



Telephone:+40 2020 3010	Date:01.11.2023
Website: www.tifrh.res.in	Email: rajasekharr@tifrh.res.in

PUBLIC TENDER

(TWO PART TENDER) for the following Works:

Construction of MS Structure for National Center for Nutrition and metabolism at Plot-B, TIFR, Survey No. 36/P,Gopanpally (Village), Serilingampally (Mandal), Ranga Reddy Dist., Hyderabad-500046.	
Tender No.	TIFR/PD/CF23-108/230934
Type of Tender	Two Part Tender (Part-I: Technical Bid and Part-II: Price Bid)
Estimated Cost	Rs. 1,98,44,100/-
Cost of EMD	Rs.3,96,900/- (Demand Draft to be drawn in favour of “Tata Institute of Fundamental Research”, Payable at Hyderabad (To be enclosed with the Technical Bid Part – I)).
Pre bidding meeting & Time	06.11.2023 at 11:30 Hrs
Last Date for Submission of Tender	10.11.2023 by 13:00 Hrs
Date of Opening Bids(Only Part-I:Technical Bid)	10.11.2023 at 15:30 Hrs
Tender Fee	Rs.1000/-(Demand Draft to be drawn in favour of “Tata Institute of Fundamental Research” Payable at Hyderabad (To be enclosed with the Technical Bid Part –I)).

- In case the Part “I” and Part “II” bids are not sealed in separate envelopes the tender will be rejected.
- The technical bid should not contain any indication of the price.
- The Technical Bid received without payment of tender fees and EMD shall be summarily rejected.
- Quotation sent by hand delivery/courier are to be handover at security after obtaining stamp, date and signature of the concern person at security.



- Contact Mr. Ashis panigrahi, Tel: 040-2020 3004/9102945867, Email Id: ashispanigrahi@tifrh.res.in for any technical or commercial terms clarifications mentioned in the tender.

Sealed tenders are invited for the aforesaid works from contractors having similar work experience in reputed Research Institutions, Universities, Central Government/Public Sector Undertaking, Private Laboratories, Multinational Companies, etc. Interested contractors who are satisfying prequalification criteria stipulated by TIFR-Hyderabad shall only submit their bids. For further details and any clarification on the tender you may please contact Head- Technical Services, Survey No.36/P, Gopanpally Village, Serilingampally Mandal, Ranga Reddy District, Hyderabad - 500046.

Last date for submission of the tender is 10.11.2023 by 13:00 Hrs.

(Rajasekhar. R)
Head-Technical Services



TENDER DOCUMENT

Construction of MS Structure for National Center for Nutrition and metabolism at Plot-B, TIFR, Survey No. 36/P, Gopanpally (Village), Serilingampally (Mandal), Ranga Reddy Dist., Hyderabad - 500 046.

NAME OF THE TENDERER:

Address:

.....

.....

.....

Last date of submission of the tender: On or before 10.11.2023 by 13:00 Hrs.



INVITATION OF BIDS

FOR

**Construction of MS Structure for National Center for Nutrition and
metabolism at Plot-B, TIFR, Survey No.36/P, Gopanpally (Village),
Serilingampally
(Mandal), RANGA Reddy Dist., Hyderabad – 500 046.**

TECHNICAL BID

PART-I



Tender Notice	:	TIFR/PD/CF23-108/230934
Name of Work	:	Construction of MS Structure for National Center for Nutrition and metabolism at Plot-B, TIFR, Hyderabad.
Location	:	Tata Institute of Fundamental Research Survey No. 36/P, Gopanpally Village, Serilingampally Mandal, Ranga Reddy District, Hyderabad – 500046.
Estimated Cost	:	Rs.1,98,44,100 /-
EMD	:	Rs.3,96,900/- (Demand Draft to be drawn in favour of “Tata Institute of Fundamental Research”, Payable at Hyderabad (To be enclosed with the Technical Bid Part – I))
Delivery Period	:	180 Days (Completion Period)
Validity	:	Seventy Five (75) days after opening of Part-I, Technical Bid

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SECTION-I	IMPORTANT INFORMATION
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INTRODUCTION

The Tata Institute of Fundamental Research is a National Centre of the Government of India, under the umbrella of the Department of Atomic Energy, as well as a deemed University awarding degrees for master's and doctoral programs. Tata Institute of Fundamental Research Centre for Interdisciplinary Sciences, Hyderabad invites bids for the following work:

Name of Work: Construction of MS Structure for National Center for Nutrition and metabolism at Plot-B, TIFR, Survey No. 36/P, Gopanpally (Village), Serilingampally (Mandal), Ranga Reddy Dist., Hyderabad-500 046.

1. PARTICULARS

a)	Considered area	210 Sqm
b)	Location	TIFR, Survey No. 36/P, Gopanpally (Village), Serilingampally (Mandal), Ranga Reddy Dist., Hyderabad-500046.
c)	Pre-Bid Meeting Date & Time	06.11.2023 at 11:30 Hrs
d)	Closing date & time of receipt of bids	10.11.2023 by 13:00 Hrs
e)	Date & time of opening of Sealed Cover-I containing Technical Bid	10.11.2023 at 15:30 Hrs.
f)	Date of opening of Sealed cover-II containing Financial Bid of eligible bidders	To be intimated to eligible bidders after completion of technical evaluation.

2. GENERAL INSTRUCTIONS

- 2.1. TIFR shall award the contract for the project through the two Bid systems.
- 2.2. The Contractors are advised to visit and examine the site of work and its surroundings and obtain any information that may be necessary, in addition to those provided in this document. The Contractor shall be deemed to have fully acquainted himself about the site condition, whether he inspects it or not.
- 2.3. The Contractor should adhere to the building bye-laws applicable for the area.

- 2.4. All clarifications shall be sought before the date of pre-bid meeting. The bidders may make suggestions which shall be considered during the Pre Bid Meeting. No further clarifications shall be issued after the issue of noteworthy replies to the pre-bid queries.
- 2.5. The submission of the bid by Contractor would imply that they have carefully read and agreed to the terms and conditions contained in this bid document.
- 2.6. The bid for the work shall remain open for acceptance for a period of **75 (Seventy Five) days** from the date of submission of the bids, which period may be extended by mutual agreement and the Contractor shall not cancel or withdraw the offer during this period. This bid document shall form a part of the contract agreement.
- 2.7. Fluctuation: Bidder must consider the price fluctuation going to happen in the bid validity period (i.e, 75 days + execution period 180 days).
- 2.8. Action for withdrawal: The bidder can't withdraw the bid within the validity period. If any bidder withdraws his bid during above said period then action will be taken as per tender clause & declaration.

3. **SUBMISSION OF BIDS:**

Bids shall be submitted to Head- Technical Services, **TIFR, Survey No. 36/P, Gopanpally (Village), Serilingampally (Mandal), Ranga Reddy Dist, Hyderabad-500046** in a sealed Master envelope super scribed "Bid for **Construction of MS Structure for National Center for Nutrition and metabolism at Plot-B, TIFR** with our enquiry no. and due date, containing two separate sealed covers clearly super scribed as "**Technical Bid**" and "**Financial Bid**" before the closing date and time of submission in the following manner:

- a) "**Technical Bid**": This will contain Technical part, Eligibility Documents alongwith testimonials. Earnest Money Deposit (EMD)
- b) "**Financial Bid**": This will contain the complete financial bidding document with duly filled in Schedule of Financial Quote of Financial Bid & Tender Drawings.

The Bids without signature of the authorized person of bidder and seal, Without EMD, with conditions or conditional rebates shall be summarily rejected.

4. **EVALUATION OF BID:**

- 4.1. **EVALUATION OF TECHNICAL BID:** The bids received will first be first opened and will be examined for Tender Fee, EMD Eligibility Criteria, Conditions, etc. Conditional Tenders and Tenders without EMD shall be summarily rejected.
- 4.2. **EVALUATION OF FINANCIAL BID:** The Financial Bid should contain the complete



financial bid document with duly filled in Schedule of Financial Quote of Financial Bid and signed Tender drawings. Financial Bids of Technically qualified Bidders will only be opened. Work will be awarded to lowest bidder (L1) based on their quotes after making necessary arithmetical checks.

5. SCOPE & OBJECTIVE

The Objective of the tender is to **Construction of MS Structure for National Center for Nutrition and metabolism at Plot-B, TIFR, Survey No. 36/P, Gopanpally (Village), Serilingampally (Mandal), Ranga Reddy Dist., Hyderabad – 500 046** as per the specifications and Bill of quantities mentioned in the Financial Bid.

Period of Completion of Work: 180 days from the date of issue of work order

Defect Liability Period: 12 months from the date of handing over of completed structure as per tender.

6. PAYMENT SCHEDULE:

The contractor shall submit the bills for payments along with a detailed statement showing the actual works carried out under different heads of items in the format specified by the TIFR. Minimum value of the work for interim payment (3 Running Bills) shall be Rs. **50,00,000/-**. All interim and final bills will be settled based on the joint measurements of each item of works and certified by TIFR Engineer. The TIFR Officers may sanction the secured advance up to an amount not exceeding 90% of the value of the materials as assessed by the Engineer-in-charge, or an amount not exceeding 90% of the material element cost in the tendered rate of the finished item of work, whichever is lower on production of sufficient documentary evidence i.e. Original invoice, inventory, Insurance for the fire and theft etc. All interim bills will be paid within 15 days from the date of submission and Final Bill will be settled within 30 days from the date of submission with certification of TIFR Engineer.



SECTION-II	ELIGIBILITY CRITERIA FOR TENDER QUALIFICATION
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A. Eligibility Criteria for Tender Qualification:

1. The Agencies/Contractors will be qualified for Construction of MS Structure for National Center for Nutrition and metabolism at Plot-B, TIFR, Survey No. 36/P, Gopanpally Village, SerilingampallyMandal, Ranga Reddy District, Hyderabad under following eligibility criteria.

• **Eligibility criteria:**

1. Proof of registration with Government / Semi Government organizations like CPWD, MES, BSNL, Railways, State PWDs etc. in appropriate class OR having experience in execution of similar nature of works.

2. The applicant should have satisfactorily completed the works as mentioned below during the last **seven years ending previous day of last date of submission of tenders.**

i. One similar works each costing not less than Rs.158.75 lakh

or

ii. Two similar works each costing not less than Rs.119.06 lakh

or

iii. Three work similar costing not less than Rs. 79.37 lakh

Important Notes:

a) **Similar work shall mean: - Fabrication, Erection of Steel Frame Structure with Deck sheeting Flooring System.**

b) Cost of work shall mean gross value of the completed work including the cost of materials supplied by the Client, but excluding those supplied free of cost. This should be certified by an officer not below the rank of Executive Engineer/Project Manager or equivalent.

