



एच एम टी लिमिटेड
(भारत सरकार का उपक्रम)
पूरक व्यापार विभाग
पिंजौर, हरियाणा - 134101
फोन / फैक्स : 91-1733-264049
ई-मेल : Estate@hmtlimited.com
वेब साईट : www.hmtindia.com

HMT LIMITED
(A Govt. of India Undertaking)
Auxiliary Business Division
Pinjore Haryana - 134101
Phone / Fax : 91-1733-264049
E-mail: Estate@hmtlimited.com
Website : www.hmtindia.com

Extension of Tender

Dated: 10.08.2021

With reference to Tender Notice dated 17.07.2021, the date of sale of Tender Forms is hereby extended up to 26.08.2021 and opening of Tender up to 27.08.2021 for the following work at HMT Limited, Pinjore, Distt. Panchkula (Haryana).

S. No.	Tender Enquiry No.	Name of work	Estimated Cost (Excluding GST)	Earnest Money (Rs)	Cost of Tender (Rs)	Completion Time
1.	HMT/ABDP/EST/TENDER/2021-22/ 01	Repair of Roads in HMT Township, Pinjore.	20,00,000.00	40,000/-	590/-	4 Months

Last Date of sale of Tender : **26.08.2021 up to 15.00 Hrs.**

Last Date of Submission of Tender : **27.08.2021 up to 12.30 Hrs.**

Opening of Tender : **27.08.2021 at 14.00 Hrs.**

1. Eligibility

- 1.1 Contractors working with HMT, Registered with CPWD, MES, Haryana PWD, HUDA and other State/Central Govt. Deptt / Board/Corporation etc. who have successfully executed works of similar nature and having P.F., ESI code and GST registration etc. are eligible.
- 1.2 The intending Tenderers shall submit the definite proof of registration certificates and list of works completed along with copy of work orders.

2. Purchase of Tender Document

- 2.1 The Tender Documents can be purchased from Estate Office located in AD-53, HMT Township, Pinjore during working hours at the cost of Rs. 590/- (Rupees Five Hundred Ninety Only) (Non Refundable) on or before due date and time.
- 2.2 Tender documents are also available on web site www.eprocure.gov.in. In case tender is down loaded from web, the cost may be remitted along with tender documents with Technical Bid.

3. Earnest Money

- 3.1 Earnest money of Rs. 40,000.00 (Rupees Forty Thousand only) in the form of Bank Draft in the favour of HMT Limited, Pinjore payable at Pinjore / Chandigarh must accompany the part – I (Technical Bid).
- 3.2 The Earnest Money would be returned to the unsuccessful tenderers after the contract is awarded to the Successful Tenderer.
- 3.3 In case of Successful Tenderer, the earnest money shall be adjusted against Security Deposit.
- 3.4 Tender without Earnest Money will be rejected.

4. Submission of Tender

Tender shall be submitted in two envelopes:

- 4.1 First envelope (Part-I) subscribed, as **“Technical Bid”** shall contain.

(i) Technical Bid Performa duly filled in and signed by the Contractor.

- (ii) Earnest Money in the form of Bank draft favouring HMT Limited Pinjore payable at Pinjore/Chandigarh.

P.T.O.

- (iii) Eligibility Documents.

- (iv) In case the tender documents are downloaded from website please attach DD/Bankers Pay Order in favour of HMT Limited Pinjore payable at Pinjore/Chandigarh OR pay the tender cost through any digital mode.

(iv).2 **Second envelop (Part-II)** subscribed as **“Commercial Bid”** shall contain schedule A,B,C,D&E duly filled and signed by the Contractor.

(iv).3 The envelopes of Technical Bid and Commercial Bid should be properly sealed along all joints with wax / tape duly filled in separate envelopes super scribing the Tender Enquiry No., Name of Work and Due Date of opening of the tender along with tenderer address on the left hand bottom of the envelope.

(iv).4 Both the envelopes of **“Technical Bid”** and **“Commercial Bid”** should be then put in a separate sealed envelope super scribed with the Tender Enquiry No., Name of Work and Due Date of opening of the tender along with tenderer address on the left hand bottom of the envelope.

(iv).5 Tenders received in envelopes not properly sealed along all joints will be rejected straightway. Also Tenders received with the Commercial Bid not sealed in separate envelopes will also be rejected.

(iv).6 The offer must reach on or before the due date and time,

(iv).7 Tender may please be dropped in the TENDER BOX placed at ABD Office (Old Tractor Spare Parts Building) Reception Area HMT Limited, Pinjore. Alternatively offers can also be sent by Registered Post/Courier Service on the following address:-

**AUXILIARY BUSINESS DIVISION
HMT LIMITED
PINJORE – 134101
DISTT. PANCHKULA (HARYANA)**

5. Opening of Tender

5.1 The tenders will be opened on the due date and time in the Estate Office in the presence of the tenderers who wish to be present.

(iv).2 On the due date only Technical Bids will be opened and date and time of opening of Commercial Bid will be intimated to the tenderer who will qualify the Technical Bid.

5.3 In case the due date is declared Holiday due to any reason next working day shall be the due date.

5.4 Tender not properly sealed and only stapled covers will not be accepted.

5.5 Tender received after due date and time shall not be accepted.

5.6 Incomplete, conditional and telegraphic tenders shall be out rightly rejected.

6. Validity of Offer

The tender submitted shall remain valid for acceptance for a period of Six months from the last date specified for receipt of tender.

7. In case of any query/clarification required by the tenderer before quoting, he can contact Dy. General Manager (Estate), HMT Limited, Pinjore on Phone no. **01733-298049** or mail **pnjr-estate@hmtlimited.com**.

HMT Limited reserves the right to accept or reject any or all the tenders without assigning any reason thereof.

**For HMT Limited
Authorized Signatory**

**A.K. Bhatia
Deputy General Manager (Estate)**



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TENDER NOTICE

Dated: 17.07.2021

Sealed tenders are invited on behalf of HMT Limited, Pinjore in two bid systems for the following Work at HMT Limited, Pinjore, Distt. Panchkula (Haryana).

S. No.	Tender Enquiry No.	Name of work	Estimated Cost (Excluding GST)	Earnest Money (Rs)	Cost of Tender (Rs)	Completion Time
1.	HMT/ABDP/EST/TENDER/2021-22/ 01	Repair of Roads in HMT Township, Pinjore.	20,00,000.00	40,000/-	590/-	4 Months

Last Date of sale of Tender : **09.08.2021 up to 15.00 Hrs.**

Last Date of Submission of Tender : **10.08.2021 up to 12.30 Hrs.**

Opening of Tender : **10.08.2021 at 14.00 Hrs.**

1. Eligibility

- 1.1 Contractors working with HMT, Registered with CPWD, MES, Haryana PWD, HUDA and other State/Central Govt. Deptt / Board/Corporation etc. who have successfully executed works of similar nature and having P.F., ESI code and GST registration etc. are eligible.
- 1.2 The intending Tenderers shall submit the definite proof of registration certificates and list of works completed along with copy of work orders.

2. Purchase of Tender Document

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3. Earnest Money

- 3.1 Earnest money of Rs. 40,000.00 (Rupees Forty Thousand only) in the form of Bank Draft in the favour of HMT Limited, Pinjore payable at Pinjore / Chandigarh must accompany the part – I (Technical Bid).
- 3.2 The Earnest Money would be returned to the unsuccessful tenderers after the contract is awarded to the Successful Tenderer.
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(i) Technical Bid Performa duly filled in and signed by the Contractor.

- (ii) Earnest Money in the form of Bank draft favouring HMT Limited Pinjore payable at Pinjore/Chandigarh.
 - (iii) Eligibility Documents.
 - (iv) In case the tender documents are downloaded from website please attach DD/Bankers Pay Order in favour of HMT Limited Pinjore payable at Pinjore/Chandigarh OR pay the tender cost through any digital mode.
- (iv).2 **Second envelop (Part-II)** subscribed as **“Commercial Bid”** shall contain schedule A,B,C,D&E duly filled and signed by the Contractor.
- (iv).3 The envelopes of Technical Bid and Commercial Bid should be properly sealed along all joints with wax / tape duly filled in separate envelopes super scribing the Tender Enquiry No., Name of Work and Due Date of opening of the tender along with tenderer address on the left hand bottom of the envelope.
- (iv).4 Both the envelopes of **“Technical Bid”** and **“Commercial Bid”** should be then put in a separate sealed envelope super scribed with the Tender Enquiry No., Name of Work and Due Date of opening of the tender along with tenderer address on the left hand bottom of the envelope.
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- (iv).7 Tender may please be dropped in the TENDER BOX placed at ABD Office (Old Tractor Spare Parts Building) Reception Area HMT Limited, Pinjore. Alternatively offers can also be sent by Registered Post/Courier Service on the following address:-

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5. Opening of Tender

- 5.1 The tenders will be opened on the due date and time in the Estate Office in the presence of the tenderers who wish to be present.
- (iv).2 On the due date only Technical Bids will be opened and date and time of opening of Commercial Bid will be intimated to the tenderer who will qualify the Technical Bid.
- 5.3 In case the due date is declared Holiday due to any reason next working day shall be the due date.
- 5.4 Tender not properly sealed and only stapled covers will not be accepted.
- 5.5 Tender received after due date and time shall not be accepted.
- 5.6 Incomplete, conditional and telegraphic tenders shall be out rightly rejected.

6. Validity of Offer

The tender submitted shall remain valid for acceptance for a period of Six months from the last date specified for receipt of tender.

7. In case of any query/clarification required by the tenderer before quoting, he can contact Dy. General Manager (Estate), HMT Limited, Pinjore on Phone no. **01733-298049** or mail **pnjr-estate@hmtlimited.com**.

HMT Limited reserves the right to accept or reject any or all the tenders without assigning any reason thereof.

**For HMT Limited
Authorized Signatory**

**A.K. Bhatia
Deputy General Manager (Estate)**



HMT LIMITED
AUXILIARY BUSINESS DIVISION
PINJORE-134101
DISTT. PANCHKULA (HARYANA)

TENDER ENQUIRY NO: HMT/ABDP/EST/TENDER/2021-22/01

PART - I

“TECHNICAL BID”

TENDER FOR
REPAIR OF ROADS
IN HMT TOWNSHIP, PINJORE

EMD TO BE ENCLOSED WITH TECHNICAL BID



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PART-I

'TECHNICAL BID'

TENDER ENQUIRY No.: HMT/ABDP/EST/TENDER/2021-22/01

NAME OF WORK: Repair of Roads in HMT Township, Pinjore

1	Name and Address of the Contractor/ Firm (in block letters)	
2	Address for Communication	
3	Telephone No.	
4	Mobile No.	
5	E-mail ID	
6	PAN NO. (copy to be enclosed)	
7	ESI Code No. (Copy to be enclosed)	
8	PF Code No. (Copy to be enclosed)	
9	GST No. (Copy to be enclosed)	
10	Income Tax Returns filed during last 2 years (Copy to be enclosed)	
11	Nature of Firm	
a)	Proprietorship or Partnership	
b)	Name of Prop./Partners/ Directors with address	
c)	%age of Ownership	

12	Present and previous Experience/Proof for having carried out similar works (Copies of Work Orders / Completion Certificates to be enclosed).	
13	Registration details (i.e. CPWD, PWD, MES, HUDA or any other Central/State Govt. Department/ Board/Corporation etc.) (Copies to be enclosed)	
14	Total No. of years of experience in this field.	
15	EMD details	
a)	DD No. & Date	
b)	Drawn on	
c)	Payable at	
d)	Name of the Bank	
e)	Value in Rs.	

I/We declare that we have read and understood the terms and conditions of the tender and after being satisfied with the information provided, we submit this bid without suppression of any materials facts and have provided true and correct information and we further understood that if any information provided by us is found to be false, our tender is liable to be rejected and EMD forfeited.

This is also to certify that the particulars furnished by me/us are correct and binding on me/us.

NOTE: PLEASE ENCLOSE COPY OF DOCUMENTS AND EXTRA SHEET WHEREVER APPLICABLE.

PLACE: _____

SIGNATURE OF PARTY/AUTHORIZED PERSON

WITH DATE AND SEAL

DATE: _____



HMT LIMITED

AUXILIARY BUSINESS DIVISION

PINJORE-134101

DISTT. PANCHKULA (HARYANA)

TENDER ENQUIRY NO: HMT/ABDP/EST/TENDER/2021-22/01

PART - II

“COMMERCIAL BID”

TENDER FOR

REPAIR OF ROADS

IN HMT TOWNSHIP, PINJORE



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(भारत सरकार का उपक्रम)
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hmt
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Tender Enquiry No.: HMT/ABDP/EST/TENDER/2021-22/01

SCHEDULE "C"

Name of work: - Repair of Roads in HMT Township.

Note: - Rate should be quoted both in words and figures.

