mortar shall be thoroughly machine mixed. No mortar that has started to set shall be used in the work.

iii) Every brick shall be thoroughly soaked in water before use. Broken bricks shall not be used except as closers. The courses shall be truly horizontal and the work strictly plumb, joints shall be broken vertically and they shall not exceed ½ "in thickness. All joints in brickwork are to be well filled with mortar.

iv) The brickwork shall not be raised more than 12 single courses per day and shall be built in English bond, except brick on edge and half brick thick walls shall be built in stretcher bond. Except for brick on edge work the bricks shall be placed with "frog" facing upwards.

v) all joints in brick work shall be raked out ½ " deep as the work proceeds and before the mortar sets.

vi) The brickwork is to be carried out with all necessary setbacks, projections, cuttings and too things in conformity with the drawings.

vii) The brick work shall be cured by watering and continuously kept wet for 10 days and the work shall be well protected during rainy season.

viii) All uneven irregular and bad brick work poor in workmanship shall be demolished if deemed necessary by the Architect and rebuilt by the contractor at the contractors' expenses. If necessary the contractor will have to provide wooden plug etc. for his own work and for which there will be no special payment on that account. The work will have to be executed at any height and lift will not form the criterion for any extra amount.

ix) Should any efflorescence be observed in brick work, it should be washed down by clean water and brick surface treated with such chemicals as are deemed necessary by the Architect without any extra charge and at the contractors' own expenses, till efflorescence subsides. Should the efflorescence persist the brick work shall be demolished if deemed necessary by the Architect and the work rebuilt with new bricks including making good all the work disturbed without any extra charge.

x) Half brick masonry

All brick work under minimum 110 mm thick shall be reinforced 2 Nos. 6 or 8 mm dia bars in every coarse in the bottom for the first two courses and in every eighth coarse thereafter along with 'U' shaped 6 mm dia MS strips @ 150 mm centers shall be provided. The said bars shall be cast in or securely fixed to adjoining concrete walls or columns. Minimum 100 wide & 75 mm thick RCC band with 1:2:4 mix concrete shall be provided or as directed for this RCC & reinforcement will be paid.

4.3 Mortar

The mortar for masonry work shall be cement and sharp coarse sand and shall be made in small quantities so as to be used up within 30 minutes. The cement and sand of the required proportion shall be first mixed dry thoroughly and water added and mixed to a sufficiently thick consistency as required by the Architect. No left over mortar shall be used. Unless otherwise specified the mortar shall be of the following proportions.

a. One cement and six coarse sand for 230 mm thick masonry work and above.
b. One cement and four coarse sand for piers, half brick walls, honeycombed brick work, hollow blocks.

4.4 Walls under structural members

Allowance shall be made for leaving, temporarily open courses immediately below all structural members built in to the walls. The open courses shall be left to permit full deflection of structural members. The open courses shall then be made good and pointed up after the structural members have been fully loaded and before the completion of the works.

5 CARPENTERS AND JOINERY

5.1 Timber

All timber shall be of the kind and of first class quality as described and indicated on drawings and schedules. It shall be uniform in texture, free from large, loose head or cluster knots, veneer, injurious open shakes, bore holes, rot, decay discoloration, soft or spongy spots, hollow pockets, pit and all other defects and blemishes. The sizes shown or described are to be taken as net sizes when finished.

5.2 Seasoning

All timber shall be fully seasoned, if necessary, in kilns and the contractor shall produce satisfactory proof of the same.

The moisture content in the Timber shall not exceed 12% for internal work and 16% for external work. The timber shall remain stable free from expansion or contraction or any other movements, when fixed in position. The timber shall be free from drying defects and shrinkage.

5.3 Rough carpentry

Material

All framing and other concealed wood members shall be of sound wood or approved specials and shall be seasoned. All surfaces in contact with masonry or concrete and in general all surfaces hidden from view shall be treated with two coats of approved wood preservative paint.

Workmanship

Skilled workmen with the longest nails that may be used without splitting the wood shall do all carpenters' work. In general top nailing and cross nailing shall be used. Wherever it is necessary or an adequate joint can not be formed by nailing the members shall be lapped or jointed by GI straps or extra wood blocks. All jointing and nailing shall be done with neatness especially in exposed positions. Joins and nailing shall be approved by the architect and done according to his direction when required. Cross bracing, solid blocking and bracing shall be provided according to best practice.

5.4 Joinery

Materials

Finished woodwork and joinery including doors shall be with straight grained Indian Teak of approved quality unless noted otherwise. Wood shall be free from knots and other blemishes and imperfections. All finished wood for joinery shall be seasoned as prescribed before. All joinery work shall be securely mortised and tanned and glued with best quality synthetic waterproof glue equivalent of FEVICOL or MOVICOL. All sections and dimensions shall be as shown on drawings. For all joinery work, nails shall not be permitted and only wood screws of appropriate sizes shall be used. Wherever practicable, means of fastening the various parts together shall be concealed.