3. The applicant should have had Average Annual financial turn over (gross) of **Rs.99.22 lakh** on construction works during immediate last three consecutive financial years ending **31st March 2023**. This should be duly audited by a Chartered Accountant. Year in which no turnover is shown would also be considered for working out the average.

4. The applicant **should not have incurred any loss** in more than two years during the last five consecutive immediate financial years ending **31st March 2023** duly certified by the licensed Chartered Accountant.
5. The applicant should have **Solvency of Rs.79.37 lakh** issued by a national bank within last one year from the date of tender notice.
6. The applicant's performance for each work completed in the last seven years should be certified by an officer not below the rank of Executive Engineer or equivalent.
7. Information and Instructions for tenderers posted on website shall part of tender document.
8. The tender document consisting of plans, specifications, the schedule of quantities of various types of items to be executed and the set of terms and conditions of the contract to be complied with and other necessary documents can be seen and downloaded from website CPP site <https://eprocure.gov.in/eprocure/app> or <https://www.tifrh.res.in/index.php/commercial-tenders/> free of cost.

It is the responsibility of the tenderer to submit the EMD (hard copy) duly sealed and signed in the “Head- Technical Services, TIFR, Survey No. 36/P, Gopanpally (Village), Serilingampally (Mandal), Ranga Reddy Dist, Hyderabad-500046.” on or before prescribed time & date of submission.

Please check Annexure-V (Page No. 85) for documents to be enclosed.

Note:

- ❖ Agencies/Contractors should have a full-fledged in-house project management team to undertake the jobs.
- ❖ The Agencies/Contractors shall **strictly furnish** aforesaid information in the formats/schedules given. **Non adherence to furnishing of information in the given format/schedules given will lead to disqualification of tender.**
- ❖ Instructions to Agencies/Contractors for furnishing the information is given as under:
 - Each page of the application shall be signed by a person having necessary authority to do so.
 - If the space in the proforma is insufficient for furnishing full details, such information may be given in separate sheets.
 - Applicants are required to furnish information against each item of the application. In



case a certain item is not applicable, please write NA. Application containing incorrect and or inadequate information is liable to be rejected.

- For any further clarification, The applicant may contact Tata Institute of Fundamental Research, Survey No. 36/P, Gopanpally Junction, Post: Gopanpally, Serilingampally, Hyderabad — 500 046.



SCHEDULE – A
BASIC INFORMATION

1. Name of the firm :
2. a) Address :
- b) Telephone / Fax No. :
- c) Mobile No. Contact Person :
- d) PAN No. :
- e) GST Registration No. :
- f) Labour License Details :
- g) Branch Office if any in Hyderabad :
3. Type of Organization (Proprietorships / Partnership) Ltd. Co. / Co-Operative) :
(Copy of relevant document to be enclosed)
4. Date of Incorporation :
5. Nature of Business :
6. Experience as prime Agencies/ Contractors (in Yrs.) :
7. Name and address of Bankers :
8. Organization chart of the Company :
including names and positions of directors / key personnel

Signature of the Applicant (s)



TATA INSTITUTE OF FUNDAMENTAL RESEARCH
(Autonomous Institution of the Department of Atomic Energy, Government of India)
Survey No.36/P, Gopanpally Village, Serilingampally Mandal, Ranga Reddy
District, Hyderabad-500046, Telangana

SCHEDULE – B

Major Civil Works (Copies of the completion certificate to be enclosed)

A. Similar work of costing Rs.158.75 lakhs or two similar works of costing Rs.119.06 lakhs or 3 similar works of costing Rs.79.37 lakhs during last 7 financial year ended on last date of receipt of tender for Research Institutes, Universities, Private Laboratories, R & D institutes, etc

Sl. .No	Name of the project& Address	Description of work in brief	Name of the Engineer	Name of the client also indicate whether Govt or semi Govt or Pvt body with full postal address	Contract Amount in Rs.	Year of commencement	Date of Completion		Whether work was left /uncompleted or the contract was terminated from either side? Give Details.	Any other relevant information relevant information
							Stipulated	Actual		
1.										
2.										

B. List of works in progress above Rs.79.37 lakhs

Sl. No.	Name of the project & Address	Description of work in brief	Name of the Engineer withfull postal address.	Name of the Client. Also indicate whether Govt. or semi Govt. or Pvt. Body with full postal address	Contract Amount in (Rs.)	Date of Completion	Present stage of work with reasons ifthe work is getting delayed	Any other relevant information
1.								
2.								

Signature of the Applicant (s)

Contractor's Signature with Stamp



SCHEDULE – C

TECHNICAL PERSONNEL & SPECIAL EXPERIENCE

List of technical personnel in your establishment giving details about their technical qualification and experience

Sr No.	Name	Age	Qualifications	Project Experience	Nature of works handled	Name of the project Handled	Date from which employed in your organization	Indicate special experience in Internal Electrification Installation & Testing projects in which were employed
1								
2								

2. Indicate other points if any to show your technical and managerial competency to indicate any important point in your favour.

Signature of the Applicant (s)

Contractor's Signature with Stamp

SCHEDULE – D

FINANCIAL POSITION AND WORKING RESULTS

	2020-21	2021-22	2022-23
1 Annual turnover	:	Rs.	
2. Net Profit	:	Rs.	
3. Credit Facilities from theBank	:	Rs.	
a) Cash Credit	:	Rs.	
b) Overdraft Limit	:	Rs.	
c) Guarantee	:	Rs.	
d) Others	:	Rs.	
4. Certificate from the Bankers regarding financial soundness of the applicant	:	Enclosed (Yes / No)	
	:	Enclosed (Yes / No)	
5. Solvency Certificate from theBankers			

Signature of the Application (s)

SCHEDULE – E

MISCELLANEOUS INFORMATION

- 1 Whether it would be possible to process :
Bank Guarantee for various advances
during execution of the work.

- 2 Details of Civil Suits / Litigations arised :
during execution of the contracts in the
last5 years.

- 3 Latest Income Tax Clearance Certificate :

- 4 Name of the two senior official of :
Organizations preferably Govt./Semi
Govt./ Autonomous/ Public Sector
Organization for whom you have
executed important and major
works, who may be directly
contracted by TIFR to gather
information about your ability,
competence and capacity of your
work/organization/etc.

- 5 Number of Supplementary :
sheetsattached.

Signature of the Applicant (s)

SECTION-III	NOTICE & INSTRUCTIONS
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1. **Sealed item rate tenders** in the prescribed form are invited from Head-Technical Services, Tata Institute of Fundamental Research, Centre for Interdisciplinary Services, Hyderabad, for the following:

Tender Notice No.	TIFR/PD/CF23-108/230934
Name of Work	Construction of MS Structure for National Center for Nutrition and metabolism at Plot-B, TIFR, Survey No. 36/P, Gopanpally (Village), Serilingampally (Mandal), Ranga Reddy Dist., Hyderabad-500046.
Estimated Cost	Rs.1,98,44,100/-
Time Limit	180 days (Completion Period)
Earnest Money Deposit	Rs.3,96,900 /- (Demand Draft to be drawn in favour of “Tata Institute of Fundamental Research”, Payable at Hyderabad (To be enclosed with the Technical Bid Part – I))
Tender Fee	Rs.1000 (Rupees Five Hundred only)
Last Date & Time of Submission of Tender	10.11.2023 by 13:00 Hrs
Date & Time of Opening of Technical Bid	10.11.2023 at 15:30 Hrs

2. **Sale of Tender:** Can be purchased from TATA INSTITUTE OF FUNDAMENTAL RESEARCH (TIFR), SERVICE BUILDING 1, SURVEY NO. 36/P, GOPANPALLY JN, POST: GOPANPALLY, HYDERABAD — 500 046, on payment of tender cost in the form of **Demand Draft to be drawn in favour of “Tata Institute of Fundamental Research”, Payable at Hyderabad (To be enclosed with the Technical Bid part – I).**

The tender documents issued must accompany at the time of submission, proof of the tender cost already paid

3. **Submission of Tender & Opening:** Tenders shall be submitted in a sealed envelope super scribed with Tender enquiry No., Due Date and with heading as **Construction of MS Structure for National Center for Nutrition and metabolism at Plot-B, TIFR, Survey No. 36/P, Gopanpally (Village), Serilingampally (Mandal), Ranga Reddy Dist., Hyderabad-500 046”** containing two separate sealed covers clearly super scribed as “TECHNICAL BID” and “FINANCIAL BID” on or before the closing date and time of submission in the following manner:

“TECHNICAL BID”: This will contain the following:

- a) Proof of Tender Cost paid already
- b) EMD
- c) Schedules giving information on Eligibility Criteria specified for tender qualification.

“FINANCIAL BID”: Signed copy of the Financial Bid quoting amount in the stipulated format and signed copies of the tender drawings.

4. Earnest Money Deposit (EMD): EMD shall be submitted in the form of **Demand Draft to be drawn in favour of “Tata Institute of Fundamental Research”, Payable at Hyderabad (To be enclosed with the Technical Bid Part-I))**

Earnest Money Deposit (EMD): Every Bidder has to pay EMD of amount as specified elsewhere in this tender by Demand Draft in favour of **“Tata Institute of Fundamental Research”** along with the offer. Quotation received without EMD shall be rejected and no correspondence whatsoever will be entertained. For successful bidder the EMD will be adjusted against Performance Guarantee and will be refunded after completion of work /supply of material at site and for unsuccessful bidders EMD will be refunded after placing the order to successful bidder.

5. Performance guarantee: The tenderer, whose tender is accepted, will be required to furnish a performance guarantee of 2.5% of the tendered amount within 7 (seven) working days from the date of intimation. This guarantee shall be in the form Demand Draft / Pay Order / Banker's cheque / Deposit or Government Securities / Fixed Deposit Receipt (FDR) or Guarantee Bonds (BG) of any Scheduled Bank in accordance with the form as Annexure – III here to. In case a fixed deposit receipt of any Bank is furnished by the contractor to TIFR as part of the performance guarantee and the Bank is unable to make payment against the said fixed deposit receipt, the loss caused thereby shall fall on the contractor and the contractor shall forthwith on demand furnish additional security to TIFR to make good the deficit.

The Performance Guarantee shall be initially valid up to the stipulated date of **completion plus 60 days** beyond that. In case the time for completion of work gets enlarged, the contractor shall get the validity of performance Guarantee extended to cover such enlarged time for completion of work. The performance guarantee shall be returned to the contractor, without any interest, after recording of the completion certificate for the work by the competent authority.

The Engineer-in-charge shall make a claim under the Performance guarantee for amounts to which TIFR entitled under the contract (notwithstanding and / or without prejudice to any other provisions in the contract agreement) in the event of:

- a) Failure by the contractor to extend the validity of the Performance Guarantee as described herein above, in which event the Engineer-in-charge may claim the full amount of the Performance guarantee.
- b) Failure by the contractor to pay TIFR, Hyderabad any amount due, either as agreed by the contractor or determined under any of the Clauses / Conditions of the agreement, within 30 days of the service of notice to this effect by Engineer-in-charge.