S. No.	Particulars of work	Qty.	Rate	Unit	Amount
1.	Providing, laying, spreading and compacting stone soling of size 25mm to 63mm stone aggregate and stone dust as per WBM specifications in uniform thickness, hand packing, rolling with the road roller of minimum 8 to 10 tonne capacity in stages to proper grade and camber applying and brooming requisite type of screening/binding materials to fill up the interstices of coarse aggregate and compacting to required density under roads after removing old material & cleaning the existing surface etc. Complete as per specifications and directions of the Engineer Incharge.	100.00		Cum.	
2.	Providing and laying bitumen penetration Macadam with hard stone aggregate for 50mm compacted thickness using coarse aggregate of size 20 to 50mm graded @ 0.60 cum per 10 sqm key aggregate of size 12.5mm graded @ 0.15 cum per 10 sqm. With bitumen paving asphalt grade VG-10 @ 50Kg/10sqm spreading coarse aggregate with the help of self propelled/ tipper tail mounted aggregate spreader & applying bitumen by a pressure distributor & then spreading key aggregate with the help of aggregate spreader complete, including consolidation with the road roller of minimum 8 to 10 tonne capacity etc. Complete as per specifications and directions of the Engineer Incharge.	30.00		Cum.	
3.	Providing and laying 40mm thick bitumastic sheet with paving asphalt grade VG-10 heated and then mixed with solvent at the rate of 70 grams per kg of asphalt using stone chippings (60% with 12.5mm nominal size and 40% with 10mm nominal size) @ 2.60cum per 100sqm and coarse sand @ 2.60cum per 100 sqm of road surface and with bitumen @ 56kg/cum of stone chippings and @ 128kg/cum of sand including a tack coat of 0.50 Kg/Sqm with hot straight run bitumen, including consolidation with road roller of 8 to 10 tonne capacity etc. Complete as per specifications and directions of the Engineer Incharge.	825.00		Sqm.	
4(a)	Providing and laying 25mm thick bitumastic sheet with paving asphalt grade VG-10 heated and then mixed				

	with solvent at the rate of 70 grams per kg of asphalt using stone chippings (60% with 12.5mm nominal size and 40% with 10mm nominal size) @ 1.65cum per 100sqm and coarse sand @ 1.65cum per 100 sqm of road surface and with bitumen @ 56kg/cum of stone chippings and @ 128kg/cum of sand including a tack coat of 0.50 Kg/Sqm with hot straight run bitumen, including consolidation with road roller of 8 to 10 tonne capacity etc. Complete as per specifications and directions of the Engineer Incharge.	3500.00	Sqm.
4(b)	Providing and laying 25mm thick premix carpet surfacing with paving asphalt grade VG-10 heated and then mixed with solvent at the rate of 70 grams per kg of asphalt using 2.25cum and 1.12cum of stone chippings of 13.2mm and 11.2mm size respectively per 100 sqm and 52 kg and 56 kg of hot bitumen per cum of stone chippings of 13.2mm and 11.2mm size respectively, including a tack coat of 0.50 Kg/Sqm with hot straight run bitumen, including consolidation with road roller of 6 to 9 tonne capacity etc. Complete as per specifications and directions of the Engineer Incharge.	1850.00	Sqm.
5.	Providing and laying seal coat of premixed fine aggregate (passing 2.36mm and retained on 180 micron sieve) with bitumen using 128 kg of bitumen of grade VG-10 bitumen per cum of fine aggregate and 0.60cum of fine aggregate per 100sqm of road surface, including rolling and finishing with road roller etc. Complete as per specifications and directions of the Engineer Incharge.	2230.00	Sqm.
6.	Providing and laying at or near ground level factory made kerb stone of M-25 grade cement concrete in position to the required line, level and curvature, jointed with cement mortar 1:3 (1 part of cement & 3 parts of coarse sand by volume), including making joints with or without grooves (thickness of joints except at sharp curve shall not to more than 5mm), including making drainage opening wherever required etc. Complete as per specifications and directions of the Engineer Incharge.	12.00	Cum.
7.	Providing and filling earth in road sides in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering etc. Complete as per specifications and directions of the Engineer Incharge.	45.00	Cum.

Total Amount: - Rs.

Add GST @

Grand Total: - Rs.

**Signature of the Contractor
with date and seal**

Deputy General Manager (Estate)



HMT LIMITED
PINJORE-134101
DISTT. PANCHKULA, HARYANA

Tender Enquiry No.: HMT/ABDP/EST/TENDER/2021-22/01

SCHEDULE (D)

Name of work: - Repair of Roads in HMT Township, Pinjore

SUPPLY OF MATERIAL

1. All materials including cement shall be supplied by the contractor.
2. The consumption of cement shall be as per Delhi Schedule of Rates.

**Signature of the Contractor
with date and seal**

Deputy General Manager(Estate)

Tender Enquiry No.: HMT/ABDP/EST/TENDER/2021-22/01

hmt	<u>DETAIL OF PAYMENT AND PENALTY</u>
SCHEDULE (E)	
Name of Work: - <u>Repair of Roads in HMT Township, Pinjore</u>	
1.Security deposit to be deposited before start of work	5% of the Value of Contract.
2.Date of commencement of work	Within 15 days from the date of issue of work order.
3.Date of Completion	Within 4 month from the date of start of work.
4. Liquidated damages	0.1% of the value of contract per day maximum up to 5% of the award value.
5a) Retention from on account payments from running bill b) Retention from final bill c) Release of 2.5% retention amount	10% of the value of work done less security already deposited. 2.5% of the value of work done. After the expiry of defect liability period.
6. Defect liability period	One year from the date of completion of work.
7.Value of work for honouring the Payment Certificate	Rs. 5,00,000.00
8.Terms of Contract	As per schedules A, B, C, D & E work order and other relevant papers attached with the tender.

**Signature of the Contractor
with date and seal****Deputy General Manager (Estate)**



Tender Enquiry No.: HMT/ABDP/EST/TENDER/2021-22/01

Tender Documents (Schedule A)

Name of Work: _____

Date of Opening: _____

Name of Contractor: _____

ESTATE DEPARTMENT



HMT LIMITED

PINJORE-134101

DISTT. PANCHKULA, HARYANA

Earnest Money of Rs. _____

Paid Vide _____

**The General Manager,
Auxiliary Business Division,
HMT Limited,
Pinjore 134101**

Dear Sir,

I / We hereby undertake the execution of several works required to be done in the erection and completion of (Name of Work) _____ HMT Pinjore in accordance with the terms, conditions rates, drawings and specifications etc. as stated in the documents attached , to your entire satisfaction. I / We also undertake to execute an agreement in furtherance of our understanding as and when required of us and shall complete the work within _____ months from the date of commencement of work.

In witness thereof I / We set my / our hand seal this _____ day of _____ 2021

DOCUMENTS ATTACHED TO THE TENDER _____ No of sheets

- | | |
|--|---|
| 1. Schedule 'A' (General Conditions) | : |
| 2. Schedule 'B' (Specifications) | : |
| 3. Schedule 'C' (Bill of Quantities) | : |
| 4. Schedule 'D' (Material Issue) | : |
| 5. Schedule ' E' (Payment and Penalty) | : |

Total

Name of the Contractor with

Full Address:

Signature of the Contractor

**HMT LIMITED PINJORE
(ESTATE DEPARTMENT)
SCHEDULE 'A'**

(GENERAL CONDITIONS OF CONTRACT)

1. Interpretation Clause: In these general conditions and in the specifications attached:

- a) The word "Company" shall be held to mean the "HMT Limited"
- b) The word "Contractor" means the individual of Company or Firm whether incorporated or not, undertaking the works and shall include legal personnel representatives of such individuals or Firm or Company.
- c) The word "Contract" means the documents forming the tender and acceptance thereof together with documents referred to therein including these conditions, specifications, and the drawings and all these documents as applicable, taken together shall be deemed to form one contract and shall be complimentary to one another.
- d) The expression "Work" or "Works" where used in these conditions shall unless there be something either in subject or contract repugnant to such construction be construed and taken to mean the works by virtue of the contract contracted to be executed, whether temporary or permanent and whether original, altered, substituted or additional.
- e) The "Site" means the lands/or others places on, in, into or through which work is to be executed under the contract or any adjacent land, path or street which may be allotted or used for the purpose of carrying out the contract.
- f) The "Employer" means the Chairman and Managing Director of the Company for the time being or his successors in Office and assigns and shall also include any authorized representatives.
- g) The "Engineer" means the Civil Engineer / Engineer-in-Charge appointed by the Employer to design and supervise the work or in the event of his ceasing to be ENGINEER, such other person or persons appointed by the Employer for that purpose.
- h) Words importing the singular number include the plural number and vice-versa.

2. Earnest Money, Security and Reserve Deposit and Defect Liability Retention:

- i) The Contractors shall deposit Earnest money @ 2% of the Tender Value or as mention in the Tender Notice in the form of Demand Draft or Bankers Pay Orders in favour of HMT Limited Pinjore payable at Pinjore/Chandigarh.
- ii) The earnest money of the unsuccessful tenderers will be refunded to them after contract is awarded to the successful tenderer.
In the case of the successful tenderer, the earnest money will merge with the security deposit, if any, to be deposited by the contractor for the due performance of the contract which shall be 5% of the value of the contract, payable in Demand Draft or Banker's pay order or through any digital mode.
- iii) In addition to this security deposit, the Company shall retrench from the contractor's bills from time to time towards on account, retention of 10% of the amount passed for payments by the Company less Security deposit, if any.
- iv) At the time of settling the final bill, a sum of 2.5% of the value of the contract shall be retained by the Company, payable to the contractor after one year after performance of the contract, subject to any deductions that would be made by the company for rectification of any defects in the works, settlements of other faults that might appear or be discovered by the Company within one year after final completion of the Contract. The balance amount shall be refunded to the contractor after the completion of the contract to the satisfaction of the Company.
- v) In case the contractor does not rectify the defects etc., as aforesaid the company is obliged to carry out such rectifications of the defects and in case expenditure shall exceed the defect liability retention of 2.5% of the value of the contract, the Contractor shall make good the excess amount within a fortnight from the date of intimation of such excess.

3. Drawings and Specifications:

The works shall be carried out in accordance with the signed drawings and specifications and such further drawings, details and instructions as may from time to time be given by the ENGINEER.

If the work shown on such further drawings, or instructions, be in the opinion of the contractor, in addition to that comprised in the contract, he shall before proceeding with such work, give at least three day's notice in writing to this effect to the ENGINEER.

Two copies of all drawings and specifications shall be supplied by the Engineer free of cost to the Contractor for his own use, which shall be returned to the Engineer on the completion of the contract.

4. Contractor's Responsibilities:

The Contractor shall provide everything necessary for the proper execution of the works according to the true intent and meaning of the drawings, specifications and Schedule of Rates and probable quantities taken together whether the same may or may not be particularly shown on the drawings or described in the specifications or in the Schedule of Rates and probable quantities provided the same is reasonable to be inferred there from.

If the Contractor finds any discrepancy in the Drawings or between drawings, specifications and Schedule of Rates and probable quantities, he shall immediately refer the same to the Engineer who shall decide which shall be followed. Figured dimensions are to be followed in preference to the scale.

Facilities for the Workmen:

The Contractor shall provide, at his own expense, adequate closet accommodation for his workmen and keep the same in good order.

Adequate drinking water facilities shall be provided for the workmen.

5. Setting out Works and Notices:

The Contractor shall set out the whole of the works and be responsible for the correctness or he positions of levels, and dimensions of the several works according to the drawings and written instructions of the Engineer. If at any time during the progress of the works any error shall appear or arise in the position, level or dimensions of the several works of the contracts, the contractor shall rectify the same or on being required to do so by the Civil Engineer, shall rectify the error. The contractor shall observe, perform and comply with the requirements of all statutes and bye-laws and shall also serve notice on the authorities of having control of the road surface before the same are broken up and he shall likewise serve notices on the owners of the sewers, drains, water or other mains, electrical cables and other things which may be in any way affected by the execution of the contract works.

6. Engineer's Order to commence Works and as to Non-Delivery of Site.

The Contractor having signed the contract the Civil Engineer will forthwith give him notice to commence the works and the contractor shall upon receipt of such notice commence the works and carry out the works at such point or points and in such portions as the Civil Engineer may direct. The Company shall with the Civil Engineer's written order to commence the works given to the Contractor make use of much of the site of work as may in the opinion of the Civil Engineer be required to enable the Contractor to commence and continue the construction of the works and shall from time to time as the works proceed give the Contractor the use of each further portion of such site as the Civil Engineer may from time to time consider proper in that behalf, but non-delivery in manner aforesaid of the use of such site or any portion thereof shall not vitiate or affect the Contractor any provision contained in the specification nor entitle the contractor to any increased allowance in respect of money.