Installation

Doors and cabinet work shall be installed in position only after the plaster in the section for which it is intended is sufficiently dry.

5.5 Measurements

The Contractor shall be fully responsible for accuracy of all measurements and shall verify all dimensions given on the drawings and shall make such site measurements as are necessary to complete the work properly.

5.6 Doors and windows

Doors and windows and ventilator frames shall be made of first quality seasoned timber specified under the head of timber for doors and window frames and as shown on the drawing or as directed by the Architect/Client. These shall be properly framed mortised together and set solidly in the masonry with MS holdfasts. Holdfasts will be 30 x 4 cms and 5 mm flat fixed to the jamb and embedded in masonry with PCC 1:2:4. Windows 1 Mtr. high will have minimum of 6 number holdfasts. Each holdfast will be fixed to the frame with 3 Nos. of 5 cm. long galvanized iron screws. In case the frames are to be fixed to RCC members suitable rawl plugs shall be used as directed by the Architect.

5.7 Flush Doors

All flush door shall be solid core as specified. It shall conform to the relevant specifications to IS: 2202 and shall be obtained from ISI approved manufacturers. The finished thickness of the shutter shall be as mentioned in the items. The E.I.C shall of the pattern and colour approve face veneers and an approved sample shall be deposited with the E.I.C fro reference. The solid core shall be wood laminate prepared from battens of well-seasoned and treated good quality wood having straight grains.

5.8 Plywood

Plywood shall be best quality closed grained suitable for veneering, painting or bonded with plastic laminate. It shall be resin bonded and of waterproof and boil proof (WBP) brand. Exposed edges shall be finished with an edge strip of solid teakwood.

5.9 Chipboard

Wood chipboard shall be particleboard made from wood particles bonded with a synthetic resin (Phenol Formaldehyde). Chipboards shall not be used externally or in damp surroundings. Only approved brand by the Architect shall be used in the works.

5.10 Glass and Glazing

The contractor shall furnish all labour, material and equipment required to complete the installation of all glass and related items. A glass shall be of the type, quality and substance specified in the schedule of quantities. The contractor shall cut glass sizes by field measurements or dimensions of the approved shop drawings. The responsibility for correct glass sizes shall rest with the contractor. No cracked, chipped or disfigured glass shall be accepted and the contractor shall replace all breakages or faulty installation without cost to the Employer.

The glass shall be set in wood or metal glazing strap and metal sash with elastic glazing and compound. The glass shall be beaded first and so installed as to achieve a completely watertight result. The opaque glass where called for shall be set with the smooth surface outside. At the completion of the work all glass shall be thoroughly cleaned of paint and other marks removed. Any cracked, scratched, chipped or otherwise defective glass shall be removed and replaced without extra cost to the Architect.

Aluminum Powder coated Windows/Doors:

Providing & Fixing Powder quoted Aluminum 2.00mm thick partition frame 75mm x 40mm channel for frame . The Aluminum partition/ door shall have half glass obscured and half 12mm thick novapan pre-laminated board and half 5mm thick glass. The cost shall include cost of angle clips, neoprene gaskets, rubber beading etc including door handles, tower bolt and door closer. The gap between Aluminium partition and wall/ ceiling shall be properly sealed with white cement or light weight angle etc as per instructions of Engineer-In-Charge.

5.11 Hardware

The contractor shall procure all the hardware as specified in the schedule. The rate shall include for making chases to receive the hardware and also the cost of approved screws, nails, champs etc. The fixing shall be done in
the best workmanship like manner and in accordance with that employed for fixing hardware. Any damage to the joinery or the hardware shall be made good at no extra cost to the Employer.

6 METAL WORKS

6.1 Metal Casements

Frames of casements shall be of hot rolled sections. Both fixed and open able frames shall be constructed of sections, which have been cut to length, mitered and electrically flush but welded at corners. Subdividing bar and it shall be tennoned and riveted in to the frames. All frames shall have the corners welded to a true right angle and welds shall be neatly ground down smooth. Couplings, mullions, transom and weather bar shall be provided as directed by the Architects. Outer frames shall be provided with fixing screws and lugs shall be used for fixing the frame to the masonry. Mastic cements shall be used for making the joints watertight.

Hinges shall be of the strong projecting type. If directed friction type hinges shall be used in which case windows shall not be fitted with peg stays. Projecting type hinged shutter shall be fitted with bronze or brass peg stays 30 cms long with pegs and brackets welded / riveted to the frame. All windows shall be provided with handles of brass or bronze, fixed with a square head bolt, which can be tightened if required after the glazing has been fitted. Top bung ventilators shall be fixed with plain hinges, riveted or welded to the fixed frame. A brass or bronze peg stays 30 cms. long as in windows shall be provided.