In the event of the contract being determined under provisions of any of the relevant clauses of the agreement, the performance guarantee shall stand forfeited in full and shall be absolutely at the disposal of TIFR, Hyderabad.

6. Security Deposit: The tenderer, whose tender is accepted, will also be required to furnish by way of Security Deposit for fulfillment of his contract, an amount equal to 5% of the tendered value of the work. Earnest Money deposited at the time of tenders will be treated as part of the Security Deposit.

or

The successful tenderer shall permit TIFR, Hyderabad at the time of making any payment to him for work done under the contract to deduct a sum at the rate of 5% of the gross amount of each running bill till the sum along with the sum already deposited as earnest money, will amount to security deposit of 5% of the tendered value of the work. Such deductions will be made and held by TIFR by way of Security Deposit unless he has / they have deposited the amount of Security at the rate mentioned above in cash or in the form of Fixed Deposit Receipts.

In case a fixed deposit receipt of any bank is furnished by the contractor to TIFR, Hyderabad as part of the security deposit and the bank is unable to make payment against the said fixed deposit receipt, the loss caused thereby shall fall on the contractor and the contractor shall forthwith on demand furnish additional security to TIFR, Hyderabad to make good the deficit.

All compensation or the other sums of money payable by the contractor under the terms of this contract may be deducted from, or paid by the sale of a sufficient part of his security deposit or from the interest arising there from, or from any sums which may be due to or may become due to the contractor by TIFR or any account whatsoever and in the event of his Security Deposit being reduced by reason of any such deductions or sale as aforesaid, the contractor shall within 10 days make good in cash or fixed deposit receipt tendered by the State Bank of India or by scheduled banks (if deposited for more than 12 months) endorsed in favour of the TIFR, HYDERABAD, any sum or sums which may have been deducted from, or raised by sale of his security deposit or any part thereof.

Security Deposit shall be initially valid up to the one year from the date of completion of work. In case the time for completion of work gets enlarged, the contractor shall get the validity of Security Deposit extended to cover such enlarged time for completion of work. The Security Deposit shall be returned to the contractor, without any interest, after completion of defect liability period.

Security Deposit as deducted above can be released against Bank Guarantee issued by a Scheduled Bank on its accumulation to a minimum of Rs.5 Lakhs subject to the condition that amount of such Bank Guarantee, except last one, shall not be less than Rs.5 Lakhs. Bank Guarantee should be submitted which will be valid upto the expiry of defect liability period.

7. Acceptance of Tender: The competent authority, on behalf of TIFR, Hyderabad does not bind itself to accept the lowest or any other tender, and reserves to himself the authority to reject any or all the tenders received, without assignment of any reason. All tenders, in which any of the prescribed conditions is not fulfilled or any condition, including that of conditional rebates, is put forth by the tenderer, shall be summarily rejected.

The Competent Authority, on behalf of TIFR, Hyderabad reserves to itself the right of accepting the whole or any part of the tender and the tenderer shall be bound to perform the same at the rates

quoted. The officer inviting tenders shall have the right of rejecting all or any of the tenders and will not be bound to accept the lowest tender or any other tender.

8. Validity of Tender: The tender for the work shall remain open for acceptance for a period of 75 days from the last date of submission of tenders. If any tenderer withdraws his tender before the said period, or before issue of Letter of Intent, whichever is earlier, or makes any modifications in the terms and conditions of the tender which are not acceptable to the Department, then TIFR, Hyderabad shall, without prejudice to any other right or remedy, be at liberty to forfeit 50% of the said earnest money absolutely. Further the tenderer shall not be allowed to participate in the retendering process of the work.

9. Levy / Taxes payable by contractor:

- a) GST or any other tax on materials and services in respect of this contract shall be payable by the contractor and TIFR shall not entertain any claim whatsoever in this respect.
- b) The contractor shall deposit royalty and obtain necessary permit as required for supply of the sand, aggregate, stone etc. from local authorities.

10. Deduction of Income Tax: Applicable as per IT Rules.

11. Site visit by the tenderer before tendering: Tenderers are advised to inspect and examine the site and its surroundings during working hours and satisfy themselves before submitting their tenders as to the nature of the ground and sub-soil (so far as is practicable), the form and nature of the site, the means of access to the site, the accommodation they may require and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their tender. A tenderer shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charges consequent on any misunderstanding or otherwise shall be allowed.

12. Signing of Tender and receipts for payments: In the event of the tender being submitted by a firm, it must be signed separately by each partner thereof or in the event of the absence of any partner, it must be signed on his behalf by a person holding a power-of-attorney authorizing him to do so, such power of attorney to be produced with the tender, and it must disclose that the firm is duly registered under the Indian Partnership Act-1952. Receipts for payments made on account of work, when executed by a firm, must also be signed by all the partners, except where contractors are described in their tender as a firm, in which case the receipts must be signed in the name of the firm by one of the partners, or by some other person having due authority to give effectual receipts for the firm.

13. Tenderer's responsibilities: The tenderer shall be responsible for arranging and maintaining at his own cost all materials, tools & plants, facilities for workers and all other services required for executing the work unless otherwise specifically provided for in the contract documents. Submission of a tender by a tenderer implies that they have read this notice & all other contract documents, and has made himself aware of the scope & specifications of the work to be done and local conditions and factors having a bearing on the execution of the work



14. Signing of contract: The Notice Inviting Tender shall form a part of the contract document. The successful tenderer / contractor, on acceptance of his tender by the Accepting Authority, shall, within 15 days from the stipulated date of start of the work, sign the contract consisting of: the Notice Inviting Tender, all the documents including all conditions, specifications and drawings, if any, forms the tender as issued at the time of invitation of tender and acceptance thereof together with any correspondence leading thereto.

15. Canvassing: either directly or indirectly, in connection with the tenders is strictly prohibited and the tenders submitted by the contractors who resort to canvassing will be liable to rejection and may be barred from future participation in TIFR works.



UNDERTAKING BY THE TENDERER

I / We have read and examined the Tender document including terms & conditions, specifications, bill of quantities, drawings and designs, general rules & directions, General Conditions of Contract, Special Conditions of Contract and all relevant other documents, publications and rules referred to in the Conditions of Contract and all other contents in the tender documents for the work.

I / We, hereby tender for execution of the work specified for the TIFR, Hyderabad within the time specified and in accordance in all respects with the specifications, designs, drawings and instructions in writing.

We agree to keep the tender open for **Seventy Five (75) days** from the last date of its submission and not to make any modifications in its terms and conditions. A sum of Rs has been deposited in cash / receipt treasury challan / deposit at call receipt of scheduled bank / fixed deposit receipt of scheduled bank / demand draft of a scheduled bank / Bank Guarantee issued by a Scheduled Bank as earnest money. If I / we, fail to furnish the prescribed performance guarantee within prescribed period, I / we agree that the said TIFR, Hyderabad or its authorized officer shall without prejudice to any other right or remedy, be at liberty to forfeit the said earnest money absolutely. Further, if I / we fail to commence work as specified, I / we agree that the TIFR, Hyderabad shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the said earnest money and the performance guarantee absolutely, otherwise the said earnest money shall be retained by TIFR, Hyderabad towards security deposit to execute all the works referred to in the tender documents upon the terms and conditions contained or referred to therein.

Further, I / We agree that in case of forfeiture of earnest money or both Earnest Money & Performance Guarantee as aforesaid, I / We shall be debarred for participation in the re-tendering process of the work.

I / We hereby declare that I / We shall treat the tender documents, drawings and other records connected with the work as secret / confidential documents and shall not communicate information derived there-from to any person other than a person to whom I / We am / are authorized to communicate the same or use the information in any manner prejudicial to the safety of the State.

Seal & Signature of Contractor
Postal Address

Dated
Witness
Address
Occupation

SECTION-IV	GENERAL INFORMATION
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i). Definition of Terms:

- a) The '**Contract**' means the documents forming the tender and acceptance thereof and the formal agreement executed between the Competent authority on behalf of the TIFR, Hyderabad and the Contractor together with the documents referred to therein including these conditions, the specifications, designs, drawings and instructions issued from time to time by the Engineer-in-charge and all these documents taken together, shall be deemed to form one contract and shall be complementary to one another.
- b) The expression '**Works**' or '**Work**' shall, unless there be something either in the subject or context repugnant to such construction, be construed and taken to mean the works by or by virtue of the contract contracted to be executed whether temporary or permanent and whether original, altered, substituted or additional.
- c) The '**Site**' shall mean the land or other places on, into or through which work is to be executed under the contract or any adjacent land, path or street 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.
- d) The '**Contractor**' shall mean the individual, firm or company, whether incorporated or not, undertaking the works and shall include the legal personnel representative of such individual or the persons composing such firm or company or the successors of such firm or company and the permitted assignees of such individual, firm or company.
- e) The '**Engineer-in-Charge**' means the Engineer / Officer, who shall supervise and be in charge of the work on behalf of TIFR, Hyderabad.
- f) '**Temporary Work**' means all temporary works of every kind required in or about the execution, completion and maintenance of the works.
- g) '**Market Rate**' shall be the rate as decided by the Engineer-in-Charge on the basis of the cost of materials and labour at the site where the work is to be executed plus 15% to cover, all overheads and profits. h) '**TIFR**' means TIFR, Hyderabad.
- h) '**Tendered value**' means the value of the entire work as stipulated in the letter of award.
- i) '**Time Limit**: The time allowed for carrying out the work reckoned from 10th day of the date of issue of work order.

ii). Opening of Tenders: Tenders shall be opened by the authorized committee of TIFR in the Presence of intending bidders or their authorized representatives at the scheduled date and time.

iii.) Declaration by tenderer: The tenderers shall sign a declaration under the Official Secret Act-1923 for maintaining secrecy of the tender documents, drawings or other records connected with the work given to them. The unsuccessful tenderers shall return all the drawings given to them.

iv.) Filling up of rates: All rates shall be quoted on the tender form by the tenderers in figures and words, and the amount in figures only. All rates shall be quoted on the prescribed tender form. The Contractor's Signature with Stamp

amount for each item should be worked out and requisite totals given.