7. Contractor's Supervision.

- a) The contractor shall either himself supervise the execution of the contract or shall appoint a competent agent approved by the Employer to act on his behalf.
- b) If in the opinion of the Employer, the contractor himself does not have sufficient technical knowledge, experience to be capable of receiving instructions of the employer or his agent or cannot give his full personal attention to the works, the Contractor shall at his own expense employ as his accredited agent an Engineer approved by the Employer.
- c) If the contractor fails to appoint a suitable agent on being ordered to do so, the Employer shall have full powers to suspend the execution of the works till such date a suitable agent is appointed and the Contractor shall be held responsible for the delay caused to the works.

- d) Orders given to the Contractor's agent shall be considered to have the same force as if they had been given to the contractor himself.
- e) The contractor or his agent shall be in attendance at the site during all the working hours and shall superintend the execution of the works with such additional assistance in each trade as the Employer may consider necessary.
- f) The Contractor or his accredited agent shall attend, when required and without making any charge for doing so, either at the office of the Employer or on the works to receive instructions.
- g) The Employer shall have full powers, and without giving any reason, to require the Contractor immediately to cease to employ in connection with this contract any agent, servant or employee whose continued employment is in his opinion undesirable.
- h) The Contractor at his own cost provide watchman at all parts of the work where necessary or required by the Civil Engineer. He shall also keep all open trenches, excavation or other dangerous places properly and sufficiently lighted between sunset and sunrise and shall provide and fix proper fencing, hoardings and temporary bridges to protect and assist the public traffic. The Contractor shall also at his own cost erect temporary fences on the site of works where required by the Civil Engineer.

8. Labour

- a) The contractor shall employ Labour in sufficient number to maintain the required rate of progress and quality to ensure workmanship of the degree required by the specification and to the satisfaction of the Employer.
- b) The contractor shall, in respect of his work, people and staff employed in connection with the contract, observe terms and conditions of the employment and pay rate of wages not less favourable than those fixed from time to time by the appropriate local wage fixing authority or in the absence of such authority not less favourable than those commonly recognized by good Employers in the trade in the district where the work is carried out.
- c) The contractor shall furnish to the Employer every morning a distribution return of the number and description of trades of his work, people employed on the works.
- d) The Contractor shall not employ, in connection with the works, any person who has not completed his eighteen years of age.
- e) The Contractor shall be responsible for providing living accommodation for such of the employees engaged in the construction work and whose living at the site is essential in the interest of the work and/ or who have not other alternative accommodation to live in. In area allotted by the Civil Engineer, within the estate of the Company and shall provide them with urinals, latrines and other sanitary conveniences. These fixtures shall be dismantled and removed from the said area after the completion of the work at the cost of the contractor. The contractor shall be held responsible for any nuisance committed by his employees within the Estate of the Company.
- f) Under age children shall not be allowed to enter into the factory along with the Labour.

9. Materials and Workmanship:

- a) i) All materials and workmanship shall be the best of the respective kinds described in Schedule 'B' . The decision of the Civil Engineer regarding rates, quality of materials and workmanship shall be final and binding on both parties.
- ii) The Engineer shall have the power to order removal from the work any defective material or any defective work and to order substitutions of materials and /or work in accordance with this agreement.
- iii) In lieu of the above, the Engineer may allow such defective materials and or work to remain with the consent of the Contractor and shall fix such lower rates or prices as he may deem fit and these shall be binding on the contractor.
- b) If it shall appear to the employer that any work has been executed with unsound, imperfect, or unskilled workmanship or with materials of any inferior quality description from or that any materials or articles provided by him for the execution of the work are unsound or of a quality inferior to that contracted for or otherwise not in accordance with the contract, the contractor shall, on demand, in writing from the Employer specifying the work, material or articles complained of notwithstanding that the same may have been inadvertently passed , certified and paid for, forthwith rectify or remove and reconstruct the work so specified in whole or in part as the case may require ,or as the case may be, remove the materials or articles so specified and provide with suitable materials at his own proper charge and cost and in the event of his failing to do so within a period specified by Employer in his demand aforesaid , then the Contractor shall be liable to pay compensation at the rate of one percent on amount of the estimate for every day not exceeding ten days , while his failure to do so shall continue and in the case of such failure the employer may rectify or remove and re-execute the work or

remove and replace with the other materials or articles complained of as the case may be at the risk and expense in all respects of the Contractor.

10. Samples:

- a) The contractor shall, if required supply to the Engineer for approval, samples of all materials at his cost, and no work shall be commenced before such samples are approved.
- b) On approval, the samples will be retained as standards of materials and workmanship.
- c) Samples of all mouldings, cornices, plastering, flooring, color washing, distemping and every other work, requiring samples in the opinion of the Engineer shall be made at the cost of the Contractor and approval of the Engineer obtained, before the work is proceeded with.

11. Tests:

The Engineer will have the option to have any of the materials tested. If the test results show that the materials do not conform to the specifications and / or the samples, the cost of all such tests shall be borne by the Contractor. If the test result shows that the materials conform to the specifications, then the cost shall be borne by the Employer.

12. Inspection:

- a) All work under or in course of execution or executed in pursuance of the contract shall at all times be open to the inspection or supervision of the Employer and his subordinates and the Contractor shall at all times during the usual working hours and at all other times at which reasonable notice of the intention of the Employer or his subordinate to visit the works shall have been given to the contractor, either himself be present to receive orders and instructions or have a responsible agent duly accredited in writing, present for the purpose. Orders given to the Contractor's agent shall be considered to have the same force as if they had been given to the Contractor.
- b) The Contractor shall give not less than five days notice, in writing to the Engineer before covering up or otherwise placing beyond the reach of measurement any work in order that the same may be measured and correct dimensions thereof taken before the same is covered up or placed beyond the reach of measurement. Any work covered up or placed beyond the reach of measurement without such notice having been given or consent obtained, the same shall be uncovered at the Contractor's expense.

13. Authorised Variations:

- i) The Employer shall have power to make any alteration in, omission from, additions to or substitutions for, the original specifications, drawings designs and instructions, that may appear to him to be necessary or advisable, before or at the commencement of the work, or during the progress of the work and the contractor shall be bound to carry out the work in accordance with the instructions, which may be given to him in writing signed by the Engineer, and such alterations omissions, additions or substitutions shall not invalidate the contract, and any altered additional substituted work which the Contractor may be directed to do in the manner above specified as part of the work shall be carried out by the contractor on the same conditions in all respects on which he agreed to do the main work and at the same rates as are specified in the tender of the main work. The time for the completion of the work shall be extended in the proportion that the altered, additional or substituted works bears to the original contract work and the certificate of the Engineer shall be conclusive, as to such proportion.
- ii) The Contractor may when authorized, and shall when directed, verbally and later confirmed in writing by the Engineer, omit from or vary the work shown upon the drawings, or described in the Schedule of Rates and probable quantities, but the contractor shall make no addition, omission or variation without such authority or direction.
- iii) All authorized variations for which a rate or price may not have been previously agreed upon shall be measured and valued by the Engineer. Such variation shall be valued at the rates contained in Schedule 'C' or where the same may not apply, at rates proportionate to the rates or price contained in Schedule 'C'.
If the altered, additional or substituted works is not entered in the Schedule of Rates then the contractor shall within seven days of the date of his receipt of the order to carry out the work inform the Engineer of the rate which it is his intention to charge for such class of work, and if the Engineer does not agree to this rate, he shall by notice in writing, be at liberty to cancel his orders to carry out class of work, and arrange to carry out in such manner as he may consider advisable, provided always that if the Contractor shall commence work or incur any expenditure in regard thereto before the rates shall have been determined as lastly herein before mentioned, then and in such case he shall only be entitled to be paid in respect of the

work carried out or expenditure incurred by him, prior to the date of determination of the rate as aforesaid according to such rate as shall be fixed by the Engineer. In the event of a dispute, the decision of the Employer shall be final.

14. Defects after Completion:

Any defect, shrinkage, settlement or other faults which may appear within twelve calendar months from the date of final completion of the work as certified by the Engineer and which, in the opinion of the Engineer, arise from faulty materials or workmanship not in accordance with the contract, shall upon the directions in writing of the Engineer, and within such reasonable time as shall be specified therein be amended and made good by the Contractor at his own cost. In case of default on the part of the contractor to amend and make good within the time limit specified by the Engineer, the Employer may employ and pay other persons to amend and make good such defects, shrinkage, settlement or faults and all damages, loss and expenses consequent on such default incidental thereto, shall be borne by the contractor and be recoverable from him by the Employer as aforesaid in clause 2 of the Schedule. Provided always that the Contractor dispute this liability to pay for in respect of any work, so amended or made good or any part thereof in accordance with the Engineer's directions, such dispute shall be referred to the Employer whose decision shall be final and without appeal.

15. Subletting:

The contract shall not be assigned or, sublet without the written approval of the Employer. And if the contractor shall assign or sublet his contract, or attempt to do so, or if any bribe, gratuity, gift, loan, perquisite regard or advantage, pecuniary or otherwise shall directly or indirectly be given, promised or offered by the Contractor, or any of his servants or agents to any officer or person in the Employ of HMT Limited in any way relating to his office or employment, or if any such officer or person shall in any way directly or indirectly be given, promised or offered by the Contractor, or any of his servants or agents, or any officer or person in the employ of HMT Limited, officer or person shall become in any way directly or indirectly interested in the contract, with the connivance of the Contractor, the Employer may there upon by notice in writing rescind the contract and the security deposit of the contractor shall there upon stand forfeited and be absolutely at the disposal of the Employer and the same consequences shall ensue as if the contract has been rescinded under clause 22 hereof, and in addition the contractor shall not be entitled to recover or be paid for any work thereof actually performed under, the contract.

16. Damage to Property:

If the Contractor or his work people or servants shall break, deface, injure or destroy any part of the building in which they may be working or any buildings, roads, road curbs, fence, enclosure, water pipes, cables, drains, electric or telephone posts or wires, tree, grass land or cultivated ground contiguous to the premises on which the work, or any part of it is being executed or if the damage shall happen to the work while in progress from any cause what so ever, or any imperfection becomes apparent in it within twelve months after a certificate final or otherwise of its completion shall have been given by the Employer as aforesaid, the Contractor shall make good at his own expenses or the Employer may deduct the expense (of which the certificate of the Employer shall be final) from any sums that may be then or at any time thereafter may become due to the contractor, or from his 2.5% retention deposit.

17. Emergency Powers:

In the event of any accident or failure occurring in or on the works which in the opinion of the Civil Engineer requires immediate attention either during the construction or during the period of maintenance, the Company may by their own or other workmen make the necessary repairs at the expense of the Contractor.

18. Fire Insurance:

Unless otherwise instructed by the Engineer, the Contractor shall on signing the contract insure the works and keep them insured until the virtual completion of the contract against loss or damage by fire in an office to be approved by the Engineer, in the joint names of the Employer and Contractor for such amount not less than the value of work in progress at any time. Such policy shall cover any property of the contractor or of any sub-contractor or employee. The contractor shall deposit the policy and receipts for the premium with the

Employer within twenty one-days from the date of signing the contract unless otherwise instructed by the Engineer. In default of the contractor for insuring as provided above the Employer or the Engineer on his behalf may so insure and may deduct the premium paid from any moneys due, or which may become due to the contractor. The Contractor shall, as soon as the claims under the policy is settled, or the work reinstated by the Insurance Office should they elect to do so, proceed with all diligence with the completion of the works in the same manner as though the fire has not occurred and in all respect under the same conditions of contract. The Contractor, in case by rebuilding or reinforcement after fire, shall be entitled to such extension of time for completion as the Engineer may deem fit.

19. Damage for non- completion:

- i) Time shall be the essence of the contract and the 'Contractor' hereby agrees to complete the work in all respects as stated in Schedule 'E'. The Contractor further agrees that the periods shall be determined by the Engineer who shall issue certificate of commencement and final completion. Should the CONTRACTOR fail to complete the work within the above specified period he shall be liable to pay the EMPLOYER liquidated damages as stated in the said Schedule. Provided nevertheless that should such delays be caused by circumstances beyond the control of the CONTRACTOR as certified by the ENGINEER, then the EMPLOYER shall grant such extra time to the Contractor for completion as may be certified and considered necessary by the Engineer as also provided under the terms of Clause 20.
- ii) The Contractor shall be bound, in all cases, in which the time allotted for any work exceeds one month, to complete 1/6th of the whole of the work before 1/4th time allotted under the contract has elapsed and 3/8th of the work before 1/2 of such time has elapsed. In the event of the Contractor failing to comply with this condition, he shall be liable to pay compensation equal to 0.1% of cost of the work for every day provided always that the entire amount of compensation to be paid under the provision of this clause shall not exceed 5% of the total value of the contract.