Centre hung ventilators shall be hung on two pairs of brass or lead-tin-bronze cup pivots, riveted to the inner and outer frames of the ventilators, to permit the ventilators to swing through an angle of approximately 85º. The opening position of the ventilator shall be so balanced to keep it open at any desired angle under normal weather conditions. A bronze spring shall be fitted in the centre of the top bar of the ventilator for operation of the ventilator. This spring catch which shall be closed in to a mild steel iron catch place, riveted or welded to outside of the outer ventilator bar. A brass chord pulley wheel in mild steel or malleable iron brackets shall be provided along with the chord eye.

The windows and ventilators shall be painted with approved paint. All the steel surface shall be thoroughly cleaned free of rust, scale or dirt and mill scale by picking or phosphating and before erecting painted with the coat of approved primer and after erection painted with two finishing coats of synthetic enamel paint of approved shade and quality. Glazing of special thickness shall be provided on the outside of frames and unless shall be used for fixing glasses. Special metal sash putty of approved make shall be used as directed.

6.2 Rolling shutters

Rolling shutters shall be in extruded galvanized sections of approved make, type and finish. These shutters shall be complete with locking arrangements, hoods, and guides, pulling devices, springs and other accessories. Wherever specified mechanical device shall be fixed for easy operation of the shutters.

6.3 Weld Mesh:

Providing and fixing of weld mesh partition along with door by making use of ISA 50x 50 x 6 angle frame all-round and every 1 to 1.2 m centre to centre grid forming. Also, make use of MS flats 40mm x 6mm for making/ strengthening the weld mesh of 50x25 mm size shall be used for partition and door. The door shall be 1.2x 2.1m by making use of 50x50x6 mm, 40x6 flats and 50x25mm weld mesh as stated above. The door shall have locking facility (heavy aldrop – Industrial type). The cost also includes providing & fixing hold fast (nut & bolt system as per drawing enclosed.. The cost of chipping walls, grouting with (1:2:4) concrete and plaster finishing after fixing. There should not be any gap between weld mesh frame and walls. Further, weld mesh shall be dismantling type fitted within nut and bolt system. The cost includes one coat of red-oxide and two coats of silver paint etc complete.

7 FLOORING

7.1 General

All flooring shall be laid to the best practice known to the trade. The flooring shall be laid to the level except where slopes are called for on the drawings in which case the slopes shall be uniform and so arranged to drain in to the indicated outlets.

Particular care shall be exercised to ensure that all flooring, skirting and dado are perfectly matched for colour and finish. Sufficient extra tiles (not less than 5%) shall

be cast / ordered to ensure an adequate supply of matched floor tiles. The contractor shall furnish for approval by the Architects, samples of each type of floor finish.

7.2 Cement concrete flooring (IPS flooring)

Indian patent stone flooring shall be 40 mm or of thickness specified and laid in two layers, bottom layer 32mm thick or as specified in 1 part of Portland cement, 2 parts of sand and 4 parts of crushed stone aggregate 10 mm down well graded machine mixed with not more than 5.5 gallons of water for each bag of cement and top layer 8mm thick in one part of Portland cement, 2.5 parts of selected crushed stone ships 6mm down with just enough sand maximum part to make workable mix, machine mixed with not more than 5 gallons of water. Top layer to be laid before the bottom layer has hardened. Flooring shall be laid in squares or bays as directed and each layers shall be well compacted by ramming with heavy teak wood flats. The top shall be brought to a smooth and even surface free from blemishes and finished smooth by steel trowel ling. After the concrete surface has hardened sufficiently to prevent dislodgement of aggregates, the patent stone shall be polished with No. 1, 2 & 3 polishing stone. The flooring shall be kept wet for seven days for curing.

Where Ironite topping is specified in the “Schedule of Quantities” the bottom layer shall be 28mm thick (instead of 1.1/4”) as described above and the 12 mm thick top layer shall be mixed with Ironite as per manufacturers specification and finished fair.

7.3 PVC flooring:

Providing and fixing 2.5mm thick PVC vinyl flooring plain coloured , marbled mosaic or mottled finish using DUNLOP or equivalent rubber based adhesive. The 2.5mm thick PVC vinyl floor shall be in rolls and the joints shall be stitched/ pasted neatly without air gaps or bubbles. The floor shall be leveled by applying POP before applying adhesive and pasting the PVC vinyl sheets. The vinyl floor shall be free from undulations, folding, air bubbles etc. The cost also includes the cost of pasting 6” border by 2.5mm thick vinyl sheets on walls. Rates include for all cutting and waste and work in all position, as well as in narrow width.