- a. The rate(s) must be quoted in decimal coinage. Amounts must be quoted in full rupees by ignoring fifty paise and considering more than fifty paise as rupee one.
- b. If a discrepancy is found, the rates which correspond with the amount worked out by the contractor shall, unless otherwise proved, be taken as correct.
- c. If the amount of an item is not worked out by the tenderer, or it does not correspond with the rate written either in figures or in words, then the rates quoted by the tenderer in words shall be taken as correct.
- d. Where the rate quoted by the tenderer in figures and in words tally but the amount is not worked out correctly, the rate quoted by the tenderer will, unless otherwise proved, be taken as correct and not the amount.
- e. In event no rate has been quoted for any item(s), leaving space both in figure(s), word(s), and amount blank, it will be presumed that the contractor has included the cost of this / these item(s) in other items and rate for such item(s) will be considered as **zero** and work will be required to be executed accordingly.
- v. **Quoted rates to include all taxes:** GST in respect of this contract shall be payable by the contractor and TIFR will not entertain any claim whatsoever in respect of the same. GST rule will be applicable if any with effect from 01.07.2017 as per GST regime. The applicable TDS/ other charges if any as per GST rule will be deducted. TIFR Hyderabad GST no.36AAATT3951F2ZG.
- vi. **Action in case of un realistic rates:** In the case of any tender where unit rate of any item (s) appear unrealistic, such tender will be considered as unbalanced and in case the tenderer is unable to provide satisfactory explanation, such a tender is liable to be disqualified and rejected.
- vii. **Contractor to depute his representative at site:** The successful tenderer for the work should have responsible and responsive representative with adequate powers to take speedy decisions during the entire period of execution at the Work place. On acceptance of the tender, the name of the accredited representative(s) of the contractor, who would be responsible for taking instructions from the Engineer-in-Charge, shall be communicated in writing to the Engineer-in-Charge.
- viii. **Sufficiency of Tender:** The Contractor shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of his tender for the works and of the rates and prices quoted in the Bill of Quantities, at which rates and prices shall, except as otherwise provided, cover all his obligations under the Contract and all matters and things necessary for the proper completion and maintenance of the works.
- ix. **Signing of Contract:** The successful tenderer / contractor, on acceptance of his tender by the Accepting Authority, shall, within 15 days from the stipulated date of start of the work, sign the contract consisting of complete tender document including conditions, bill of quantities, drawings, if any, and acceptance thereof together with any correspondence leading thereto along with DAE Safety Code and Model Rules for the protection of health, sanitary arrangements for workers employed by DAE or its contractors, DAE Contractor's Labour Regulations, List of Acts and omissions for which fines can be imposed. No payment for the work done will be made unless contract is signed by the contractor.

SECTION-V

GENERAL CONDITIONS

1. Compensation for delay: If the contractor fails to maintain the required progress in terms of contract or to complete the work and clear the site on or before the stipulated or extended date of completion, he shall, without prejudice to any other right or remedy available under the Law to the Govt. on account of such breach, pay as agreed compensation the amount calculated at **1.5% per month of delay to be computed on per day basis** on the amount of tendered value of the work for every completed day / month (as applicable) that the progress remains below that specified or that the work remains incomplete. Provided always that the total amount of compensation for delay to be paid under this condition shall not exceed 10% of the tendered value of work or of the tendered value of the item or group of items of work for which a separate period of completion is originally given.

2. Determination of contract: Subject to other provisions contained in this clause, the Engineer-in-Charge may, without prejudice to his any other right or remedy against the contractor in respect of any delay, inferior workmanship, any claim for damages and /or any other provisions of this contract or otherwise, and whether the date for completion has or has not elapsed, by notice in writing absolutely determine the contract in any of the following cases:

i. if the contractor having been given by the Engineer-in-Charge a notice in writing to rectify, reconstruct or replace any defective work or that the work is being performed in an inefficient or otherwise improper or un workman-like manner shall omit to comply with the requirements of such notice for a period of 7 days thereafter.

ii. If the contractor has, without reasonable cause, suspended the progress of the work or has failed to proceed with the work with due diligence so that in the opinion of the Engineer-in-Charge (which shall be final and binding) he will be unable to secure completion of the work by the date for completion and continue to do so after a notice in writing of 7 days from the Engineer-in-charge.

iii. If the contractor fails to complete the work within the stipulated date or items of work with individual date of completion, if any stipulated, on or before such date(s) of completion and does not complete them within the period specified in a notice given in writing in that behalf by the Engineer-in-Charge.

iv. If the contractor persistently neglects to carry out his obligations under the contract and / or commits default in complying with any of the terms and conditions of the contract and does not remedy it or take effective steps to remedy it within 7 days after a notice in writing is given to him in that behalf by the Engineer-in-Charge.

v. If the contractor shall offer or give or agree to give to any person in TIFR or to any other person on his behalf any gift or consideration of any kind as an inducement or reward for doing or forbearing to do or for having done or forborne to do any act in relation to the obtaining or execution of this or any other contract for TIFR.

vi. If the contractor shall obtain a contract elsewhere as a result of wrong tendering or other non-bonafide methods of competitive tendering.

vii. If the contractor assigns, transfers, sublets (engagement of labour on a piece-work basis or of

labour with materials not to be incorporated in the work, shall not be deemed to be subletting) or otherwise parts with or attempts to assign, transfer, sublet or otherwise parts with the entire works or any portion thereof without the prior written approval of the Engineer-in-Charge.

viii. If the work is not started by the contractor within 1 / 8th of the stipulated time.

ix. When the contractor has made himself liable for action under any of the cases aforesaid, the Engineer-in- Charge on behalf of the TIFR, Hyderabad shall have powers:

a) To determine the contract as aforesaid (of which termination notice in writing to the contractor under the hand of the Engineer-in-Charge shall be conclusive evidence). Upon such determination, the Earnest Money Deposit, Security Deposit already recovered and Performance guarantee/Security Deposit under the contract, shall be liable to be forfeited, and shall be absolutely at the disposal of TIFR, Hyderabad.

b) After giving notice to the contractor to measure up the work of the contractor and to take such whole, or the balance or part thereof, as shall be unexecuted out of his hands and to give it to another contractor to complete the work. The contractor, whose contract is determined as above, shall not be allowed to participate in the tendering process for the balance work

x. In the event of above courses being adopted by the Engineer-in-Charge, 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 advances on account or with a view to the execution of the work or the performance of the contract. And in case action is taken under any of the provisions aforesaid, the contractor shall not be entitled to recover or be paid any sum for any work thereof or actually performed under this contract unless and until the Engineer-in-Charge has 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.

3. Contractor liable to pay compensation even if contract is not determined: In any case in which any of the powers conferred upon the Engineer-in-Charge under the contract, shall have become exercisable and the same are not exercised, the non-exercise thereof shall not constitute a waiver of any of the conditions hereof and such powers shall notwithstanding be exercisable in the event of any future case of default by the contractor and the liability of the contractor for compensation shall remain unaffected. In the event of the Engineer-in-Charge putting in force all or any of the powers vested in him under the preceding clause he may, if he so desires after giving a notice in writing to the contractor, take possession of (or at the sole discretion of the Engineer-in-Charge which shall be final and binding on the contractor), use as on hire (the amount of the hire money being also in the final determination of the Engineer-in-Charge) all or any tools, plant, materials and stores, in or upon the works, or the site thereof, belonging to the contractor, or procured by the contractor and intended to be used for the execution of the work / or any part thereof, paying or allowing for the same in account at the contract rates, or, in the case of these not being applicable, at current market rates to be certified by the Engineer-in-Charge, whose certificate thereof shall be final and binding on the contractor, his clerk of the works, foreman or other authorized agent to remove such tools, plant, materials, or stores from the premises (within a time to be specified in such notice); in the event of the contractor failing to comply with any such requisition, the Engineer-in-Charge may remove them at the contractor's expense or sell them by auction or private sale on account of the contractor and at his risk in all respects and the certificate

of the Engineer-in-Charge as to the expenses of any such removal and the amount of the proceeds and expenses of any such sale shall be final and conclusive against the contractor.

4. Time Extension for delay: The time allowed for execution of the works as stipulated in the contract or the extended time in accordance with these conditions shall be the essence of the Contract. The execution of the works shall commence from such time period as mentioned in contract. If the Contractor commits default in commencing the execution of the work as aforesaid, TIFR shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the earnest money & Performance guarantee/Security Deposit absolutely.

As soon as possible after the Contract is signed, the Contractor shall submit a Time and Progress Chart for each mile stone and get it approved by the Department. The Chart shall be prepared in direct relation to the time stated in the Contract documents for completion of items of the works. It shall indicate the forecast of the dates of commencement and completion of various trades of sections of the work and may be amended as necessary by agreement between the Engineer-in-Charge and the Contractor within the limitations of time imposed in the Contract documents, and further to ensure good progress during the execution of the work, the contractor shall in all cases in which the time allowed for any work, exceeds one month (save for special jobs for which a separate programme has been agreed upon) to complete the work as per the mile stones given.

If the work(s) be delayed by:

- i. Force majeure, or
- ii. Abnormally bad weather, or
- iii. Serious loss or damage by fire, or
- iv. Civil commotion, local commotion of workmen, strike or lockout, affecting any of the trades employed on the work, or
- v. Delay on the part of other contractors or tradesmen engaged by Engineer-in-Charge in executing work not forming part of the Contract, or
- vi. Any other cause which, in the absolute discretion of the Engineer-in-Charge is beyond the Contractor's control, then upon the happening of any such event causing delay, the Contractor shall immediately give notice thereof in writing to the Engineer-in-Charge but shall nevertheless use constantly his best endeavors to prevent or make good the delay and shall do all that may be reasonably required to the satisfaction of the Engineer-in-Charge to proceed with the works.

Request for rescheduling of Mile stones and extension of time, to be eligible for consideration, shall be made by the Contractor in writing within 14 days of the happening of the event causing delay on the prescribed form. The Contractor may also, if practicable, indicate in such a request the period for which extension is desired. In any such case the **Engineer-in-Charge** may give a fair and reasonable extension of time and reschedule the mile stones for completion of work. Such extension shall be communicated to the Contractor by the Engineer-in-Charge in writing, within 3 months of the date of receipt of such request. Non application by the contractor for extension of time shall not be a bar for giving a fair and reasonable extension by the Engineer-in-Charge and this shall be binding on the contractor.

5. Measurements of work done: Engineer-in-Charge shall, except as otherwise provided, ascertain and determine by measurement, the value in accordance with the contract of work done. All measurement of all items having financial value shall be entered in Measurement Book and/or level field book so that a complete record is obtained of all works performed under the contract. All measurements and levels shall be taken jointly by the Engineer-in-Charge or his authorized representative and by the contractor or his authorized representative from time to time during the progress of the work and such measurements shall be signed and dated by the Engineer-in-

Charge and the contractor or their representatives in token of their acceptance. If the contractor objects to any of the measurements recorded, a note shall be made to that effect with reason and signed by both the parties. If for any reason the contractor or his authorized representative is not available and the work of recording measurements is suspended by the Engineer-in-Charge or his representative, the Engineer-in-Charge and the Department shall not entertain any claim from contractor for any loss or damages on this account. If the contractor or his authorized representative does not remain present at the time of such measurements after the contractor or his authorized representative has been given a notice in writing three (3) days in advance or fails to countersign or to record objection within a week from the date of the measurement, then such measurements recorded in his absence by the Engineer-in-Charge or his representative shall be deemed to be accepted by the Contractor.