20 Extension of time and Certificate of completion:

- a) If the contractor shall desire an extension of time for completion of the work on the grounds of his having been unavoidably hindered in its execution or on any other ground he shall apply in writing to the Employer within 30 days of the date of hindrance on account of which he desires such extension as aforesaid and the Employer shall, if in his opinion reasonable grounds be shown therefore, authorize such extension of time, if any, as may, in his opinion be necessary and proper. In the event of a dispute, the decision of the Employer shall be final and without appeal.
- b) On completion of the work, the contractor shall be furnished with a certificate by the Employer of such completion, but no such certificate shall be given, nor shall the work be considered to be complete, until the Contractor shall have removed from the premises on which the work shall be executed all scaffolding, surplus materials and rubbish and cleaned off the dirt from all wood-work doors, windows, walls, floors or other parts of any building in, upon or about which the work is to be executed or of which he may have had possession for the purpose of the execution thereof, or until the work shall have been measured or caused, to be measured by the Engineer, such measurements being binding and conclusive against the Contractor. If the contractor shall fail to comply with the requirement of this clause as to removal of scaffolding, surplus materials and rubbish, and cleaning of dirt on or before the date fixed for the completion of the work, the Employer may at the expense of the Contractor, remove such scaffolding, surplus materials and rubbish and dispose off the same as he thinks fit and clean off such dirt as aforesaid, and the Contractor shall forthwith pay the amount of all expenses so incurred and shall have no claims in respect of all expenses so incurred and shall have no claims in respect of any such scaffolding or surplus materials aforesaid except for any sum actually realized by the sale thereof.

21. Termination:

- a) The Employer shall have the right to terminate the contract by serving the Contractor with a fortnight's notice in writing:
 - i) If the Contractor fails to sign the agreement within two weeks from the date of acceptance of tender.
 - ii) If the Contractor fails to start the work within fifteen days from the date of order to commence work.

- iii) If in the opinion of the Engineer, the work of the Contractor is unsatisfactory or if the work is proceeding so slow as to rule out the possibility of completion on the Schedule date.
- b) Retired Engineers shall not work as Contractors or as employees of Contractors within two years of their retirement, unless prior permission is obtained from the Government.

The Contract is liable to be cancelled, if either the Contractor himself or any of his employees is found to be a person who has not obtained the necessary permission stated in (b) above.

In any of the above cases, the earnest money deposit, deposited along with the tender shall stand forfeited and be absolutely at the disposal of the Employer.

22. Compensation:

- a) In any case in which under any clause or clauses of this contract, the Contractor shall have rendered himself liable to pay compensation amounting to the whole of his security deposit (whether paid in one sum or deducted by installments), the Employer shall have power to adopt any of the following courses as he may deem best suited to the interests of the Employer.
 - i) To rescind the contract (of which recession notice in writing to the Contractor under the hand of the Employer shall be conclusive evidence) and in which case the Security Deposit of the contractor shall stand forfeited and be absolutely at the disposal of the Employer.
 - ii) To employ labour paid by the Employer and to supply materials to carry out the work, or any part of the work, debiting the Contractor with the cost of labour, supervision and the price of materials (of the amount of which cost the price, a certificate of the Employer officer shall be final and conclusive against the Contractor) and crediting him with the value of the work done in all respects in the same manner and at the same rates as if it had been carried out by the Contractor under the terms of his contract, the certificate of the Employer as to the value of the work done shall be final and conclusive against the Contractor.
 - iii) To measure up the work of the Contractor, and to take such part thereof as shall be unexecuted out of his hands and to give it to another Contractor to complete, in which case any expenditure which may be incurred in excess of the sum which would have been paid to the original Contractor if the whole work had been executed by him (of the amount of which, the certificate in writing of the Employer shall be final and conclusive) shall be borne and paid by the original Contractor and may be deducted from any money due to him under the contract or otherwise, or from his security deposit or the Proceeds of sale thereof or a sufficient part thereof.
- b) In the event of any of the above courses being adopted by the Employer, the Contractor shall have no claim to compensation for any loss sustained by him by reason of his having purchased or procured any materials or entered into any engagements or made any advance on account of or with a view to the execution of work or to performance of the contract. And in case the contract shall be rescinded under the provisions aforesaid, the Contractor shall not be entitled to recover or be paid any sum for any work thereof actually performed under this contract unless and until the Employer will have certified in writing the performance of such work and the value payable in respect thereof and he shall only be entitled to be paid the value so certified.
- c) In the event, the Employer enforces either of the powers (a) or (b) vested in him under the proceeding clause he may, if he so desires take possession of all or any tools, plant materials and stores in or upon the works, or the site thereof or belonging to the Contractor or procured by him and intended to be used for the execution of work or any part thereof, paying or allowing for the same in the account at the contract rates, or in case of these not being applicable, at current market rates to be certified by the Employer whose certificate thereof shall be final. Otherwise the Employer may, by notice in writing to the Contractor, or his clerk of the works, foreman or other authorized agent required him to remove such tools, plants, material or stores from the premises (within a time to be specified in such notice) and in the event of the Contractor failing to comply with any such requisition the Employer may remove them at the Contractor's risk and expense or sell them by auction or private sale on account of the contractor and at his risk in all respect and the certificate of the Employer as to the expense of any such removal and the amount of the proceeds and expenses of any such sale shall be final and conclusive against the Contractor.
- d) Any sum of money due and payable to the Contractor / Supplier (including security/ deposit returnable to him) under this contract may be appropriated by the Purchaser / Employer and set off against any claim of the Purchaser / Employer for the payment of a sum of money

arising out of or under any other contract made by the contractor/supplier with the Purchaser / Employer.

23. Certificate of Payment:

- a) No payment shall be made for works estimated to cost less than Rupees five thousand till after the whole of the works shall have been completed and certificate of completion given. But in the cases of works estimated to cost more than Rupees five thousand, the Contractor shall on submitting the bill thereafter be entitled to receive a monthly payment proportionate to the part thereof approved and passed by the Employer, whose certificate of such approval and passing of the sum so payable shall be final and conclusive against the Contractor. But all such interim payments shall be regarded as payment by way of advance against the final payments only and not as payments for work actually done and completed and shall not preclude the requiring of bad, unsound, and imperfect or unskilled work to be removed and taken away, nor shall it conclude or affect in any way the powers of the Employer under these conditions, or any of them as to the final settlement and adjustment of the accounts or otherwise. The Contractor shall submit the final bill within one month of the date fixed for the work otherwise the Engineer's certificate of the measurement and of the total amount payable for the work accordingly shall be final and binding on both parties.
- b) A bill will be submitted by the Contractor as and when the balance of the work reaches the limit fixed in Schedule 'E' and the Employer shall take or cause to be taken the requisite measurement for the purpose of having the same verified and the claim as far as admissible after deduction of 10% thereof as retention percentage adjusted, if possible, before the expiry of ten days from the presentation of the bill. If the contractor does not submit the bill as aforesaid, the Employer may depute a subordinate to measure up the said works in the presence of the contractor, or his representatives whose counter-signature to the measurement list will be sufficient warrant, and the Employer may prepare a bill from such list which shall be binding on the Contractor in all respects.
- c) The Employer shall pay to the Contractor in the manner set forth here in after such sums as shall become payable from time to time by installment when, in the opinion of the Engineer, work to the value of not less 10% of the contract amount has been executed in accordance with the contract.
Subject to the provision of the contract, the Contractor shall be entitled under the certificate to be issued by the Engineer to the Contractor to payment by the Employer from time to time by installments as follow:
 - i) Within fifteen days from the date on which, the Engineer's certificate shall be presented by the Contractor to the Employer, ninety (90) per cent of the value of the work executed.
 - ii) Within forty days of the date on which, the Engineer's certificate of final completion shall be presented by the Contractor to the Employer, such payment as shall bring the total payment made to 97.5% of the aggregate value of work executed as mentioned in such certificate of the Engineer.
 - iii) At the expiration of twelve months from the date of final completion certificate referred to above and on the production of further certificate from the Engineer that the work is free from defects or faults for which the Contractor is responsible under clause 14 hereof, the balance of two and a half per cent of the aggregate value of work executed.

24. Workmen's Compensation:

- a) In every case in which by virtue of the provision of Section 12, sub-section (a) of the Workmen's Compensation Act, 1923, the Employer is obliged to pay compensation to a workman employed by the Contractor, in execution of the works, the Employer will recover from the Contractor, the amount of the compensation so paid and without prejudice to the right of the employer under section 12, Sub-section (2) of the said act, the Employer shall be at liberty to recover such amount or any part thereof by deducting it from the security deposit or from any sum due by the Employer to the Contractor whether under this contract or otherwise.
- b) The Employer shall not be bound to contest any claim made against it under Section 12, Sub-section (1) of the said Act, except on the written request of the Contractor and upon his giving to the Employer full security for all costs for which the Employer might become liable in consequence such claim.
- c) The Contractor shall also remain liable for all payment or compensation to his Employees under the payment of Wages Act, 1937, Employer's Liability Act, 1958, or any other enactments in force relating hereto or rules there under.

25. Clearing up and Handing over:

All rubbish shall be removed from the site as it accumulates. All floors stairs, landings, doors, windows surface and soil drains shall be cleaned down and put in a thoroughly clean, sound and workman like, state to the satisfaction of the Engineer, before the work is finally handed over. All rubbish and surplus materials not required by the Employer shall be removed by the Contractor. The Contractor shall give notice in writing to the Engineer when work is so ready to be handed over, and if taken over by the ENGINEER, certificate of final completion shall be issued by the ENGINEER to the Contractor.

The ENGINEER and the Contractor shall jointly inspect the work and record deficiencies and / or discrepancies certificate of final completion shall be issued only if the works are completed in all respects.

26. Supply of Water and Electricity:

Water and Electricity for construction will be made available at site from a delivery point which may be seen by the Contractor. Piping or leads from this point to where the Contractor requires the supply shall be provided by the contractor himself. The water meter shall be installed by the Contractor. The charges for consumption of water and electricity will be at rates to be specified by the Employer.

Water charges shall be as per prevailing rate of Haryana Govt. Where, water meter is not installed, the charges for water shall be recovered on the basis of 1% of the total cost of work.

No Company's plant, materials or labour will ordinarily be lent or hired to the Contractor.

Exceptional cases must have the approval of Civil Engineer in writing and in such cases hire charges are recoverable.

27. Material Supply:

a) The company does not hold itself responsible for the supply of materials. If, however, it has stocks of any materials and decides to issue on request from the Contractor, the issue will be under the following conditions:

i) For controlled materials as per Schedule 'D'.

ii) For non-controlled materials on the basis of the rates to be determined by Employer. Deductions or set off for the value of materials supplied shall be made from sums payable to the Contractor under this contract or otherwise due to him.

b) Where controlled materials are not supplied by the Company, the Employer will assist in obtaining release for the controlled materials required and such permit or release orders for the controlled materials will be handed over to the Contractor who shall make his own arrangements for ordering receipt of materials, payment, transport, handing loading and unloading and storage at site.

No extension of time will be given on the plea if non-receipt or delay in obtaining such materials.

c) In the case of controlled articles supplied by the employer for the execution of works covered by this contract, the controlled rate plus transportation and 10% handling charges prevailing on the date of issue of the materials to the contractor will be relevant and not the controlled rates 10% transportation and handling charges prevailing on the date of agreement. Further, in case controlled articles are used by the Contractor for the work other than those covered by the tender, or sold to third parties, or in case of any conversion or misappropriation of such materials by the contractor, the Employer shall forthwith rescind the contract, forfeit the security deposit and make the Contractor liable for all the damages resulting in the breach of the contract as provided in law.

28. Revision of Rates:

The Contractor shall agree not to petition for revision of rates tendered by him under any circumstances at any stage either during execution or when the final claims are settled. The rates quoted shall hold good till the completion of the work. For non- tendered items, if any, rate abstracts mutually agreed upon will be applicable.

29. Works to be carried on with expedition failing which the Company may employ other Contractors without vitiating the Contract.

The Contractor shall commence to carry on the works with the due diligence, and as such expedition as the Engineer may reasonably expect having regard to the specified time of

completion of the whole of the works. In case the Contractor fails to do so or neglects to provide proper and sufficient materials or to employ a sufficient number of workmen to execute the works, then the Company shall have full power without vitiating the contract to take the works wholly or in part out of the hands of the Contractor to engage or employ any other person s or workmen and to procure all requisite materials and implements for the due execution and completion of the said works and the costs and charges incurred by the Company in so doing shall be ascertained by the Civil Engineer, be paid for or allowed to the Company to deduct amount of such costs and charges along with overheads out of any sums the become due from the Company to the Contractor under this or any other contract.

30. Arbitration:

Any dispute arising out of this contract shall be subject to the decision of the Arbitrator, who shall be appointed by the General Manager / Executive Director, HMT Limited Pinjore and shall be of the rank of DGM/JGM HMT Limited Pinjore and the decision of the said Arbitrator shall be final and binding on the parties.

30-A. Jurisdiction:

Any dispute arising out of this contract shall be subject to the exclusive Jurisdiction of Civil Courts at Kalka.