8 PLASTERING AND PAINTING

8.1 General

8.1.1 All Plaster work shall be of the best workmanship and in strict accordance with the dimensions of the drawings. All Plastering shall be finished to true levels including plumbs, without imperfections, and square with adjoining work. It shall form proper foundations for finishing materials such as paint etc., Masonry and concrete surface to which plaster is to be applied shall be clean, free from efflorescence, sufficiently rough and keyed to ensure proper bond.

8.1.2 Wherever directed all joints between R.C.C frames and masonry walls, shall be expressed by a groove in the Plaster. This groove will exactly coincide with the joint

beneath. At the corners of all windows and doors or other openings and wherever instructed, 24 gauge expanded galvanized metal mesh strips 200mm wide 450mm long shall be placed diagonally to prevent Plaster cracks.

8.1.3 Where grooves are not called for, the joint between concrete and masonry in filling shall be covered by 24 gauges expanded galvanized metal strips, 200mm wide installed before plastering. The Contractor shall supply all necessary labour, material, tools and scaffolding necessary for the completion of the work detailed. He shall be responsible to take proper precautions to all works from damage. Any work rejected through non-compliance with the specifications or damaged work shall be removed and replaced at the expense of the contractor.

8.1.4 All chasing, installation of conduits, boxes, etc., shall be completed before any Plastering is commenced on a surface. Chasing or cutting of Plaster will not be permitted. Broken Comers shall be cut back less than 150mm on both sides and patched with plaster of Paris as directed. All corners shall be rounded to a radius. Contractor shall get samples of each type of Plasterwork approved by the Architect.

8.1.5 The materials used for Plastering shall be proportioned by volume by means of gauge boxes. Alternatively, it may be required to proportion the materials by weight.

8.2 Plaster Work

8.2.1 The joints in the brick work, concrete blocks, shall be raked to a depth of 15m while the masonry is green. Concrete surfaces to receive plaster shall be suitably roughened. All walls shall be washed with water and kept damp for 10 hours before Plastering.

8.2.2 The interior Plaster unless specified otherwise shall be average of 15mm thick on walls and minimum 6mm thick for the ceiling. The finished texture shall be as approved by the Architect/EIC. The mix for Plaster unless otherwise specified, shall be one part Cement and six parts sand, to walls and one part Cement 4 parts sand to ceiling.

8.2.3 The interior Plaster upto 15 mm thick shall be applied in one coats. The surface shall be trowel led smooth to an approved surface. All Plasterwork shall be kept continuously wet for seven days.

8.2.4 Until unless specified the external Plaster shall be of two coats on an overall thickness of minimum 20 mm. Preparations of walls to receive Plaster- work shall be the same as in internal Plaster. Backing coat shall be 14 mm thick with Cement mortar 1:4 and finishing coat shall be with Cement mortar 1:4. Backing coats shall be combed on wet surface to form keys for finishing coat.

8.2.5 For sand faced cement Plaster 20 mm thick will be done in two coats .Base coat in 1:4 cement sand mortar in 1:4 & the finishing coat shall be in Cement mortar 1:4, sand used shall be properly graded and washed so as to give a grained texture. Finishing Plaster coat shall be 8mm thick, uniformly applied and surface finished with special rubbing by sponge pads and other tools and recommended by the Architect.

8.2.6 For rough cast Plaster, the backing shall be floated with 3mm thick cement mortar 1:4 with fine sand, spread in small areas not exceeding 2 Sq.mt. at a time. While this coat is still wet, the rough cast containing a mixture of 1 part of Cement, 2 Parts of fine sand and 1 part of gravel, 3 to 6mm size, shall be dashed on the floating coat, to a uniform thickness of 15mm thick and finished even.

8.3 WHITE WASHING

8.3.1 White washing with Lime

The wash shall be prepared from fresh stone lime (Naral / Patna or Dehradun quality). The lime shall be thoroughly slaked on the spot, mixed and stirred with sufficiency to water to make a thin cream. This shall be allowed to stand for a period of 24 hours and then shall be screened through a clean coarse cloth 40gm of gum dissolved in hot water, shall be added to each 10 entire decimeters of cream. The approximate quantity of water to be added in making hot cream will be 5 liters of Water to 1 kg. of lime. Indigo (Neel) up to 3 gm. Per Kg. of lime dissolved in water, shall then be added and wash stirred well. Water then shall be added at the rate of about 5 liters per Kg. of lime to produce a milky solution.

8.3.2 Preparation of Surface

Before White washing is started, the surface shall be thoroughly brushed free from mortar droppings and foreign matter. Any unevenness shall be made good by applying putty made of plaster of Paris mixed with water on the entire surface including filling up the undulations and then sand papering the same after is its dry.