The contractor shall, without extra charge, provide all assistance with every appliance, labour and other things necessary for measurements and recording levels. Except where any general or detailed description of the work expressly shows to the contrary, measurements shall be taken in accordance with the procedure set forth in the specifications notwithstanding any provision in the relevant Standard Method of measurement or any general or local custom. In the case of items which are not covered by specifications, measurements shall be taken in accordance with the relevant standard method of measurement issued by the Bureau of Indian Standards and if for any item no such standard is available, then a mutually agreed method shall be followed.

The contractor shall give, not less than 7 days' notice to the Engineer-in-Charge or his authorized representative in-charge of the work, 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 be taken before the same is covered up or placed beyond the reach of measurement and shall not cover up and place beyond reach of measurement any work without consent in writing of the Engineer-in-Charge or his authorized representative in-charge of the work who shall within the aforesaid period of seven days inspect the work, and if any work shall be covered up or placed beyond the reach of measurements without such notice having been given or the Engineer-in-Charge's consent being obtained in writing, the same shall be uncovered at the Contractor's expense, or in default thereof no payment or allowance shall be made for such work or the materials with which the same was executed.

Engineer-in-Charge or his authorized representative may cause either themselves or through another officer of the department to check the measurements recorded jointly or otherwise as aforesaid and all provisions stipulated herein above shall be applicable to such checking of measurements or levels. It is also a term of this contract that recording of measurements of any item of work in the measurement book and/or its payment in the interim, on account or final bill shall not be considered as conclusive evidence as to the sufficiency of any work or material to which it relates nor shall it relieve the contractor from liabilities from any over measurement or defects noticed till completion of the defects liability period.

6. Completion Certificate: Within ten days of the completion of the work, the contractor shall give notice of such completion to the Engineer-in- Charge and within fifteen days of the receipt of such notice, the Engineer-in- Charge shall inspect the work, and if there is no defect in the work, shall furnish the contractor with a certificate of completion, otherwise a provisional certificate of physical completion indicating defects (a) to be rectified by the contractor and / or (b) for which payment will be made at reduced rates, shall be issued. But no final certificate of completion shall

be issued, 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, rubbish and all huts and sanitary arrangements, required for his/their work people on the site in connection with the execution of the works as shall have been erected or constructed by the contractor(s) and cleaned off the dirt from all wood work, doors, windows, walls, floors or other parts the 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, and not until the work shall have been measured by the Engineer-in-Charge. If the contractor shall fail to comply with the requirements of this clause as to removal of scaffolding, surplus materials and rubbish and all huts and sanitary arrangements as aforesaid and cleaning off dirt on or before the date fixed for the completion of the work, the Engineer-in-Charge may at the expense of the contractor remove such scaffolding, surplus materials and rubbish, etc., and dispose off the same as he thinks fit and clean off such dirt as aforesaid; and the contractor shall have no claim in respect of scaffolding or surplus materials as aforesaid except for any sum actually realized by the sale thereof.

7. Contractor to keep site clean: When the annual repair and maintenance of works are carried out, the splashes and droppings from white washing, colour washing, painting etc. on wall, floors, doors, windows etc. shall be removed and the surface cleaned simultaneously with the completion of these items of work in the individual rooms, quarters or premises etc. where the work is done without waiting for the actual completion of all the other items of work in contract. In case the contractor fails to comply with the requirements of this clause, the Engineer-in-Charge shall have the right to get this work done at the cost of the contractor either departmentally or through any other agency. Before taking such action, the Engineer-in-Charge shall give **10 days'** notice in writing to the contractor.

8. Completion plans to be submitted by the contractor: The contractor shall submit completion plan required as per Specifications for **Construction of MS Structure for National Center for Nutrition and metabolism at Plot B** as applicable within 7 days of the completion of the work. In case, the contractor fails to submit the completion plan as aforesaid, he shall be liable to pay a sum equivalent to 2.50% of the value of the work subject to a ceiling of Rs.15000/- as may be fixed by the Engineer-in-Charge and in this respect the decision of the Engineer-in-Charge shall be final and binding on the contractor.

9. Payment of Running & Final Bill: The contractor will be paid 3 Running Account (RA) Bills and Final Bill considering the progress of works based on measurement of works completed. The contractor shall submit the bills for payments along with detailed statement showing the actual works carried out under different heads of items in the format specified by TIFR-, Hyderabad. Minimum value of the work for interim payment shall be Rs.50,00,000 /-.

BILL FORMAT

Tender Item No.	Description of Items (as per Order)	Unit	Tender Quantity	Executed Quantity	Rate	% work done	Amount

NOTE: All quantities in the bill should be in cumulative.
 All measurements should be in the order of tender sequence and should be recorded in the measurement book.

The Measurement should be strictly in the below mentioned format only.

MEASUREMENT FORMAT

Tender Item No.	Description of Item Location against each Measurement taken	Nos.	Length	Breadth/width	Height	Qty.	Remarks

The works which have been certified for running bills will also be verified along with the final bill and any defects found need to be replaced / rectified by the contractor at his cost. Till the time, the site is handed over in full, it is the contractor's liability to safeguard the works done and completed at site. The Progress of work should not be affected in any way quoting the reason of non-availability of funds / materials / releasing of running bill. The liability of contractor is to complete all works in his scope in the scheduled time as per the terms of contract and will not relieve the contractors from his obligations once the Running bill is paid / kept pending.

The Security Deposit, shall be refunded on expiry of the Defects Liability Period after rectifying all defects to the satisfaction of the TIFR-Hyderabad/E.I.C. The acceptance of payment of the final bill by the Contractor would indicate that he would have no further claim in respect of the work executed.

10. Materials to be provided by the contractor: The contractor shall, at his own expense, provide all materials, required for the works other than those specified otherwise. The contractor shall, at his own expense and without delay, supply to the Engineer-in-Charge samples of materials to be used on the work and shall get these approved in advance. All such materials to be provided by the Contractor shall be in conformity with the specifications laid down or referred to in the contract. The contractor shall, if requested by the Engineer-in-Charge furnish proof, to the satisfaction of the Engineer-in-Charge that the materials so comply. The Engineer-in-Charge shall within thirty days of supply of samples or within such further period as he may require intimate to the Contractor in writing whether samples are approved by him or not. If samples are not approved, the Contractor shall forthwith arrange to supply to the Engineer-in-Charge for his approval, fresh samples complying with the specifications laid down in the contract. When materials are required to be tested in accordance with specifications, approval of the Engineer-in-Charge shall be issued after the test results are received.

The Contractor shall at his risk and cost submit the samples of materials to be tested or analyzed and shall not make use of or incorporate in the work any materials represented by the samples until the required tests or analysis have been made and materials finally accepted by the Engineer-in-Charge. The Contractor shall not be eligible for any claim or compensation either arising out of any delay in the work or due to any corrective measures required to be taken on account of and as a result of testing of materials.

The contractor shall, at his risk and cost, make all arrangements and shall provide all facilities as the Engineer-in-Charge may require for collecting, and preparing the required number of samples

for such tests at such time and to such place or places as may be directed by the Engineer-in-Charge and bear all charges and cost of testing unless specifically provided for otherwise elsewhere in the contract or specifications. The Engineer-in-Charge or his authorized representative shall at all times have access to the works and to all workshops and places where work is being prepared or from where materials, manufactured articles or machinery are being obtained for the works and the contractor shall afford every facility and every assistance in obtaining the right to such access.

The Engineer-in-Charge shall have full powers to require the removal from the premises of all materials which in his opinion are not in accordance with the specifications and in case of default, the Engineer-in-Charge shall be at liberty to employ at the expense of the contractor, other persons to remove the same without being answerable or accountable for any loss or damage that may happen or arise to such materials. The Engineer-in-Charge shall also have full powers to require other proper materials to be substituted thereof and in case of default, the Engineer-in-Charge may cause the same to be supplied and all costs which may attend such removal and substitution shall be borne by the Contractor.

The contractor shall at his own expense, provide a material testing lab at the site for conducting routine field tests. The lab shall be equipped at least with the testing equipment as specified in the contract.

11. Excavated / dismantled material will be TIFR's property: The contractor shall treat all materials obtained during dismantling of a structure, excavation of the site for a work etc. as TIFR property and such materials shall be disposed off to the best advantage of TIFR according to the instructions in writing issued by the Engineer-in-Charge.

12. Work to be executed in accordance with specifications, drawings, orders, etc. : The contractor shall execute the whole and every part of the work in the most substantial and workman like manner both as regards materials and otherwise in every respect in strict accordance with the specifications. The contractor shall also conform exactly, fully and faithfully to the designs, drawings and instructions in writing in respect of the work signed by the Engineer-in-Charge. The several documents forming the Contract are to be taken as mutually explanatory of one another, detailed drawings being followed in preference to small scale drawing and figured dimensions in preference to scale.

The following order of preference shall be observed:

- a) Description of Bill of Quantities.
- b) Particular Specifications and Special Clauses, if any.
- c) Drawings.
- d) Department of Atomic Energy Specifications
- e) C.P.W.D. Specifications.
- f) Indian Standard Specifications of B.I.S.
- g) Manufacturer's specifications

The contractor shall comply with the provisions of the contract and with the care and diligence execute and maintain the works and provide all labour and materials, tools and plants including for measurements and supervision of all works, structural plans and other things of temporary or permanent nature required for such execution and maintenance in so far as the necessity for providing these, is specified or is reasonably inferred from the contract. The Contractor shall take full responsibility for adequacy, suitability and safety of all the works and methods of construction

The contractor shall comply with the provisions of the contract and with the care and diligence execute and maintain the works and provide all labour and materials, tools and plants including for measurements and supervision of all works, structural plans and other things of temporary or permanent nature required for such execution and maintenance in so far as the necessity for providing these, is specified or is reasonably inferred from the contract. The Contractor shall take full responsibility for adequacy, suitability and safety of all the works and methods of construction. Contractor shall be required to submit a guarantee bond for all the water proofing works carried out by him. Contractor shall use the items of approved makes.

13. Deviations / Variations : Extent And Pricing: The Engineer-in-Charge shall have power (i) to make alteration in, omissions from, additions to, or substitutions for the original specifications, drawings, designs and instructions that may appear to him to be necessary or advisable during the progress of the work, and (ii) to omit a part of the works in case of non-availability of a portion of the site or for any other reasons and the contractor shall be bound to carry out the works in accordance with any instructions given to him in writing signed by the Engineer-in- Charge and such alterations, omissions, additions or substitutions shall form part of the contract as if originally provided therein and any altered, additional or substituted work which the contractor may be directed to do in the manner specified above as part of the works, shall be carried out by the contractor on the same conditions in all respects including price on which he agreed to do the main work except as hereafter provided.