30-B.

In case of commercial and other agreements and other agreements between two Public Sector Enterprises or between a Public Sector Enterprise and a Govt. Department, the following Arbitration Clause shall be applicable.

“In the event of any dispute or difference relating to the interpretation and application of the provisions of the contracts such dispute or difference shall be referred by either party to the Arbitration of one of the Arbitrations in the Department of Public Enterprise to be nominated by the Secretary to the Govt. of India in charge of the Bureau of Public Enterprises. The Arbitration Act, 1960 shall not be applicable to the arbitration under this Clause. The award of the Arbitrator shall be binding upon the parties to the dispute, provided, however, any party aggrieved by such award may make a further reference for setting aside or revision of the award to the law Secretary, Department of Legal Affairs. Ministry of Law & Justice, Government of India. Upon such reference the dispute shall be decided by the Law Secretary or the special Secretary / Addl. Secretary when so authorized by the law secretary, whose decision shall bind the parties finally and conclusively. The parties to the dispute will share equally the cost of arbitration as intimated by the Arbitrator.”

31. The Contractor shall during the currency of the contract when called upon by the Engineer-in-Charge engage and also ensure engagement by Sub-Contractors and other Employer by Contractor in connection with the works, such number of apprentices in the categories mentioned below and for such periods as may be required by the Engineer-in-Charge. The contractor shall train them as required under the Apprentices Act, 1961 and the rules made there under and shall be responsible for all obligation of the Employer under the said Act including the liability to make payment (S) to Apprentices as required under that said Act.
32. Workers employed on the contract must be insured under the E.S.I. Scheme.
33. The Contractor shall take all necessary precautionary measures during the execution of work by providing safety belts etc. to the workmen employed on the job by the Contractor. In the event of any accident involving any injury or death of a workmen, the Contractor shall be wholly responsible for all legal compensation claim for the same and Company shall not entertain any claim whatsoever on this account.
34. The Contractor shall be responsible solely for any pilferage / theft of company's materials. The decision of Engineer In charge for amount of recovery shall be final and binding on the contractor and shall be recovered from any pending payments.

35. Insurance:

The Contractor shall arrange for “All Risk Policy “for the full value of the Contract. The Company will arrange for “Contractors All Risk Policy “for the full value of the contract and the cost of which shall be borne by the contractor.

The said insurance shall be in the name of the company and the Contractor shall deposit with the Company the said policy or policies within the stipulated time and the cost of which shall be borne by the Contractor.

36. Tax on works Contract:

“The value shown in the tender will be inclusive of all taxes, HMT Tools Limited will not pay or reimburse any tax levied and paid by the contractor for the sale of goods used/ transferred in the execution of contract or any amount deducted and deposited by HMT Machine Tools Limited as Sale Tax deduction at source from the contract value or under any amended clause from time to time by the statute.”

37. Electricity Charges:

Normally the Company will arrange to supply Electricity for the construction and fabrication contracts. But some States have objections to such unauthorised tapping/ connections, specially where there is restricted and controlled supply of Electricity. In such cases, the contractors shall arrange electricity for the constructions and fabrications themselves through the local Electricity Boards/ Authorities or the Company will try to arrange same through electricity boards or authorities at the tariffs fixed by them. The tariffs leg ether with service charges fixed by the Company shall be remitted by the contractors either in advance or as desired under the local Electricity Rules and Regulations provided such an arrangement is approved by the local Electricity Boards/ Authorities.

38. Provident Fund:

The Employees Provident Fund & Miscellaneous provisions Act, 1952 & Scheme framed there under has been extended to the establishment engaged in the building & construction Industry. Consequently, all the contractors / engineering firms who are engaged in the building & construction industry are required to extend the benefits of provident Fund to their employees from the 1st. day of their employment. As such, contractors / firms are required to register themselves with the Regional Provident Fund Commissioner and to obtain Employer's code No. from them. A copy of such registration / code no. Allotted by the Regional PF authorities shall be submitted by the contractor / firm to HMT. Further the contractor / firm shall be liable, as principal employer, to comply with the statutory formalities under the said Act in respect o fits employees and to deposit the CPF dues etc. in respect of its employees during the currency of the contract directly with the Regional PF authorities every month. A copy of the Challan to the effect of having deposited such dues/ no dues certificate obtained from the office of the Regional PF Commissioner shall be produced to the Company before the installment / payments are released to the Contractor / firms.

**SIGNATURE OF THE CONTRACTOR
WITH DATE AND SEAL**

DEPUTY GENERAL MANAGER (ESTATE)



HMT Limited Pinjore

Technical Documents (Schedule B)

Name of Work: _____

Date of Opening: _____

Name of Contractor: _____

**ESTATE DEPARTMENT
HMT LIMITED PINJORE
(ESTATE DEPARTMENT)**

**SCHEDULE 'B'
(General Specifications of work)**

1. Measurement:

The method of measurements shall be as per ISI-Code No. 1200-1953 with up- to-date amendments.

2. Materials:

All materials to be used in works shall be the best in their respective kind, to the approval of the Engineer and to conform to the standards and specifications of the corresponding ISI Codes with up-to date amendments.

3. Construction Works:

For all construction works, brief specifications are enclosed as per Annexure 1,II & III for General guidance only. However, for detailed specifications, a reference shall be made to the respective items of work of Schedule 'C' and the relevant I.S.I codes. The Contractors are required to be in possession of all such I.S.I Codes and keep them ready for inspection as and when desired by the Engineer, In case of any dispute, the decision of the Engineer shall be final.

**SIGNATURE OF THE CONTRACTOR
WITH DATE AND SEAL**

ANNEXURE 'I' TO SCHEDULE 'B'

(GENERAL SPECIFICATIONS FOR CONCRETE WORK)

1. General:

- a) Whenever a reference is made to any Indian Standard Code of practice it shall mean the latest version of the relevant standard in use.
- b) In order to exercise the required degree of constant control over the concrete materials and their proportions, the Contractor shall set up and maintain at his own expense a testing Laboratory at site. He shall provide all apparatus required for sensitive testing of concrete and concrete materials and in particular he must have the following equipments in the site laboratory.
 - i) A set of Standard Sieves
 - ii) Sieve Vibrator
 - iii) Measuring Cylinders
 - iv) Slump Cones.
 - v) Adequate number of Standard Moulds.
 - vi) Weighting Balance.
 - vii) Oven or other apparatus to dry aggregates.
 - viii) Curing Tank for Cubes.

Any other apparatus deemed necessary by the Engineer for proper control shall be provided by the Contractor at his own expenses.
The laboratory shall be staffed by qualified technicians.

- c) Whenever 1:2:4 concrete is specified for R.C.C. work, it shall conform to M 200 as per I.S.I.

2. Cement:

- a) Cement to be used on the works shall comply with the Indian Standards Specification No. 269 for Portland cement and shall be obtained from approved sources. If asked for by the Engineer, Certificate of tests from an approval laboratory shall also have to be obtained at the Contractor's cost. Samples for testing shall be extracted as in clause 5.21 .S:269 within one week of delivery and the tests shall be made within four weeks of delivery. All cement shall be stored in suitable weather-proof structures or silos so that it does not come in contact with the ground and is prevented from being damaged by moisture. These buildings or silos shall be provided by the Contractor at his own cost and placed in locations approved by the Engineer. Provisions for storage shall be ample and the shipments of cement, as received shall be separately stored in such manner as to provide easy access for the identification and inspection of each shipment. Storage buildings shall have a capacity for the storage of a sufficient quantity of cement to allow sampling at least 12 days before the cement is to be used. Stored cement shall meet the test requirements at any time after storage when a retest is ordered by the Engineer.

The Contractor shall keep accurate records of the deliveries of cement and of it's used in the work. Copies of these records shall be supplied to the Engineer in such forms as may be required. Cement shall be used in the sequence in which it arrives in order that no cement shall be unnecessarily stored for a long period. If cement becomes lumpy due to partial hydration it shall be removed from the site immediately.

Any materials which has deteriorated or which has been damaged or contaminated, whether during transit to the site or at the site or otherwise shall not be used in the concrete and shall be immediately removed from the site and replaced at the expense of the Contractor.

b) Admixtures:

The use of Admixtures to improve the work ability is allowed only if there is proved evidence that neither the strength nor the other requisite qualities of concrete and / or steel, accessories, grout are impaired by their use. The use of admixtures containing Calcium Chloride, Fluorides Nitrates and Sulphates is prohibited. The Engineer's decision on all matters relating to the use of admixture shall be final.

Admixtures shall be stored in a suitable Water-proof building. Any material which has deteriorated or has been contaminated or damaged whether during transit or at site shall not be used and shall be immediately removed from the site and replaced at the Contractor's own expense.

c) Aggregates:

All aggregates shall generally conform to the requirement of IS 383. Materials shall be taken only from sources of supply approved by the Engineer. Any material which has deteriorated or which has been contaminated shall not be used for concrete. All aspects of aggregate handling and storage are subject to the approval of the Engineer and shall be such as to minimize segregation and breakage and prevent contamination by grass, soil, wood sawdust, oil aggregates of other sizes or other foreign material and so that adequate supplies are available in advance of the requirements. Each size of aggregate shall be stored on a separate platform or stockpile at locations to be approved by the Engineer and such platform or stockpiles shall be sufficiently removed from each other to prevent the material at the edges of the piles from becoming intermixed. If aggregates are stockpiled on the ground, the bottom portion of the stockpiles within one foot of the ground shall not be used for both fine and coarse aggregates, preliminary tests shall be carried out, for physical characteristics, limits of deleterious substances, soundness, etc. prior to construction and also when the source of procurement is changed. All tests will be conducted at the Contractor's expense.

Sand shall be of an approved quality, clean, sharp and free from injurious amount of dust, mica, shells, soft and flaky particles shale, alkali organic matter, loam or other deleterious substances. The sand shall be taken from a source approved by the Engineer, and if required by him it shall be thoroughly washed screened and graded by the Contractor at his own cost and expense to the satisfaction of the Engineer, and he shall include in his rate the cost of washing. It shall be within the range of grading Zone I and Grading Zone II of table of I.S. 383.

- d) The whole of the ingredients of the coarse aggregate shall consist of hard stone free from deleterious substances and shall contain no soft or elongated pieces. If it is considered necessary, the Engineer may instruct it to be washed, screened and graded at Contractor's expense. The Contractor shall include in his price for concrete the Cost of washing and screening the aggregate.

e) Mixing Water

The water for making concrete shall be first tested at the Contractor's expenses for its suitability by laboratory approved by the Engineer. It is usually required to be fit for drinking, or to be taken from an approved source. This is to ensure that the water is reasonably free from such impurities as suspended solids, organic matter and dissolved salts which are frequently contained in natural water and which may adversely affect the properties of the concrete, especially the setting and hardening.

If the quality of water to be used for mixing concrete is in doubt, it should be assessed by comparing the setting times of cement paste and the compressive strength of concrete made with it and with tap water under similar conditions. Sea water shall not be used for concrete work.

f) Steel:

The steel to be used in reinforced concrete work shall comply with requirement of Indian Standard specification No. 226, 432, 1139 and 1786, steel bars made by re-rolling old rails, bars etc. will not be allowed to be used on any account and the Contractor must produce proof that such bars are not being used. Should the result of tests conducted through an approved laboratory at the Contractor's expense made in accordance with the provisions of relevant Indian standard Specification shows that the steel does not comply with this specification, the Engineer may at his discretion reject the lot or lots, from which the sample or samples were taken and the same shall not be used in the works but shall be removed there from and the work already executed with such bars may be ordered to be demolished at the Contractor's cost. The Contractor will not be paid for the demolished work nor will the completion time limit be extended.

All steel used for reinforcement shall be free from loose scales or rust which must be removed with a stiff-wire brush and coated with neat cement wash as directed. Bars must also be free from oil or paint. All bending shall be done cold, gradually, evenly and without jerks. All protruding bars, to which other bars are to be spliced later, must be protected from rusting by a coat of thin neat cement grout, and the Contractor's rates shall

be inclusive of this item. The steel shall be properly braced supported and otherwise held in position by concrete spacer block and steel chairs so as to prevent displacement while concrete is put in. Tiles, lads or stone chips will not be permitted to be used as spacer blocks. The correct number and size of reinforcing bars, stirrups and binders shall be provided and placed in position strictly according to the contract, drawings and instructions. This must be looked after with proper care and checked over by a competent foreman of the Contractor personally and finally before pouring the concrete. A steel fixer should be in full time attendance while puring concrete to adjust and fix the reinforcement.