8.3.3 Application

The White wash shall be applied with brushes to the specified number of coats. The operation for each coat shall consist of a stroke of the brush given from top downwards, another from bottom upwards over the first stroke, and similarly one stroke horizontally from the right and another from the left before it dries up.

8.3.4 Rate

The rate shall include cost of all materials, tools, and labour involved in all the operations described above including scaffolding, protecting doors, windows, floor etc. including taxes, from splashes and drooping .

8.4 White Washing and whiting

Preparation of mix: Whiting (ground white chalk) shall be dissolved in sufficient quantity of warm and thoroughly stirred to form thin slurry which shall then be screened through a clean coarse cloth. Two Kg. of gum and 0.4 Kg. of Copper Sulphate dissolved separately in hot water shall be added for every cum of the slurry which shall then b diluted with water to the consistency of milk also as to make a wash ready for use.

Other specifications described in above shall be applied in this case also.

8.5 Colour Washing

The mineral colours not affected by lime, shall be added to white wash. “Indigo shall however, not be added. No colour wash shall be done until a sample of the colour wash of the required tint of shade has been got approved from the Architect. The colour shall be of even tint or shade over the whole area.

A priming coat of white wash with lime or with whiting shall be applied. Two or more coats shall then be applied on the entire surfaces till it represents a smooth and uniform finish.

Other specifications described in above shall apply in this case also.

8.6 Distempering

Dry distemper of required colour and (IS: 427 – 1965) of approved bran and manufacture shall be used. The shade shall be got approved from the Architect before application of the distemper. The dry distemper colour as required shall be stirred slowly in clean water using 6 deciliters.

8.7 Synthetic enamel paint

8.7.1. Manufacture of paints, mixing of paints etc., shall be generally according to the Indian standard codes of practice.

8.7.2. In the event of conflict between this technical specification for painting and the painting manufacturer specification, this conflict should be immediate brought to the notice of the Engineer. Generally cases of such conflicts, manufacturers specification recommendation shall prevail.

8.7.3. General compatibility between primer and finishing paints shall be certified by the paint manufacturer supplying the paints.

8.7.4. Before the contractor buys the paint in bulk, the contractor shall obtain sample of paint and establish “Control Areas of Painting”. On control area, surface preparation and painting shall be carried out in the presence of manufacturer of paint shall be carried out in the presence of manufacturer of paint and owners. Control area serves as specimen of painted surfaces, for observing and recording quality and performance of paint.

8.7.5. Samples of paint shall be got tested from the recognized testing laboratories to establish quality of paint w.r.t. (i) viscosity (ii) adhesion / bond of paint to steel surfaces (iii) adhesion / stimulated salt spra test (iv) chemical analysis, percentage of solids be weight (v) normal wear resistance against exposure to acid fumes, and such other tests as considered necessary by the Consultants.

8.7.6. Whole system of paint shall preferably be obtained from the same manufacturer.

8.7.7. The painting material in containers without labels or with illegible labels shall be rejected, removed from the area and shall not be used.

8.7.8. Thinners wherever used shall be those recommended by the paint manufacturers, and shall be obtained in containers with manufacturers name and brand name of thinner. Legibly printed, failing which the thinner is liable to be rejected and shall not be used.

8.7.9. Area, which become in accessible after assembly shall be painted before assembly after cleaning the surfaces and specified.

8.7.10. Where shop primer painting is scratched, abraded or damaged, the surfaces shall be thoroughly cleaned using emery paper and power driver wire brush wherever warranted or as directed by the Engineer, and touched up with corresponding primer. Touching up paint shall be matched and blended to eliminate conspicuous marks.

8.7.11. If more than 50 percent of the painted surface of an item requires repair the entire item shall be mechanically cleaned and new primer coats followed by finishing coats shall be applied as per painting specification.

8.7.12. All field – welded areas on shop painted items shall be mechanically cleaned including the weld area proper, adjacent areas contaminated by weld spatter or fumes & areas where existing primer / intermediate / finish pain is burnt. Subsequently, new primer and finishing coats of paint shall be applied as per painting specification.

8.7.13. Application of paint shall be spraying or brushing as per IS : 486 – 1983 and IS : 487 – 1985 and in uniform layers of 50 percent over lapping strokes by skilled painters. Painting shall not be done when the temperature is less than 5 degree C or more than 45 degree C and relative humidity is more than 85% unless manufacturer's recommendations permit. Also painting shall not be done in frostily or foggy weather. During application, paint agitation must be provided where such agitation is recommended by the manufacturer.

8.7.14. Paint shall be applied at paint manufacturer's recommended rates. The number of coats shall be such that the minimum dry film thickness specified is achieved. The dry film thickness (DFT) of painted surfaces shall be checked with an ELCOMETER or measuring gauge to ensure specified DFT.