A. Deviation and Time Extension: The time for completion of the works shall, in the event of any deviations resulting in additional cost over the tendered value sum being ordered, will be extended, if requested by the contractor, as follows:

- i. In the proportion which the additional cost of the altered, additional or substituted work, bears to the original tendered value, plus
- ii. 25% of the time calculated in (i) above or such further additional time as may be considered reasonable by the Engineer-in-Charge.

B. Extra Items and Pricing: In the case of extra item(s) which cannot be determined under Part-B of the schedule of quantities, the contractor may within fifteen days of receipt of order or occurrence of the item(s), claim rates, supported by proper analysis, for the work and the Engineer-in-charge shall within one month of the receipt of the claims supported by analysis, after giving consideration to the analysis of the rates submitted by the contractor, determine the rates on the basis of the market rates and the contractor shall be paid in accordance with the rates so determined.

In the case of substituted items, the rate for the agreement items (to be substituted) and substituted item shall also be determined in the manner as mentioned in the following para:

C. Substituted Items and Pricing:

- i. If the market rate for the substituted item so determined is more than the market rate of the agreement item (to be substituted) the rate payable to the contractor for the substituted item shall be the rate for the agreement item (to be substituted) so increased to the extent of the difference between the market rates of substituted item and the agreement item (to be substituted).

ii. If the market rate for the substituted item so determined is less than the market rate of the agreement item (to be substituted) the rate payable to the contractor for the substituted item shall be the rate for the agreement item (to be substituted) so decreased to the extent of the difference between the market rates of substituted item and the agreement item (to be substituted).

D. Deviated Quantities and Pricing: In the case of contract items, substituted items, contract cum substituted items, which exceed the limits of 30% for building work, 100% for foundation work and 50% for maintenance work, the contractor may within **15 days** of receipt of order or occurrence of the excess, claim revision of the rates, supported by proper analysis, for the work in excess of the above mentioned limits, provided that if the rates so claimed are in excess of the rates specified in the schedule of quantities, the Engineer-in-Charge shall within one month of receipt of the claims supported by analysis, after giving consideration to the analysis of the rates submitted by the contractor, determine the rates on the basis of the market rates and the contractor shall be paid in accordance with the rates so determined.

The provisions of the preceding paragraph shall also apply to the decrease in the rates of items for the work in excess of the aforesaid limits, and the Engineer-in-Charge shall after giving notice to the contractor within one month of occurrence of the excess and after taking into consideration any reply received from him within **15 days** of the receipt of the notice, revise the rates for the work in question within one month of the expiry of the said period of **15 days** having regard to the market rates.

Any operation incidental to or necessarily has to be in contemplation of tenderer while filing tender, or necessary for proper execution of the item included in the Bill of Quantities mentioned above, whether or not, specifically indicated in the description of the item and the relevant specifications, shall be deemed to be included in the rates quoted by the tenderer. Nothing extra shall be admissible for such operations.

14. Foreclosure of contract due to abandonment or reduction in scope of work: If at any time after acceptance of the tender, TIFR-Hyderabad shall decide to abandon or reduce the scope of the works for any reason whatsoever and hence not require the whole or any part of the works to be carried out, the Engineer-in-charge shall give notice in writing to that effect to the contractor and the contractor shall act accordingly in the matter. The contractor shall have no claim to any payment of compensation or otherwise whatsoever, on account of any profit or advantage which he might have derived from the execution of the works in full but which he did not derive in consequence of the foreclosure of the whole or part of the works.

15. Suspension of work:

i. The contractor shall, on receipt of the order in writing of the Engineer-in-Charge, (whose decision shall be final and binding on the contractor) suspend the progress of the works or any part thereof for such time and in such manner as the Engineer-in-Charge may consider necessary so as not to cause any damage or injury to the work already done or endanger the safety thereof for any of the following reasons:

ii. On account of any default on the part of the contractor or b. for proper execution of the works or part thereof for reasons other than the default of the contractor; or c. for safety of the works or part thereof.

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

iv. If the suspension is ordered for reasons (b) and (c) in sub-para (i) above:

v. The contractor shall be entitled to an extension of time equal to the period of every such suspension PLUS 25%, for completion of the item or group of items of work for which a separate period of completion is specified in the contract and of which the suspended work forms a part, and;

vi. If the total period of all such suspensions in respect of an item or group of items or work for which a separate period of completion is specified in the contract exceeds thirty days, the contractor shall, in addition, be entitled to such compensation as the Engineer-in-Charge may consider reasonable in respect of salaries and/or wages paid by the contractor to his employees and labour at site, remaining idle during the period of suspension, adding thereto 2% to cover indirect expenses of the contractor provided the contractor submits his claim supported by details to the Engineer-in-Charge within fifteen days of the expiry of the period of 30 days.

vii. If the works or part thereof is suspended on the orders of the Engineer-in-Charge for more than three months at a time, except when suspension is ordered for reason (a) in Sub-Para (i) above, the contractor may after receipt of such order serve a written notice on the Engineer-in-Charge requiring permission within fifteen days from receipt by the Engineer-in-Charge of the said notice, to proceed with the work or part thereof in regard to which progress has been suspended and if such permission is not granted within that time, the contractor, if he intends to treat the suspension, where it affects only a part of the works as an omission of such part by TIFR or where it affects whole of the works, as an abandonment of the works by TIFR, shall within ten days of expiry of such period of 15 days give notice in writing of his intention to the Engineer-in-Charge. In the event of the contractor treating the suspension as an abandonment of the contract by TIFR, he shall have no claim to payment of any compensation on account of any profit or advantage which he might have derived from the execution of the work in full but which he could not derive in consequence of the abandonment. He shall, however, be entitled to such compensation, as the Engineer-in-Charge may consider reasonable, in respect of salaries and/or wages paid by him to his employees and labour at site, remaining idle in consequence adding to the total thereof 2% to cover indirect expenses of the contractor provided the contractor submits his claim supported by details to the Engineer-in-Charge within 30 days of the expiry of the period of 3 months.

16. Action in case of work not done as per specifications: All works under or in course of execution or executed in pursuance of the contract, shall at all times be open and accessible to the inspection and supervision of the Engineer-in-charge, his authorized subordinates in charge of the work and all the superior officers of the Department or any organization engaged by the Department for Quality Assurance and of the Chief Technical Examiner's Office, and the contractor shall, at all times, during the usual working hours and at all other times at which reasonable notice of the visit of such officers has 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 that 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 himself.

If it shall appear to the Engineer-in-charge or his authorized subordinates in-charge of the work or his subordinate officers or the officers of the organization engaged by the Department for Quality Assurance or to the Chief Technical Examiner or his subordinate officers, that any work has been executed with unsound, imperfect, or unskillful workmanship, or with materials or articles provided by him for the execution of the work which are unsound or of a quality inferior to that contracted or

otherwise not in accordance with the contract, the contractor shall, on demand in writing which shall be made within twelve months (six months in the case of work costing. 10 Lakh and below except road work) of the completion of the work from the Engineer-in-Charge specifying the work, materials or articles complained of notwithstanding that the same may have been 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 other proper and suitable materials or articles at his own charge and cost. In the event of the failing to do so within a period specified by the Engineer-in-Charge in his demand aforesaid, then the contractor shall be liable to pay compensation at the same rate as under clause III(1) of the contract (for non-completion of the work in time) for this default. In such case the Engineer-in-Charge may not accept the item of work at the rates applicable under the contract but may accept such items at reduced rates. Decision of the Engineer-in-Charge to be conveyed in writing in respect of the same will be final and binding on the contractor.

17. Contractor liable for damages, defects during Maintenance (Defect Liability Period): If the contractor or his working people or servants shall break, deface, injure or destroy any part of building in which they may be working, or any building, road, road kerb, fence, enclosure, water pipe, cables, drains, electric or telephone post or wires, trees, grass or grassland, or cultivated ground contiguous to the premises on which the work or any part of it is being executed, or if any damage shall happen to the work while in progress, from any cause whatever or if any defect, shrinkage or other faults appear in the work within **12 months (6 months** in the case of work costing **Rs. 10,00,000/- and below** except road work) after a certificate final or otherwise of its completion shall have been given by the Engineer-in-Charge as aforesaid arising out of defective or improper materials or workmanship, the contractor shall upon receipt of a notice in writing on that behalf make the same good at his own expense, or in default, the Engineer-in-Charge cause the same to be made good by other workmen and deduct the expense from any sums that may be due, or at any time thereafter may become due to the contractor, or from his security deposit, or the proceed of sale thereof or of a sufficient portion thereof. The security deposit of the contractor shall not be refunded before the expiry of **12 months (6 months** in the case of work costing **Rs.10,00,000/- and below** except road work) after the issue of the certificate final or otherwise, of completion of work, or till the final bill has been prepared and passed whichever is later. Provided that in the case of road work, if in the opinion of the Engineer-in-Charge, half of the security deposit is sufficient to meet all the liabilities of the contractor under this contract, half of the security deposit will be refundable after **6 months** and the remaining half after **12 months** of the issue of the said certificate of completion or till the final bill has been prepared and passed whichever is later. Performance Security shall be refunded to the contractor after completion of the work and recording the completion certificate.

18. Contractor to supply tools & plants etc.: The contractor shall provide at his own cost all materials (except such special materials, if any, as may in accordance with the contract be supplied from the Engineer-in-Charge's stores), machinery, tools & plants. in addition to this, appliances, implements, other plants, ladders, cordage, tackle, scaffoldings and temporary works required for the proper execution of the work, whether original, altered or substituted and whether included in the specification or other documents forming part of the contract or referred to in these conditions or not, or which may be necessary for the purpose of satisfying or complying with the requirements of the Engineer-in-Charge as to any matter as to which under these conditions he is entitled to be satisfied, or which he is entitled to require together with carriage therefore to and from the work. The contractor shall also supply without charge the requisite number of persons with the means and materials, necessary for the purpose of setting out works, and counting,

weighing and assisting in the measurement or examination at any time and from time to time of the work or materials. Failing his so doing, the same may be provided by the Engineer-in-Charge at the expense of the contractor and the expenses may be deducted, from any money due to the contractor, under the contract and/or from his security deposit or the proceeds of sale thereof, or of a sufficient portions thereof.