3 (a) Concrete Mix Design:

- i) Concrete mix for various specified design strengths shall be worked out by the contractor.
- ii) The mix proportions shall be selected to ensure that the workability of the fresh concrete is suitable for the conditions of handling and placing, so that after compactions it surrounds all reinforcement, tendons and ducts and completely fills the frame work. When the concrete is hardened its quality shall be such as to comply with the strength, durability and other requirements, taking into account the conditions to which it will be exposed.
- iii) Any standard method of mix design may be used, except that for determining the “required average strength “the probability of any test result failing short of the specified minimum shall be taken as 1 in 10. Unless the Contractor can prove from his past experience that he is capable of achieving a high degree of control, in the initial mix design only a “fair control “should be assumed. Before arriving at the average strength Values the Contractor should give due regard to the “ Criteria of Acceptance “, of site concrete, which shall in general be as per ACI-214, but in particular as per clause 4.4 hereafter.
- iv) The mixes designed by the Contractor shall be used on site only after obtaining a written approval of the Engineer. It is to be understood that the mix design shall be entirely the responsibility of the Contractor & such approval by the Engineer shall not relieve them of the same.
- v) The contractor shall prepare all calculations, tabulations, graphs etc. pertaining to concrete mix designs and/ or test results and supply copies of such calculations, tabulations, graphs etc. as required under Architects’ instructions.
- vi) The minimum cement contents for various mixes shall be as follows.

MIX	Bags % Cft
M 150	16
M 200	18
M 250	20
M 300	22
M 350	24
M 400	26
M 450	28

b) Batching:

The aggregate shall be generally measured by weight batching making due allowance for all water contained in aggregates. Volume batching of aggregates may be permitted when the Contractor can prove that adequate control can be exercised and densities of the aggregates are fairly uniform.

The water shall be controlled by direct measurement and allowance shall be made for any water in the aggregates. The quantity of water contained in the aggregates shall be determined by method approved by the Engineer.

The cement shall be measured by weight. In addition to this accurate control of water /cement ratio, some measure such as slump test shall be adopted to check that there is no Significant variation in the work ability of the mix.

All tests above shall be carried out at regular intervals and a record of the results kept on site. One copy of the record shall be sent to the Engineer for reference.

To ensure that the grading of the aggregates remains the same as the grading on which the mix design is based sieve analysis must carried out regularly. A chart showing the result of such analysis must be kept on site. If a change in grading is unavoidable, the mix must be redesigned accordingly.

c) Mixing:

Thorough mixing of the concrete is essential and mixers should always be operated at the speed recommended by the makers.

A mixing time of not less than two minutes after all materials, including water, have entered mixing drum is often recognized as a satisfactory period for mixers up to 1 Cu.yd. Capacity. A slightly longer mixing time may be required for mixing exceeding 1 Cu.yd. Capacity and for dry concrete mixers. Mixing times, however, vary according to the type of mixer and the above items may be reduced for some modern mixers.

When the concrete is mixed, the complete content of the drum should be discharged in one operation into a hopper or container. Mixing time is lost and risk of segregation occurs if the batch is discharged into a number of separate barrows or prams.

At the start of the day the first batch to two of the concrete will be harsh and stony because some mortar will stick to the inside of the drum round the blades. The proportion of coarse aggregate should, therefore, be reduced for the first mix or so.

The mixer should be thoroughly washed out and the blades cleaned after use, otherwise the mixing drum will soon become caked with hardened concrete. This is not only difficult to remove, but impairs the efficiency of the machine. The inside of the drum should be inspected regularly, and any blades which are worn or broken should be replaced. Inspection and regular maintenance are essential if loss of time due to a breakdown of the mixing plant is to be avoided.

d) Placing:

It is important that the concrete be placed in its final position before the cement reaches its initial set. The concrete should normally be compacted in its final position within 30 min. of leaving the mixer, and once compacted, it should not be disturbed.

Before the concrete is actually placed in position, the inside of the forms should be inspected to see that they have been cleaned and oiled, Temporary openings should be provided to facilitate inspection, especially at the bottom of columns, to permit the removal of all sawdust, wood shavings, cigarette ends and dirt. Opening should be placed so that the water used to flush the forms will draw it away. No water should be left in the forms.

The concrete should be spread evenly in the form to avoid segregation and should completely fill all corners of form work and the space between the reinforcement. Vibrator should not be used for spreading the concrete. Concreting should be carried on without interruption between predetermined construction joints.

e) Compacting:

The object of compacting concrete is to achieve maximum density. The concrete should, therefore, be placed a little in excess of its specified depth, so that after proper compaction its final desired depth is obtained. Manually rodding and tapping the concrete and tapping the form work on its external face shall be continuously carried out at the actual pouring head, while compacting the concrete with mechanical vibrators shall be done sufficient distance away from the pouring head, so that the vibrator is utilized only to compact the concrete and not to spread it. Beams and columns shall be vibrated using immersion vibrators as per IS: 2505 and IS: 3558: thin section like water tank walls shall be vibrated using clamp-on vibrators and slabs shall be vibrated with surface vibrators. The contractor shall at all times have in reserve sufficient vibrators of each variety to guard against shut down of the work occasioned by the failure of the equipment in operation and to permit the equipment to be serviced and overhauled in rotation. No concreting will be permitted in the event of power failure or vibrator failure. The Engineer may, however, at his absolute discretion, permit concreting by increasing the slump and correspondingly increasing the cement contents at Contractor's cost; but in that case the concrete compacted mechanical vibration shall be paid for at a rate of 10 less than concrete rates Except for shallow or inaccessible concrete the vibration shall be penetrated vertically and at regular distance intervals, neither at an angle, nor at haphazard intervals. It is better to vibrate at smaller intervals for shorter periods of time, rather than at wider intervals for longer periods of time. The time and intervals shall be subject to the approval of the Engineer.

At corners obstructions, embedded fixtures and congested reinforcement areas, the vibrators shall be manipulated with the utmost care and handled only by the most experienced, workmen. All vibrating operations for the entire duration of the job shall be carried out by the same set of workmen.

f) Curing:

All freshly placed concrete surfaces shall be protected from foreign elements and from defacement during building operations. The contractor shall provide and use, where directed by the Engineer, enough tarpaulins or other suitable materials to cover completely or enclose as freshly finished concrete.

As soon as the concrete has hardened sufficiently to prevent damage, it shall be cured by maintaining the concrete in a damp condition by application of wet sacking or other approval moisture retaining covering for a period of 28 days after placing the concrete.

Extreme care should be taken to ensure that all surfaces are kept in a moist condition and no local area shall be allowed to dry out intermittently.

4. Testing:

- a) Method of sampling and testing shall be carried out as per I.S. 1199 and I.S. 516 but the evaluation of test results shall be as per ACI 214 in general and Clause 4 (d) herein after in particular.
- b) Tests shall be conducted on sets of three companion cubes or specimens. Companion specimens shall be taken out from a sample taken from a single batch of concrete and shall be of the same age at the time of testing. The average strength of the three companion specimens shall constitute the result of that test. The size of cube shall be 15 cms. (6inches).
- c) The frequency of taking cubes shall be as follows:
From each sample of concrete 6 companion cubes shall be taken. Three of these shall be tested at 7 days and the remaining three at 28 days
Two such samples giving 12 cubes shall be obtained per mix per day or for every 50 cum or fractions thereof of laid concrete of each grade whichever gives more number of cubes. All these cubes shall be tested in the site laboratory. As a check on the site testing equipment an additional 6 companion cubes shall be taken from 10% of the samples and these shall be tested at the corresponding ages in a laboratory nominated by the Engineer. If a significant difference is found between the two corresponding results, all further tests shall be carried out in the nominated laboratory till the testing equipment at site is properly repaired. The cost of all this testing shall be borne by the Contractor.
The Engineer may at his absolute discretion reduce the frequency of tests, when the extent of control is ascertained and the level of control reaches an acceptable limit.
- d) The criteria of acceptance of site concrete is as follow:
The concrete and the quality control, both shall be accepted if not more than 1 test in any 10 consecutive tests falls below 100% of the specified design strength, but not below 90% of the same.
If more than one test in any often consecutive tests do fall below 100% of the specified design strength but not below 90% then the concrete shall be still accepted but not the quality control, and immediate steps should be taken to improve the same. If any test result falls below 90% of the specified design strength, all concrete in the structure, of which that batch is representative, shall be liable for rejection.

5. Form- Works:

The form work shall generally comply with the requirements of Clause 20.2 of I.S. 456 and the tolerance shall be as per Clause 203.1 of A.C.I. 347.

6. (a) Specifications for Precast Concrete

- i) All precast work shall be carried out in strict accordance with the details shown on drawings.
- ii) All precast units are to have a distinguishing number and the date of casting plainly marked on them. A record showing the distinguishing mark, date of casting and erecting of each until shall be kept for reference.
- iii) Steel or other approved shuttering shall be used for all precast work. The shuttering shall be struck only when the concrete is of sufficient strength so that it is not damaged or after striking the shuttering.
- iv) The concrete in one precast piece shall be placed in one operation.
- v) A precast piece shall be suspended or supported only at the points described on the working drawings or as otherwise instructed by the Engineer. A place that is cracked or otherwise damaged, during before or after erection shall be removed from the works and replaced by the Contractor free of charge. Pieces shall be bedded or otherwise fixed in their permanent position as shown on drawings or as instructed by the Engineer.

6. (b) Tolerances :

Length	(6 mm) +- (¼ in)
Cross- section	(1.5 mm) +- (1/6 in)

It must be emphasized that precast units of accurate dimension are necessary for the final assembly and deviations in sizes should be an absolute minimum.'

7. LOADINGS TESTS ON PRECAST UNIT SHALL BE CARRIED OUT AS SPECIFIED BY THE ENGINEER, AT THE CONTRACTOR'S COST.

**ANNEXURE " II" TO SCHEDULE "B"
(GENERAL SPECIFICATIONS FOR BUILDING WORKS)**

I. Materials & Workmanship:

1. General:

- 1.1 All materials brought on the site of works and meant to be used in the same shall be the best of their respective kinds, and to the approval of the Engineer. The Engineer or his representative will accept the materials that really the best of their kinds obtainable, when it is proved beyond doubt that no better materials of the particular kind in question are available in the market.
- 1.2 The Contractor shall check each fresh consignment of materials as it is brought on the site of the works to see that it conforms in all respects to the specifications and / or the samples approved by the Engineer.
- 1.3 Any material that have been found not to conform to the specification will be rejected and will be removed from the site immediately by the contractor at his own cost.
- 1.4 The materials shall be stored or stacked on the site as directed by the Engineer.

2. Cement:

- 2.1 Cement used shall be of any brand of Indian make approved by the Engineer & Conforming to the latest Indian Standard Specification for Portland cement.
- 2.2 The cement shall be stored in a place approved by the Engineer and shall be well protected from dampness or any damage that may be caused to its quality by the weather or any other cause whatsoever.
- 2.3 No cement that has been kept in stores for too long a period to deteriorate in quality or that has become caked or perished by wetness or otherwise shall, under any circumstances, be used on the works but shall be removed from the works.

3. Lime

- 3.1 The lime used on the works shall be the Kanker lime brought from the best quarry and shall be made from well burnt lime stone which shall first be carefully freed from earth and other impurities before burning. The lime shall be delivered at the site of the mortar mill as early as possible after it has been drawn from the kilns and shall be free from ash, under burnt or unburnt materials, dust clay and other impurities. If so ordered by the Engineer, the lime shall be slaked at the site of the works in the presence of the Engineer or his representative.
- 3.2 The lime shall be stored in a rain proof shed with an impervious floor until required for use.

4. Sand:

- 4.1 The sand shall be river or pit sand, free from any clay, loam or vegetable matter and shall be clean and fit for use in the opinion of the Engineer or his representative. The sand shall be screened or washed in clean water, if necessary, as directed by the Engineer or his representative.
- 4.2 The sand used for concrete shall be sharp, angular grit type and well-graded, and shall pass through a sieve having 5 mm/square mesh (3/16" square) measured clear. Fine sand will not under any circumstances; be used for the concrete or mortar.
- 4.3 The sand used for the first coat of plaster shall pass through a sieve of 3mm square (64 meshes per square inch), and for the second and third coats of plastering, pointing, etc. shall be clean, sharp and gritty to the touch and shall pass through 1.5 mm square mesh (324 meshes to the square inch).

5. Aggregate:

- 5.1 Aggregate for the work shall be granite/hard stone. It shall be angular & with sharp corners and well-graded. The aggregate shall be clean and free from all clay, loamy admixture or any vegetable matter and will be of the

gauge specified. It shall be washed and screened before use if not already perfectly clean and found not to conform fully to the gauge specified. Hand broken aggregate will be preferred, to machine broken aggregate.

6. Bricks.

- 6.1** All bricks used on the works shall be best available ground moulded bricks and shall be uniform in quality and size.
- 6.2** They shall be uniform size, shape and colour and must be well burnt so as to give a clear ringing sound when struck. They shall not break when thrown on the ground or struck against other bricks. They shall have sharp edges and angles and even surfaces. No unburnt or overburnt bricks shall be used.