8.7.15. The inside surface of gutter which come in contact with rain water shall provided with 2 finishing coats of wear resistant, bit mastic paint of minimum DFT 75 microns, in addition to 2 primer coats of red oxide zinc chromate in alkyd medium corresponding to IS : 2074 – 1992 or 2 primer coats of epoxy based red oxide zinc chromate / epoxy based red oxide zinc phosphate of minimum DFT 25 microns per

coat, as given in specification and drawings. Other structures shall be painted as per the painting system mentioned in the drawings or schedule of items.

8.7.16. All structures shall receive one coat of primer paint at shop after fabrication before dispatch after surface preparation has been done as per requirements. Firm coat of primer paint shall be applied not later the 2-3 hours after preparation of surfaces, unless specified otherwise.

8.7.17. Unless otherwise specified all structures after erection shall be given one coat of primer followed by the coats of finishing paint of approved colour and quality. The under coat shall have different tint to distinguish the same from the finishing coat. Edges, corner crevices, depressions, joints and welds shall receive special attention to ensure that they receive painting coats of the required thickness. Machine – finished surfaces shall be coated with white lead before shipment or before being put out into the open air.

8.7.18. Parts of steel structures, embedded in concrete, shall be given a protective coat of Portland cement slurry immediately after fabrication after surfaces of this part is thoroughly cleaned from grease, rust, mill scales etc., no paint shall be applied on this part.

8.7.19. Zinc-rich primer paints, which have been exposed several months before finishing cost is applied, shall be washed down thoroughly to remove soluble zinc salt deposits. In similar circumstances, the surfaces of paint based on epoxy resin should be abraded or lightly blast cleaned to ensure adhesion of next coat.

8.7.20. Surfaces which cannot be painted but require protection shall be given a coat of rust inhibitive grease according to IS:958 – 1975 or solvent deposited compound according to IS: 1153 – 1975 or IS : 1674 – 1960.

8.7.21. The proposed make quality and shade of the paint shall have approval of the Owner / Engineer.

8.7.22. Choice of primer paints shall be made depending upon the requirement. Accordingly, primer of suitable type may be chosen from the following, all subject to approval by the Engineer / Consultant.

i. Red oxide zinc chromate (Alkyd medium) conforming to IS : 2074 – 1992
ii. Aluminium zinc oxide
iii. Chemical resisting paints for structures exposed to corrosive atmosphere, acid fumes, chemical action etc.,

The primers recommended are as follows:

a. Epoxy based zinc chromate / zinc phosphate
b. Polyurethane paint
c. Chlorinated rubber paint

iv. Coal tar pitch and Bitumen paints – high build coal tar pitch or bitumen paint (cold applied) yielding coats about 0.25mm thick shall be used. High build coat tar pitch shall be preferred to bitumen paint.

v. Metal coating
a. Hot dip galvanizing
b. Sprayed zinc
c. Sprayed aluminum
vi. Heat resistant primers for structures subject to temperature above 150 degrees centigrade.

The paints shall be of reputed make like Berger / Asian paint or as approved by the Engineer / Consultant

FINISHING PAINTS

8.7.23 Choice of finishing paint shall be done from the following paints (unless specified otherwise) depending upon the environment to which steel structures are exposed, all subject to approval by the Engineer / Consultant.

i. Synthetic enamel of approved colour as per IS : 2932 – 1974
ii. Aluminium paint as per IS : 2339 – 1963
iii. High build coat tar pitch or bitumen paint (Cold applied)
iv. Chemical resisting paints
a. Epoxy based finishing paints
b. Chlorinated rubber based paint
v. Heat resistant finishing paint for structures subject to temperature above 150 degree C. Silicon based Aluminium the paints shall be of reputed make like Berger / Asian paint or as approved by the Engineer / Consultant

For all painting work on structural items, the unit of measurement shall be metric ton. The calculation of weight for painting is similar to that for structural works mentioned above.

9. Water Proofing :

1. Providing & Water proofing plaster in 20mm thick with 1st coat of 12mm thick in rich mortar C.M(1:6)& 2nd coat 8mm thick in CM(1:4) in terraces including void sealing with pressure grouting with proprietary chemical max at 20 points at every 0.6m to 1.0m centre to centre both ways including mixing of water proofing compound(at all heights & levels and as per instruction of Engineer-in-Charge)
2. **Specialised Poly Urethane Sealant Treatment to the terrace cracks**:

a. Cleaning of the surface
b. Making 'V' groove
c. Application of one coat of crystalline water proofing with – ROOFEX/ZORIPEX XL(Armstrong/PMCC) duly pre wetting of the groove with water.

d. Filling of the groove with single component high flexible polyurethane sealant – ROOFSEAL PU/ ZORISEAL PU (Armstrong/ PMCC) to a width and depth of 6mm to 10mm.