19. Recovery of compensation paid to workmen : In every case in which by virtue of the provisions of section 12 sub-section (1) of the Workmen's Compensation Act. 1923, TIFR is obliged to pay compensation to a workman employed by the contractor, in execution of the works, TIFR will recover from the contractor the amount of the compensation so paid; and, without prejudice to the rights of TIFR under Section 12, sub-section (2) of the said Act, TIFR 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 TIFR to the contractor whether under this contract or otherwise. TIFR 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 TIFR full security for all costs for which TIFR might become liable in consequence of contesting such claim.

20. Ensuring payment and amenities to workers if contractor fails: In every case in which by virtue of the provisions of the Contract Labour (Regulation and Abolition) Act, 1970 and of the contract labour (Regulation and Abolition) Central Rules, 1971, TIFR is obliged to pay any amounts of wages to a workman employed by the contractor in execution of the works, or to incur any expenditure in providing welfare and health amenities required to be provided under the above said Act and the Rules, under Clause 19 H or under the DAE Contractor's Labour Regulations, or under the rules framed by Government from time to time for the protection of health and sanitary arrangements for workers employed by Department of Atomic Energy contractors, TIFR will recover from the contractor the amount of wages so paid or the amount of expenditure so incurred; and without prejudice to the rights of TIFR under Section 20, sub-section (2) and Section 21, sub-section (4) of the contract labour (Regulation and Abolition) Act, 1970, TIFR 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 TIFR to the contractor whether under this agreement or otherwise. TIFR shall not be bound to contest any claim made against it under Section 20, subsection (1) and section 21, sub-section (4) of the said Act, except on the written request of the contractor and upon his giving to TIFR full security for all costs for which TIFR might become liable in contesting such claim.

21. Labour laws to be complied by the contractor: The contractor shall obtain a valid license under the Contract Labour (R & A) Act, 1970 and the Contract Labour (Regulation and Abolition) Central Rules, 1971, before the commencement of the work, and continue to have a valid license until the completion of the work. The contractor shall also abide by the provision of the Child Labour Prohibition & Regulation) Act-1998. The contractor shall also comply with the provisions of the building and other Construction Workers (Regulation of Employment& Conditions of Service) Act, 1996 and the building and other Construction

Workers Welfare Cess Act, 1996. Any failure to fulfill these requirements shall attract the penal provisions of this contract arising out of the resultant non execution of the work.

22. Minimum wages act to be compiled with: The contractor shall comply with all the provisions of the Minimum Wages Act, 1948, Contract Labour (Regulation and Abolition) Act, 1970 and rules framed there under and other labour laws affecting contract labour that may be brought into force from time to time.

23. Settlement of Disputes & Arbitration: Any dispute arising from this contract will be referred to two arbitrators one to be appointed by you and one by us. The two arbitrators, in the event of their disagreement will appoint an Umpire. The decision of the Umpire shall be final and binding. The arbitration will proceed as per Indian Arbitration Act, 1940, as amended up to date.

24. Confidential Information : The drawings, specifications, proto-type, samples and such other information furnished to the contractor relating to the supply / work, sub-systems / equipment etc. are to be treated as confidential which shall be held by the contractor in confidence and shall not be divulged to any third party without the prior written consent of the Department. The contractor, therefore, binds himself, his successors, heirs, executors, administrators, employees and the permitted assignees or such other persons or agents directly or indirectly concerned with the work / supply to the confidential nature of the drawings, specifications, proto-type samples etc. It is a further condition of the contract that the contractor shall not, without prior written permission from the Department, transmit, transfer, exchange, gift or communicate any such confidential information, and also the component, sub assembly, products, by-products etc. pursuant to the fabrication under taken by the contractor, to any third party.

25. Safety with Scaffolding and Mobile Elevated Platform: Every scaffold or mobile elevated platform and its supporting members, railings, Tee-boards, ropes should be designed to support given load, with a safety factor of at least four. No alterations should be made that might impair the strength of such structures, no improvised, make-shift or substandard scaffold should be permitted even for the most temporary use. All work in connection with such structures, including construction, operation, maintenance, alteration and removal should be carefully done under the direction and supervision of persons with specialized experience in such works. A safe and convenient means of access should be provided to the platform or scaffold. Means of access may be a portable ladder, fixed ladder, ramp or it may be a stairway. The use of cross braces or frame work as means of access to the working surface should not be permitted.

26. The TIFR-Hyderabad shall not be responsible for any accident/injury or loss of life of any of the persons engaged by the contractor that may take place while executing the contract. Any compensation or expenditure towards the treatment of such injury or loss of life shall be sole responsibility of the contractor. **At his cost, the contractor shall obtain appropriate/adequate insurance policy to his personnel towards meeting the liability of compensation arising out of death, injury, disablement, etc. at work.**

27. Other Damages:

27.1. The Contractor/Supplier/Manufacturer shall be responsible for all injury to persons, animals or things and for all damage to the works, structure of, and decorative work in the property which may arise from operation or neglect of himself or any of his Subcontractor or of his or Sub-Contractor's employees, whether such injury or damage may arise from carelessness, accident or any other cause whatever in any way connected with the carrying out of this contract. This clause shall be held to include any damage to buildings, whether immediately adjacent or otherwise, any damage to roads, streets, foot paths, as well as all damage caused to the works forming the subject of this contract by frost or other inclemency of weather. The Contractor/Supplier shall indemnify the Purchaser and hold him harmless in respect of all and any expenses on property as aforesaid and also in respect of any claim made in respect of injury or damage under any acts of Government or otherwise and also in respect of any award of compensation or damages

consequent upon such claim. Contractor shall furnish necessary insurance documents **(Contractor All Risk Policy)** taken for the site before commencement of work.

27.2. The Contractor/Supplier/Manufacturer shall reinstate all damage of every sort mentioned in this clause, so as to deliver up the whole of the contract works complete and perfect in every respect and so as to make good or otherwise satisfy all claims for damage to the property of the Owner/third parties.

27.3. The Contractor/Supplier/Manufacturer shall indemnify the Purchaser against all claims which may be made against the Purchaser, by any member of the public or other party, in respect of anything which may arise in respect of the works or in consequence thereof and shall, at his own expense, effect and maintain, until the work has been 'Taken Over' under clause 5.

27.4. The Contractor/Supplier/Manufacturer shall also indemnify the Purchaser against all claims which may be made upon the Purchaser whether under the Workmen's Compensation Act or any other statute in force during the currency of this contract or at common law in respect of any employee of the Contractor/Supplier or of any of his sub-contractor and shall at his own expense effect and maintain until the work has been 'Taken Over', with an approved office. Contractor shall furnish a copy of the labour licence before commencement of work. If the aforesaid are not applicable contractor should furnish declaration to this effect and shall indemnify TIFR-Hyderabad, Hyderabad for violation of any such compliances.

27.5. The Purchaser, with the concurrence of the Engineer In-Charge, shall be at liberty and is hereby empowered to deduct the amount of any damages compensation costs, charges and expenses arising or accruing from or in respect of any such claims or damages from any sums due to or become due to the Contractor/Supplier.

SECTION – VI

SPECIAL CONDITIONS OF CONTRACT

I. GENERAL

1. Special Conditions of Contract (SCC) shall be read in conjunction with the General Conditions of Contract (GCC) also referred to as General Terms & Conditions of Works Contract, Schedule of Quantities, specifications of work, drawings and any other document forming part of this Contract wherever the context so requires.
2. Notwithstanding the sub-division of the document into these separate sections and volumes, every part of each shall be deemed to be supplementary of every other part and shall be read with and into the Contract so far as it may be practicable to do so.
3. Where any portion of the GCC is repugnant to or at variance with any provisions of the Special Conditions of Contract, then unless a different intention appears, the provision(s) of the Special Conditions of Contract shall be deemed to override the provision(s) of GCC only to the extent that such repugnancy or variations in the Special Conditions of Contract are not possible of being reconciled with the provisions of GCC.
4. Wherever it is stated in this Bidding Document that such and such a supply is to be affected or such and such a work is to be carried out, it shall be understood that the same shall be affected and /or carried out by the Contractor at his own cost, unless a different intention is specifically and expressly stated herein or otherwise explicit from the context. Contract Price shall be deemed to have included such cost.
5. The materials, design & workmanship shall satisfy the applicable relevant Indian Standards, the job specifications contained herein & codes referred to. Where the job specifications stipulate requirements in addition to those contained in the standard codes and specifications, these additional requirements shall also be satisfied. In the absence of any Standard / Specifications / Codes of practice for detailed specifications covering any part of the work covered in this bidding document, the instructions / directions of Engineer-in-Charge will be binding upon the Contractor.
6. In case of contradiction between relevant Indian standards, GCC, Special Conditions of Contract, Specifications, Drawings and Schedule of Rates, the following shall prevail in order of precedence.
 - a) Detailed Purchase Order along with statement of agreed variations, if any, and its enclosures.
 - b) Letter of Intent(LOI)
 - c) Schedule of Quantities
 - d) Special Conditions of Contract
 - e) Instructions to Bidders
 - f) General Conditions of Contract
 - g) Technical Specifications
 - h) Relevant Indian Standards.
 - i) Drawings/ Data Sheets

II. THE WORK

1. Scope of Work & Scope of Supply

The scope of work covered in this Contract will be as described in scope & objective of work provided in Section-I of important information to bidders, Schedule of Quantities, Technical Specifications, Drawings, etc.

2. Time Schedule

The Completion period for this job shall be as given in this bid document. Time is the essence of this Contract. The period of completion given includes the time required for mobilization as well as testing, rectifications, if any, retesting, demobilization and completion in all respects to the satisfaction of the Engineer-in-Charge.

A joint programme of execution of work will be prepared by the Engineer-in-Charge and Contractor. This programme will take into account the time of completion period of the Contract.

Monthly execution programme will be drawn up by the Engineer-in-Charge jointly with the Contractor based on availability of materials, work fronts and the joint programme of execution as referred to above. The Contractor shall scrupulously adhere to the Targets / Programme by deploying adequate personnel, Construction Equipment, Tools and Tackles and also by Timely Supply of required materials coming within his scope of supply as per Contract. In all matters concerning the extent of target set out in the monthly programme and the degree of achievement, the decision of the Engineer-in-Charge will be final and binding upon the Contractor.

Contractor shall give every day category-wise labour and equipment deployment report along with the progress of work done on previous day in the pro-forma prescribed by the Engineer-in-Charge.

3. Temporary Works

All temporary works, enabling works, including dewatering of surface and subsoil water, preparation and maintenance of temporary drains at the work site, preparation and maintenance of approaches to working areas, adequate lighting, wherever required, for execution of the work, shall be the responsibility of the Contractor and all costs towards the same shall be deemed to have been included in the quoted prices.

4. Quality Assurance

Detailed quality assurance program to be followed for the execution of Contract under various divisions of works will be mutually discussed and agreed to.

The Contractor shall establish, document and maintain an effective quality assurance system as outlined in the specifications and various codes and standards.