7. Teak Wood:

- 7.1** All work shall be of best Indian Teak Wood and shall be fully matured, well seasoned and free from all knots, shakes, cracks or defects of any other kind. Only the heart wood of a sound tree from which the sap has been entirely removed (sap wood that is found to be soft or of a spongy nature at any portion of the scantling under consideration will be rejected) and which is of uniform substance, straight in fiber and of uniform hardness shall be used on the works. The colour shall be uniform throughout.
- 7.2** No wood work, unless otherwise permitted in writing by the Engineer, shall be placed in position, covered in the ground or walls unless and until it has been approved by the Engineer or his representative, otherwise it is to be removed or payment proportionately deducted at the discretion of the Engineer. The contractor shall therefore give due notice to the Engineer or his representative for inspection. All timber coming in contact with masonry or concrete shall be treated with one coat of tar or wood preservative before fixing.

8. Stone:

- 8.1** Stone for rubble masonry shall be best of its kind Sharp and angular and free from flakes, or quality approved by the Engineer. No earthy or discoloured weathered or water worm stone shall be used. All stone for cut stone work shall be best of its kind sound durable, free from flaws, cracks veins, crystals, minerals, salt cavities or other defects and uniform texture. No earthy, discolored, or weather or water worn stone shall be used. All stones shall be laid on their natural beds and properly bonded in the work. All granite stone shall be from approved quarries and to be of the best description and of approved quality and colour.
- 8.2** Dressing: All faces of stones are required to be true and out of winding except where it is otherwise specified. The face of stones described as hammer-dressed shall be, as far as possible, squared leveled with a mason's hammer by knocking off all protuberance and ridges. Size stone required, for construction may be edged out and hammer dressed stone described as 1,2 or 3 line dressed and shall be as per samples kept at site.

9. Steel:

- 9.1** All steel work shall comply with the Indian Standard Specification for construction steel. The surface shall be free from rust. All steel shall be tested and of approved manufacture.

10. Mortar:

- 10.1** The materials shall be properly gauged and mixed dry. Water will then be gradually added to make the mixture homogeneous. No mortar that has begun to set shall be used.
- 10.2** The lime will be thrown into the mortar mill and ground with water until it forms homogeneous slurry. The slurry shall then be added slowly to required quantity, the mill working all the times. The mill shall go round at least 120 times. The grinding to be performed with a sufficient quantity of fresh water for such periods as may be ordered by the ENGINEER. The mortar to be kept moist and well sheltered from rain and sun till it is used in the work. No mortar that has commenced to show signs of initial set is to be used in the work without the special permission of the ENGINEER. For purpose of grinding, the mortar mill shall be constructed on the works at a site which will be pointed out by the ENGINEER. Such mortar grinding mill shall have one heavy roller. The entire mills are to be approved by the ENGINEER.

II. Excavation and Foundations:

1. Excavation

The Contractor shall not make excavation with side slope. The bottom of excavations shall be leveled to the level shown on the drawings, or such other levels as the Engineer may direct.

2. Leveling the Site:

The contractor shall mark the plinth levels on bricks pillars and the whole of the site shall be leveled to such levels to be determined by the Engineer by removing the superfluous portions of earth and filling in all depressions after the foundations have been constructed.

3. Spoil

The Contractor, without the consent in writing of the Employer or the Engineer on his behalf, shall not sell, remove or permit to be removed from the works any excavated materials which may be suitable and required for refilling the sides of foundations or for the work ordered.

4. Slips and Falls:

Every precaution shall be taken against slips and falls of the earth, clay, sand and other materials in the excavation, but in the event of any slip occurring, the contractor shall remove at his own expense, the surplus materials arising there from and at his own cost shall make good the space caused by the slips and falls which may be outside the dimension of the work ordered.

5. Ground Bed:

Should the bottom of any excavation appear to be soft, unsound or unsuitable, the Contractor shall report the matter to the Engineer and if the Engineer so directs, shall excavate the same to such depth as the Engineer shall direct. In case of extra excavation, such extra depth shall be filled up with concrete or such other materials as the Engineer shall direct. Such excavation and filling shall be valued and paid for as an authorized extra.

6. Protection:

- a) The contractor shall provide all necessary covering or boards and lay the same to protect the trenches of excavations from inclement weather.
- b) All trenches at the lowest level of any part of them shall at all times be kept free from water.

7. Foundation Bed:

The contractor shall well water, ram and thoroughly consolidate the bottom of all excavations before construction of foundations of other work is commenced.

8. Filling in:

- a) No excavation shall be filled in or concrete or foundation covered up until the dimensions have been check measured by the Engineer or his representative.
- b) After the Engineer 's permission has been obtained, the excavation shall be refilled with the excavated materials or other materials as ordered by the Engineer in layers not exceeding 150 mm (6") in depth Earth layer shall be well watered and rammed until it has become thoroughly consolidated. It shall be carefully placed and rammed so as not to cause any damage either to the materials structure or interfere with the alignment of levels.

III. Concrete, Plain and Reinforced:

1. Mixing:

Mixing of concrete shall be done only with the concrete mixer. Hand mixing shall not be permitted unless the Civil Engineer permits in case pf party works only. If hand mixing is allowed, the mixing shall be done by trained men using spades. The dry material shall be measured out with measuring boxes and turned over three times and then water added to the required quantity and the whole turned over at least three times again before the concrete is used in the works. The mixing shall be done on specially prepared platforms and not on the ground.

2. Forms and Form Works:

- 2.1 Any formwork found necessary by the Engineer shall be erected by the Contractor for carrying out concrete work. The centering shall be of such dimensions and so constructed as to remain rigid during the laying, tamping and setting of concrete.
- 2.2 Care shall be taken that when any formwork is reused, its surface shall be smooth and clean.
- 2.3 Immediately before any concreting is commenced, all formwork shall be carefully examined to see that dirt, shavings, sawdust and other refuse have been removed. All traps and temporary doors shall be carefully made good before any concrete is put in place.

3. Concrete Proportions:

3.1 The proportions of materials used shall generally be as per specifications of Schedule 'C', but shall be exactly determined from time to time by the Engineer in accordance with the relative coarseness and dampness of the aggregate.

4. Joints in Slabs etc.

- 4.1 Joints in beams and slabs shall be made at mid-span or as directed by the Engineer.
- 4.2. Joints shall be vertical and not the natural slope of the concrete and shall be rebated as directed.
- 4.3. The vertical face shall be chipped, watered and grouted with neat cement immediately before the fresh concrete of a succeeding batch is placed against it.

5. Removal of Centering:

- 5.1 All centering and forms shall be kept in position until the expiry of work as hereinafter specified.
- 5.2 The centering for slabs shall be kept in position for not less than ten days. The centering in all cases will be removed as directed by the Engineer.
- 5.3. The centering for beams and the bottom supports shall be kept for 28 days, unless otherwise specified by the Engineer.

6. Curing:

All concrete works shall be kept watered continuously for a minimum period of seven days, and up to a maximum period of fourteen days for certain works as directed by the Engineer.

7. Steel Reinforcement:

- 7.1 All bars shall be in one length as far possible, free from defects and no welding will be permitted. Where bars are to be joined they shall overlap at least 40 diameters in all cases.
- 7.2 Care shall be taken to see that the rods are placed in exact positions.
- 7.3 All reinforcement bars shall have hooked ends, unless otherwise directed by the Engineer.
- 7.4 Where rods intersect, they shall be wired at intervals with No.20 gauge iron wire.

8. Placing Concrete:

- 8.1 The concrete shall be placed in its final position before the initial set has taken place in layers not exceeding 75 mm (3") depth before tamping (in case of columns).
- 8.2. As soon possible after mixing the concrete shall be carefully packed around the steel work and shall be thoroughly packed and consolidated in such a manner and under such conditions as will secure a compact mass without voids and of the greatest possible density for the proportions used.
- 8.3 The greatest care shall be taken to prevent any displacement or bending of the bars, ties, links, stirrups or fabric etc.
- 8.4 If it is found when the formwork is removed that the surface of the slabs etc. is not perfect, it shall be made good by the Contractor at his own expense with rough cast, cement plaster composed of one part of cement to three parts of sand before final plastering.

9. Cover:

- 9.1 The cover at the end of the bars shall not be less than 38 mm (1.5").
- 9.2 The cover for any longitudinal bar in beams shall not be less than 38 mm (1.5").
- 9.3 The cover for any main reinforcement bar in slabs shall not be less than 13mm (0.5") or less the diameter of the bars, whichever is more.

10. Damp proof course:

- 10.1 Immediately over stone masonry at the level of the leveling course, there shall be a cement concrete course as specified.
- 10.2 This shall be cured for a minimum of three days before masonry is started over it.

11. Cement concrete in Foundations:

- 11.1 **Mixing and Laying:** Mixing shall be done by means of mechanical or electric concrete mixers. If hand mixing is permitted the several materials shall be accurately gauged and thoroughly mixed on a platform, being turned over at least twice dry and twice wet. Water shall be added only gradually and no more shall be used than necessary to sufficiently wet the materials, it shall be deposited gently in the trenches in horizontal layers of not more than 150 mm (6") thick and gently rammed by thappes only. No more concrete shall be mixed than can be used within half hour.
- 11.2 **Curing:** after laying, the concrete shall be kept watered thoroughly for a minimum period of seven days or as directed by the Engineer.

IV. Brick Work:

- 1.1 All brick work in C.M. Shall be or bricks thoroughly soaked for four hours before use. The practice of dipping the bricks in water just before use will not be allowed. All necessary water cisterns for this purpose shall be constructed by the Contractor to the satisfaction of the Engineer to ensure proper soaking of bricks.
- 1.2 All brick work shall be of in cement mortar of the required proportion as specified by the Engineer.

V. Stone Masonry:

- 1. One bond stone in at least every 2 meters (6ft) interval in each course (staggered in consecutive courses) and at junctions, return and angles shall bond into the work. The header to be at least 0.05Sq. M (half a Square foot) in area at face to run back the entire width of wall. When the thickness of wall is more than 600 mm (two feet) a series of bond stones to be laid through the walls as to form front to back, breaking joints or overlapping each other for at least 150 mm (6 inches). No stone whose length is less than 500 mm (1.5 ft) to be in the work as headers. Quoin stones flat bedded and of suitable rectangular size to be put at all angles. The exposed surface shall be rough dressed and joints cement pointed.
- 2. Before commencing the masonry work for foundation, trenches shall be leveled right through at the bottom and the same shall be watered and well rammed. The trenches shall be kept free of water while the masonry work is in progress.
- 3. The masonry shall be well –watered until it becomes hard and solid and shall be well covered during the rains. Any work washed out by rain or other water, shall be removed and rebuilt at the Contractor's expense. The exposed stone surface shall be cleaned thoroughly so that no mortar is sticking. The joints shall be raked out to a depth of 20 mm (¾") & the stone edge left sharp and clean.

VI. Hollow- Concrete- Block Masonry:

1. Block:

- 1.1 The blocks shall be prepared with cement sand mortar 1:4 unless otherwise specified. The finished shall be as per drawing. These shall be cured for a minimum period of 14 days before laying.

2. Mortar:

- 2.1 Unless otherwise specified the mix of cement and mortar for laying and jointing the blocks shall be 1:4 for partition walls (100mm thick) and 1:6 for other walls (of thickness 200 mm and above).
- 2.2 The consumption of mortar for such masonry shall not be less than 7% (i.e.7 cum per 100 cum) of the finished masonry.

3. Laying:

- 3.1 The block shall be laid true to line and plump and the masonry shall be cured for a period of 14 days after laying.
- 3.2 The joints shall be fully flushed with mortar and neatly finished.

4. Rates:

Besides for full sized blocks, the rates shall be inclusive for quarter, half, three quarter and other special size blocks as may be required for proper bonding etc.

5. Measurements:

As for brick masonry.

VII. Flooring:

1. General:

- 1.1 Mixing: Mixing shall be as per cement concrete specification. The mix shall be of the driest consistency which is workable. Not more than 24 Liters (5.25 gallons) of water per bag of cement shall be added.
- 1.2 Placing: Clean base thoroughly of all earth rubbish etc., with wire brush, chiseling out, if necessary. Wet the surface thoroughly but do not allow pools of water. Concrete to required thick ness and bring to established grade with a straight edge.
- 1.3 Finishing: Compact first with wood float. Follow with steel trowel after concrete has hardened sufficiently to prevent excess fine material from working to surface,. Bring finished to a smooth surface. If necessary, toweling shall be done after concrete has further hardened as directed. Lay in bays not more than 2 meters X 3 meters (6'x10')
- 1.4 Curing and Protection: As for plain cement concrete.
- 1.5 Admixtures: If directed as water proofing or hardening compound (composeal or ironite) shall be added according to manufactures specifications to get a water proof or medium duty floor.