3. Specialised coving Treatment to the terrace:

a. Chipping of the existing plastering and flooring upto 150mm.
b. Cleaning of the surface from dirt, dust and other contaminations.
c. Application of one coat of SBR latex based acrylic polymer bonding agent – ROOFBOND SBR/ZORIBOND SBR (Armstrong/ PMCC) mixing with cement as manufacturers specifications.
d. After the bond coat application, providing and laying of Polymer concrete coving at following 900 junctions for wall to floor upto 9" at 1:2:4 ratio mixing with acrylic polymer compound – ROOFCRETE AR/ ZORICRETE CMG (Part – I, liquid form)(Armstrong/PMCC) at 500ml per bag of 50kgs cement , with neat finish.
e. Application of two coats of acrylic polymer elastomeric cementitious water proof coating with – ROOFCOAT/ZORICOAT (Armstrong/PMCC) mixing with cement as per company specification.

4. Specialised APP modified membrane treatment to the terrace:

a. Cleaning of the surface
b. Repairing of the crack if any with PU sealant.
c. Providing and application of one coat of bituminous primer.
d. Providing and making U shape groove on the wall by chipping existing plaster surface.
e. Supply and applying 3mm thick 3.5 kgs/Sq.m. APP membrane having polyester reinforcement and mineral slate top finish with 10CM overlaps and fushing the overlaps and joints by thermo fusion process into the groove walls.
f. Providing and sealing of the groove with polymeric cement mortar with neat finish.

5. BRICK BAT COBA WATER PROOFING

Providing chemical waterproof treatment with Brick bat coba & chemical cement mortars to exposed RCC roof slab surfaces to required slopes mixed with – Zoriproof (100 ML Per Bag of 50 Kgs Cement) waterproofing chemical compound, laid over roof slab and brickbat coba treatment in chemical cement mortar 80 mm thick at the centre and 60 mm thick at the edges finished smooth with a floating coat of chemical mixed cement mortar as per the manufacturer specification including cost and conveyance of all materials like sand, chemical –Zoriproof (100 mL Per Bag of 50 Kgs Cement) waterproofing compound, water etc., to site, including seigniorage charges and operational, incidental, and labour charges for mixing mortar, laying, lift charges, rendering smooth curing including rounding off junctions of wall and slab etc., complete for finished item of work (with a guarantee of 10 years)

10. BRIEF SPECIFICATION FOR ALUMINUM COMPOSITE PANEL (ACP)

Providing and fixing Aluminum composite paneling using 4mm thick (Aluminum sheet shall be coated with PVDF coating). The Aluminum composite panels are fixed to MS box section 50X25 mm. Panel shall be fixed using self tapping screw and joints shall be sealed with coloured pigment sealant(colour as per choice of Engineer-In – Charge) and the panel shall be water proof. The performance of ACP shall be guaranteed for 10years. The thickness of Aluminum sheet in the sand witched sheet shall be 0.5mm. Section of panel shall be open for cleaning/inspection

The bottom of the aluminum composite paneling shall be closed with Bird mesh using 50 X50 X10 gauge weld mesh supported on network of 40X40X5 mm angles. All the angles/mesh shall be coated with cone coat of red oxide and two coats of oil paint.

11. GYPSUM BOARD FALSE CEILING:

Providing &fixing 12mm thick Gypsum board false ceiling by supporting metal studs and adjustable 6mm MS hangers etc. The cost includes cost of joining with Gypsum tape &finishing as a seamless surface with P.O.P, and one coat of primer suitable for Gypsum board and finishing with two coat of oil bound distemper. The cost also includes providing & fixing Gypsum ceiling borders and finishing to match the ceiling, making necessary cut-outs or openings for light fixtures etc, complete.

12. Wall Panelling:

Providing & fixing wall panelling with block boards, grade 2 quality interior grade, decorative type with decorated face veneer on one face (19/20 thick) also including door with all fitting, godrej knob, hinges, tower bolts. Fixed to wooden timber frame soft wood 2nd class 25 mm thick planed one side with butt joints and fixed with nuts/screws supplied and fixed. Including Anti termite treatment to wooden timber frame complete. The cost also includes the cost of Providing & Pasting 4mm Teak wood veneer including 2 or 3 coats of polishing ,complete.

13. GLAZED DOORS:

Providing & fixing double leaf frameless glazed door with 12mm thk TOUGHENED glass, all sides edge polished to be fixed on patch fittings of the approved make. Cost of the door to be inclusive of pre-approved ozone make patch fitting, floor spring, patch lock, handles of 32 x 1300 matt finish, handles to be fitted horizontally / vertically as per instructions & patch fitting(s) lock(s), etc., all complete as per design.