2. Cement Concrete Patent Stones and Terrazzo Floors:

- 2.1 Mixing: As per plain cement concrete specification.
- 2.2 Laying: Lay floor to alternate squares to pattern shown on the drawings or s directed. Fix teak wood screeds 50 mmx38mm (2"x1.5") on all four edges of the square to be laid. Embed screeds firmly in weak mortar. Lay the undercoat of 32mm (1.25") first and leave 6mm (1/4") space for topping, which should then be laid within 10 to 15 minutes brought to level with a straight edge, care being taken to fill all holes and voids with mortar by beating with hard bristle brushes.
- 2.3 Finishing: Roll the concrete topping length and cross-wise to receive through compaction. Additional marble chips or larger size may be added during rolling if desired. After topping has hardened to prevent dislodgement of aggregate it shall be ground with carborandum of coarse grade to expose aggregate. The floor shall be kept wet during grinding. Remove ground material by flushing with water and moping. If any air holes or voids still remain they shall be filled with neat cement paste, which shall be spread in. After hardening for seven days the floor shall be again ground with carborandum blocks, of a fine grade and polished. The rate shall include coats, all laying, rolling, grinding and polishing etc.

VIII. Carpentry and Joinery:

1. Timber:

- 1.1 The whole of the timber of carpenter's work and joiner's work to be the best sawn die-squared wood and to hold the full scantlings as specified.
- 1.2 All timber to be free from sap shakes, large loose or dead knots, waney edges or other defects, and to be properly seasoned.
- 1.3 The sizes shown or described are to be taken as net sizes when finished and all timber must be free from defects and true in size and shape and well seasoned.

2. Workmanship:

- 2.1 All Joinery shall be jointed in a sound and workmanlike manner and all the moldings shall be accurately run. None of the joints shall remain loose or open.
- 2.2 Shrinkage: If the joints of any joinery work should open before liability period stated in the conditions of contract, the Contractor shall take down all such joinery and shall either refit it or renew it.
- 2.3 Frames: All frames shall be built in as the work proceeds. The practice of leaving openings in masonry shall not be allowed.
- 2.4. Exposed faces: All the exposed faces of joinery works shall be thoroughly planed and sand papered.

IX. Glass and Glazing:

1. Glass

- 1.1 Glass for doors windows and ventilators etc. shall conform with the specifications of schedule 'C'
- 1.2 Ground glass be provided to all baths and closets.
- 1.3 All glasses are free from waves, bubbles, scratches and all other imperfections.

2. Damaged Glass:

- 2.1 The Contractor shall be liable for damage to of scratching of the glass while the building is under construction.
- 2.2 Any glass found to be thus damaged shall be replaced by the Contractor at his own cost.

3. Completion:

- 3.1 The Contractor shall clean and polish all glasses to the satisfaction of Engineer.

X. Plastering:

1. Plastering:

- 1.1 The surface to be plastered shall be suitably prepared by hacking in case of concrete work and / or raking out the joints in the bricks work as directed by the engineer, and washed well with clean water free from all dust particles before any plaster is applied. The brick work shall be kept wet at least for six hours before the plastering is commenced. The plaster shall then be laid on with some what more than the required thickness and with a flat wooden rule. It shall be pressed into the joints and the finish done with lime slurry and steel trowel, or with wooden floats as directed by the Engineer.
- 1.2 The proportions of cement and sand for plaster shall be as defined in the relevant item in the Schedule 'C'
- 1.3 Plastering of an entire and unobstructed are shall be done at one stretch, and on occasion when owing to the extent of the area being too large or for some other reasons, the work is to be left over for the completion on the next working day, the joint between the two days work shall be rubbed down with carborandum stone on the work carried out in such a manner as to have no marks left in the finished work.
- 1.4 Provide plaster off-sets and bands still to precise dimensions and clean edges as shown on drawings.
- 1.5 All corners to be finished with 1:4 cement mortar. All surfaces to be finished on top with lime, where required.
- 1.6 No more cement mortar shall be mixed than can be used within half an hour. The joints shall be raked out to a depth of 13 mm ($\frac{1}{2}$ ") and the surface watered. The mixture of sand cement shall be applied evenly on the surface of the wall. The plaster of 20 mm and above shall be applied in two coats of 13 mm the balance of 7 mm or more. The first coat shall be made rough. After the first coat has sufficiently dried, the second coat will be applied and the surface finished off at once by being rubbed over with a trowel till the cement appears on the surface.

XI. Painting and Decoration:

1. Painting:

- 1.1 All tints and shades to be approved by the Engineer and the Contractor is to allow for twelve hours time of one man in painting small portions of the work in different colours so that the appearance in site may be judged and a selection made. The tints of undercoats are to be approximately those of the finishing of the colour. In order to indicate the number of coats applied a difference to be made in the tint of each successive coat.
- 1.2 Painting, varnishing and enameling are to be proceeded with unless the room is practically free from dust. All coats shall be thoroughly dry before subsequent coats are applied, and the requisite rubbing down with glass paper between coats is to be done. All cracks and crevices and nail holes to be stopped with hard stopping of approved make or shall consist of 20% of putty mixed with 20% of white lead.
- 1.3 No painting in exterior work is to be done in wet weather or upon surface which is not thoroughly dry.
- 1.4 The paints shall be of approved make and shade. The Engineer's decision shall be final in this respect.

ANNEXURE III TO "SCHEDULED 'B' Structural Steel Work

1. Rates:

- 1.1 The rates for structural steel work shall provide for welded joints and the Contractors shall not claim any thing extra for reduction in weight for welded joints as against riveted joints.
- 1.2 The rate includes material as well as the provision for all the necessary tools, plant, equipment, tackle required for straightening, cutting, drilling, fabrication, conveying, erecting, aligning and leveling etc. Cutting or any other types of wastage are not considered for payment.

2. Measurements:

- 2.1 All steel work will be measured in finished form at its required position in the structure, finished with one coat of standard paint conforming to IS-102 unless specified otherwise.
- 2.2 Indian Standard Method of measurements of Building works no. IS 1200-1958 with –date amendments shall be followed for all measurements.

3. Steel:

Finished sound, mild steel / Tor steel, free from cracks, surface flaws, laminations, splits, rough joggled or imperfect edges or any other surface or internal defect should be used. The mild steel shall conform with field test for structural steel based on IS Code No. IS 226 and IS 800. The Tor steel shall conform to ISI Code No. 1139. All structural shall be clearly rolled to the dimensions, sections and weights specified. Re-rolled Sections shall not be used.

4. Cutting of Structural Materials & Welding:

- 4.1 Cutting by shearing, cropping and gas cutting shall be clean, reasonably and free from distortion and all cutting edges shall be ground afterwards.
- 4.2 For mode of operations, safety during working, the designs, dimensions and type of Welding, terms symbols, accessories, tools and plants for welding Indian Standards Nos. IS 812,814,814,815, 816,818,819, 1179, 1182, 1261, 1278, 1323, 1395 etc. shall be followed.

5. Fabrication:

- 5.1 All bars, plates or rolled sections shall, before any other work is done upon them, be straightened and free from twist etc.
- 5.2. All sheared edges and ends where stress is transmitted shall be planed or machined perpendicular to line of thrust, Rough edges shall be filled off, ground, or machined as may be instructed. No articles shall be supplied with any edge or/ and in a rough or improperly finished manner which will required further treatment before it can be fitted closely into its intended position. Ends of all stiffeners etc. shall be firmly secured.
- 5.3 Joints in angles, plates etc. are to be made only in such positions as may be shown on plans or ordered. But joints must bear truly over the whole of the butting surface. Plates and bars should be leveled and straightened when necessary by pressure and not by hammering. All steel work intended to be riveted or bolted together

must take good face to face contact. All holes whether for rivets or bolts, are to be drilled in the solid, or Punched 5.00 mm (3/16") less than finished size and latter drilled to the required diameter which must not be more than 0.75 mm (1/32") larger than the river or bolt diameter. All rough edges or bolts resulting from planning or drilling are to be removed.

- 5.4 All bolts and nuts shall be whit worth's standards both as regards threads and sizes of heads and nuts. The heads and nuts shall be hexagonal unless otherwise specified. Headed bolts are to have heads forged in one piece with the shank, the shank being only cylindrical and the head concentric.
- 5.5 The screws of all bolts should show not less than a full thread above the nut when the latter has been screwed up tight and should not project in any unsightly manner. Where instructed by the Engineer, excessive projections are to be cut off and the end trimmed with a file.
- 5.6 Both the heads and nuts of bolts, and also rivet heads when tightened shall lie squarely and closely on the plates, bolts and rivets shall pass through holes in plates, accurately, fittings and without distortion of bolt, rivet or plate. The surface of every steel bed and bearing plate or plate over saddle casting shall be made perfectly square and level all over when attached to the member supported by it shall be dead true in every direction to its proper angle of bearing. The ends of all stanchions must be truly square to the main member and having all stiffening angles or 'T's supporting projections close fitted to those projections.

6. Erection:

- 6.1 Before commencing erection in the Contractors shall, if required, submit for approval to the Engineer a detailed centre line setting out plan out with the levels shown to a bench mark approved by the Engineer and only after such approval by the Engineer, the Contractor shall commence the erection work.
- 6.2. The centre lines of all columns and stanchion bases and girder bearing etc. must be defined by the Contractor with all the care necessary to ensure the whole work coming together proper position. All bearings levels must be determined or checked by him, to bench marks previously agreed upon with the Engineer, These must be placed in true position and strictly vertical. In case where there will be no later disturbance or adjustment, columns and stanchions may be bedded on cement mortar when first raised but where this is not so, they shall be placed on pickings or wedges, and not ground till the first tier or beams is in place nor must upper lengths be added till girders attached to lengths have been fixed.
- 6.3. In fixing bed plates, special care be taken to put the holding down bolts exactly in position. So that the nuts may bear square, firmly gripping the plate below. The upper surface of the bed plates or rollers must be exactly at the level given by the Engineer. The bed plates are to set in cement as the Engineer may direct.
- 6.4. All roof trusses shall be set up under favourable conditions with respect to wind, and shall be effectively stayed during the progress of the work, where necessary, staging of adequate strength are to be provided by the Contractor to facilitate the work of erection and inspection.
- 6.5 The responsibility for lifting rests with Contractor. He must not use any lifting appliance, whether his own or the property of another which is not suitable for the purpose. The slinging of steel work previous to lifting must be under the control of a man of experience. Where trusses or structural materials are to be lifted, care is to exercised to ensure by proper lashings that they will not separate, splay apart or slip out when raised. In putting iron work together, the greatest care is taken to fit the plates and bars accurately in contact, and to see that rivet and bolt holes correspond before riveting up. All joints are to be perfectly cleaned and freed from rust. Should any parts be bent or injured, they are to be repaired according to the instructions of the Engineer.
- 6.6 All members must be so formed that they can be accurately assembled without being unduly strained or forced into position and when built, shall be true and free twists, kind's buckles or open joints between component pieces. Failure to comply with these conditions will involve the rejection of the defective members.
- 6.7 The whole of the work with the exception of the bolts, rivets, and machined surfaces, after being scrapped perfectly free from rust, scale and dust will be brushed with steel brushes, and shall be (at the discretion of the Engineer) thoroughly coated with boiled linseed oil laid hot. The steel work shall afterwards be painted with one heavy coat of red lead paint. The paint is to be best quality and obtained from makers approved by the Engineer. Painting will be done in accordance with the specification for painting.

7. Painting:

- 7.1. All rivets, nuts, washers etc. should be thoroughly cleaned and dipped in boiled linseed oil. All the machined surface should be coated with a mixture of white lead and tallow.
- 7.2 Surfaces which are to be held in contact by riveting or welding should be painted with two coats of standard paint

8. Shop Drawings:

- 8.1** Before taking up fabrication work the Contractor must submit shop drawings for all joints with proper dimensions, Levels etc. and get the approved by the Engineer-in –Charge.

9. Miscellaneous:

In case of any missing details, specifications etc. the following Codes of Practice shall be followed:

- a) Indian Standard Code of Practice for use of Structural Steel in General Building Construction No. IS-800, 226 and 1139.
- b) Specification for Steel Metal Rain-Water Pipes up to 100 mm nominal size, gutters fittings and accessories No. IS-1728
- c) Sliding door bolts for use with pad locks No. IS-281
- d) Fixing accessories for corrugated sheets roofing No. IS-730
- e) Fixing of iron and steel in Building, painting and allied finishes –IS-1477
- f) Code of Practice for Water Proofing of roofs with Bitumen felts IS-1346.
- g) Aluminum corrugated sheet IS-1254.
- h) Steel windows for Industrial Building, IS-1361.
- i) ISI hand book for structural Engineer (NO 1)
- j) Other Indian Standards concerned with the respective items works.
- k) Unless & until specified, latest specifications of CPWD-1977 Vol. 1 & II shall be followed for missing details and specifications.

**SIGNATURE OF THE CONTRACTOR
WITH DATE AND SEAL**

DEPUTY GENERAL MANAGER (Estate)