14. WOODEN CUPBOARDS:

Providing & making wooden cupboards with 18mm water proofed pre-laminated (both sides) MDF wood as per instructions of Engineer-in-Charge. The cost includes providing & Fixing all hardware etc as directed by EIC.

15. PRE COLOUR LAMINATED SHEETS:

Providing Pre colour coated 26 gauge galvolume sheets at any height & levels in repairs as per directions of EIC and as per maintenance specifications(repair works)

16. SUN CONTROL FILM:

Providing & Pasting Sun control film on the sides of glass of windows(garware polyester – 38 micron tinted) as per instructions of Engineer-In-Charge.at any height and level

LIST of material to be used in this construction

Sl. No	Description of Material	Approved Brands
1	Reinforcement(TMT bars)	VSP/TATA/SAIL/ JINDAL/TATA TMT bars conforming to IS codes to be approved by MIDHANI.
2	Structural Steel	VSP/SAIL/JINDAL/TATA
3	Weld electrodes	ESAB or D&H or MODI or ADOR or ADVANI
4	Enamel paints	Asian/Berger/Nerolac
5	Acrylic Emulsion	Asian Paints/Berger Paint/ Nerolac Paints.
6	Cement based paint	Snowcemplus/ACE
7	Cement	53 Grade O.P.C confirming to IS 12269 to be approved by MIDHANI.
8	Shuttering	a) Plywood shuttering confirming to IS 4990 b) Steel plate shuttering as per relevant IS codes to be approved by MIDHANI.
9	SAND	Good River sand –Zone-III/IV- VIJAWADA/BODHAN/KARIMNAGAR
10	Bricks	36 kg/Sq.cm
11	RMC	RMC confirming to IS 4926 to be approved by MIDHANI.
12	Water Proofing products	Sika/Roofmate/Lyod/Shalimar

CHECK LIST OF DOCUMENTS TO BE ENCLOSED BY CONTRACTOR IN TECHNICAL BID for "ANNUAL MAINTENANCE CONTRACT FOR MAINTENANCE & MINOR WORKS AT MIDHANI

SL. NO	DESCRIPTION OF PRE-QUALIFICATION CRITERIA	YES ENCLOSED	NO-NOT ENCLOSED
1.	EMD (Rs 1.00 lakhs)		
2.	Latest bank solvency for Rs 10 lakhs not older than one year from the date of release of this advertisement.		
3.	Details of ESI/PF registration.		
4.	Details of Similar Experience certificate in the last 7 years.		
	A 3 similar completed works each costing not less than the amount equal to 40% of the estimated cost. OR B 2 similar completed works each costing not less than the amount equal to 50% of the estimated cost. OR C one similar completed works each costing not less than the amount equal to 80% of the estimated cost. PS: - 1)Experience certificates shall be duly Self Attested		
5.	Specified minimum requirements: The contractor shall have similar experience in maintenance works including labour oriented works.		
6.	Details of registration of firm in MIDHANI or other Government organization. Government/ Public Sector Unit/ Large Private Organizations with Certificate if any.		
7.	PAN number/ GIR number issued by I.T authority		
8.	GSTN Registration and details of VAT clearance certificate not older than 6 months from the date of advertisement.		
9.	Latest income tax clearance certificate or 3 years IT returns or 3 years audited balance sheets duly attested by Charted Accountant.		
10	Average Annual Turnover during the last 3 years, ending 31st March 2016, should be at least 30% of the approximate estimated cost of the work.(Audited financial statement duly attested shall be attached).		
11.	RTGS details (Bank details for e-payment)		

Declaration by contractor

1. I have seen the site and understood the full scope of work viz Specifications, drawings etc.
2. I have noted the changes (if any) as per pre-bid meeting and understood the scope of work and I agree to enclose pre-bid meeting minutes along with technical bid, failing which MIDHANI is empowered to reject or consider as per decision of MIDHANI Management. I shall not claim any extra due to self misunderstanding of drawings, specifications etc, what so ever.
3. I agree to return all the documents along with this offer.
4. Any information provided in the bid if found to be false at any time, MIDHANI is empowered to take action against me as per the MIDHANI rules in VOGUE.

CONTRACTOR
SIGNATURE AND SEAL

Note:-The tender application and related documents will be assessed to demonstrate convincingly that the applicant possesses the required experience, together with the technical, administrative and financial capability to perform the Contract and has good performance record in the relevant area. Applicants will not be considered if they have a poor performance record such as: abandoning of works; not properly completing /defaulting contracts, inordinate delays in completing contracts; litigation history, financial failure, etc. Midhani reserves the right to approach its previous clients for the purpose of this Contract.