The Owner/Consultant or their representative shall reserve the right to inspect/witness, review any or all stages of work at shop/site as deemed necessary for quality assurance and / or timely completion of the work.

In case Contractor fails to follow the instructions of Engineer-in-Charge with respect to above clauses, next payment due to him shall not be released unless and until he complies with the instructions to the full satisfaction of Engineer-in-Charge.

5. Labour License

Before starting of work, Contractor shall obtain a license from concerned authorities under the Contract Labour (Abolition and Regulation) Act 1970, and furnish copy of the same to Owner.

6. Labour Relations

In case of labour unrest/labour dispute arising out of non-implementation of any law, the responsibility shall solely lie with the Contractor and they shall remove/resolve the same satisfactorily at his cost and risk.

The Contractor shall at all times take all reasonable precautions to prevent any unlawful, riotous or disorderly conduct by or amongst his staff and labour and to preserve peace and protection of persons and property in the neighborhood of the Works against such conduct.

7. Site Cleaning

The Contractor shall clean and keep clean the work site from time to time to the satisfaction of the Engineer-in-Charge for easy access to work site and to ensure safe passage, movement and working.

The Contractor shall dispose off the unserviceable materials, debris etc., to the earmarked area within the premises or any other location outside the premises as per the Contract and/or as decided by the Engineer-in-Charge. No extra payment shall be paid on this account.

8. Review/Approval of Drawings, Design and other documents submitted by Contractor

TIFR, HYDERABAD/Consultant will normally require and utilize a maximum time frame of seven (07) working days from the date of Receipt for Review/Approval of Drawings and other documents submitted by Contractor. Upon Review of the submitted documents, TIFR, HYDERABAD may give their comments and ask for modification/resubmission after necessary rectifications/ modifications and the time frame of 7 working days will be applicable for same.

9. Protection of Existing Facilities

Contractor shall obtain all clearance (work permit) from the Owner, as may be required from time to time, prior to start of work. Work without permit shall not be carried out within the existing premises.

Contractor shall obtain plans and full details of all existing and planned facilities/services/utilities from the Owner and shall follow these plans closely at all times during the performance of work. Contractor shall be responsible for location and protection of all facilities/utilities and structures at his own cost.

Despite all precautions, should any damage to any structure / utility etc. occur, the Contractor shall contact the Owner / authority concerned and Contractor shall forthwith carry out repair at his expenses under the direction and to the satisfaction of Engineer-in-Charge and the Owner/concerned authority. Contractor shall take all precautions to ensure that no damage is caused to the existing facilities etc., during construction. Existing structures/ facilities/ utilities damaged / disturbed during construction shall be repaired and restored to their original condition by Contractor after completion of construction to the complete satisfaction of Owner.

10. Work Front

The work involved under this Contract may include such works as have to be taken up and

completed after other agencies have completed their jobs. The Contractor will be required and bound to take up as and when the fronts are available for the same and no claim of any sort whatsoever shall be admissible to the Contractor on this account. Only extension of time limit shall be admissible, if the availabilities of work fronts to the Contractor are delayed due to any reason not attributable to the Contractor and the same is clearly recorded.

11. Site Facilities

The Contractor shall arrange for the following facilities at site, for workmen deployed/engaged by him / his sub- contractor, at his own cost:

- a) Arrangement for First Aid.
- b) Arrangement for clean & potable drinking water.
- c) Contractor's Site Office and Stores

Owner shall provide land only for contractor's site office and stores and fabrication yard, if any at site. However, same shall be dismantled prior to submission of Final Bill.

The Contractor shall remove all temporary buildings / facilities etc., before leaving the site after completion of works in all respect.

12. Construction Power and Water

TIFR shall provide metered and chargeable power at a single point and the Contractor shall be exclusively responsible for the safety and to make his own arrangements for supply of power as per required.

Water required for the works shall be provided by TIFR depending upon the availability for free of cost. If not, the contractor has to make own necessary arrangement at own cost for drawing water including making temporary storage, pumping etc. TIFR will not pay any extra charges.

13. Cement & Steel:

Cement required for execution of the job under the scope of this tender shall be supplied by the contractor at his own cost. Cement used shall be 53 grade Ordinary Portland cement (OPC) for all concrete works and 43 Grade Ordinary Portland cement (OPC) for other works. In case 43 grades OPC is not available, Portland Slag Cement or Portland Pozzolanic Cement may be permitted by TIFR, HYDERABAD after review of the same. Contractor to include the cost of cement required for execution of various items included in this tender in their quoted rates. Cement shall be of Grade as specified in the SOQ and shall conform to relevant BIS standards of latest edition.

The contractor will be required to maintain a stock register for receipt, issuance and daily consumption of cement at site. Cement shall be regulated on the basis of 1st receipt to go as 1st issue. Cement not consumed within 3 months after bringing to site shall not be used and shall be removed from site with prior written permission of EIC.

Contractor shall construct suitable temporary godown at site for storage of cement under his lock and key. The contractor will be fully responsible for safe custody of cement.

TIFR, HYDERABAD will not entertain any claims by the Contractor for theft, loss or damages to cement. Contractor shall not remove from the site any cement bags at any time.

Entire quantity of reinforcement steel required for the project shall be supplied and provided at site by the contractor at his own cost. TIFR, HYDERABAD shall not supply any reinforcement steel. The

contractor shall make necessary arrangement at his own cost for unloading, storage of steel in the open duly fenced under locking arrangement. The Contractor shall produce invoice for the reinforcement steel to EIC for every batch of procurement along with Manufacturer's Test Certificate. No payment will be made or measurement recorded for binding wires which shall be of specified gauge and shall be provided by the contractor. All binding wires required for tying the reinforcement in position etc. will be supplied by the contractor. Cost of this binding wire and labour will be included in the item for binding and placing reinforcement in position.

It will be necessary that the contractor get the cement and steel tested at his own cost at TIFR, HYDERABAD approved laboratory as per the testing schedule or as per the EIC's advise.

The contractor will be required to maintain a register for recording details of steel receipt, steel utilized and balance at site.

In every case, it shall be the contractor's responsibility to ensure the standard of quality and the correctness of quantity of steel procured at site by him.

14. Rules and Regulations

Contractor shall observe in addition to Codes specified in respective specification, all national and local laws, ordinances, rules and regulations and requirements pertaining to the work and shall be responsible for compliance to the same.

15. Procedures

Various procedures and method statements to be adopted by Contractor during the construction as required & sought by TIFR, HYDERABAD and as per the respective specifications shall be submitted to Engineer-in-Charge in due time for approval.

16. Security

As the premises at TIFR, HYDERABAD is a protected area, entry into the area shall be restricted and may be governed by issue of photo gate passes. The Contractor shall arrange to obtain through the Engineer-in-Charge, well in advance, all necessary entry permits/gate passes for his staffs and laborers and entry and exit of his men and materials shall be subject to vigorous checking by the security staff. The Contractor shall not be eligible for any claim or extension of time whatsoever on this account.

It shall be the responsibility of the contractor to safeguard all his materials/owned from theft, damage etc. For this purpose the contractor shall be allowed to keep his own security inside TIFR, HYDERABAD premises.

17. Drawings and Documents

Drawings accompanying the Bidding Document are indicative of scope of work and issued for bidding purpose only. Purpose of these drawings is to enable the bidder to make an offer in line with the requirements of the owner.

The contractor as per 'scope of work' shall submit detailed designs including calculations, shop drawings, joinery details etc by a Govt. approved/ licensed Structural Engineer confirming structural stability which will be examined and approved by the Engineer-In-Charge with deviations if required before taking up the work.

18. Contractor's Billing System

TIFR, HYDERABAD will provide an approved format for Measurement sheets, Bill Summary and Bill Abstract. Contractor has to ensure that these data are updated for each subsequent RA and Final Bill.

TIFR, HYDERABAD will utilize these data for processing and verification of the Contractor's bill. Contractor's RA Bills shall be accompanied by progress photographs.

19. Site Organization

The Contractor shall without prejudice to his overall responsibility to execute and complete the works as per specifications and time schedule progressively deploy adequate qualified and experienced personnel together with skilled / unskilled manpower and augment the same as decided by Engineer-in-Charge depending on the exigencies of work to suit the construction schedule without any additional cost to Owner.

The Contractor shall provide all necessary superintendence during the execution of the Works and as long thereafter as the Engineer-in-Charge may consider necessary for the proper fulfilling of the Contractor's obligations under the Contract Such superintendence shall be given by sufficient persons having adequate knowledge of the operations to be carried out (including the methods and techniques required, the hazards likely to be encountered and methods of preventing accidents) for the satisfactory and safe execution of the Work. The workmen deployed by the Contractor should also possess the necessary license etc., if required under the existing laws, rules and regulations.

20. Responsibility of Contractor

It shall be the responsibility of the contractor to obtain the approval for any revision and/or modifications decided by the contractor from the Owner / Engineer-in-Charge before implementation. Also such revisions and / or modifications if accepted / approved by the Owner / Engineer-in-Charge shall be carried out at no extra cost to the owner. Any change required during functional requirements or for efficient running of system, keeping the basic parameters unchanged and which has not been indicated by the contractor in the data / drawings furnished along with the offer shall be carried out by the contractor at no extra cost to the owner.

All expenses towards mobilization at site and demobilization including bringing in equipment, work force, materials, dismantling the equipment, clearing the site etc. shall be deemed to be included in the prices quoted and no separate payments on account of such expenses shall be entertained.

It shall be entirely the contractor's responsibility to provide, operate and maintain all necessary construction equipment, steel scaffoldings and safety gadgets, cranes and other lifting tackles, tools and appliances to perform the work in a workman like and efficient manner and complete all the jobs as per time schedule.

Preparing approaches and working area for the movement of his men and machinery.

The procurement and supply in sequences and at the appropriate time of all materials, and consumables shall be entirely the contractor's responsibility and his rates for execution of work will be inclusive of supply of all these items.

21. Coordination with other agencies

Contractor shall be responsible for proper coordination with other agencies operating at the site of

work so that work may be carried out concurrently, without any hindrance to others. The Engineer – in – Charge shall resolve disputes, if any, in this regard, and his decision shall be final and binding on the Contractor.

22. Underground and overhead structures

The Contractor will familiarize himself with and obtain information and details from the Owner in respect of all existing structures, and utilities existing at the job site before commencing work. The Contractor shall execute the work in such a manner that the said structures, utilities, etc. are not disturbed or damaged, and shall indemnify and keep indemnified the Owner from and against any destruction thereof or damages thereto.

23. Documents required with final bill

Statement of final bills – issue of No Claim/ No Due Certificate

The Contractor shall furnish a No-Claim/No-Due declaration indicating that there are no balance dues to his sub-vendor/sub- contractors/labour contractors along with the Final Bill.

24. Working hours

The work shall be carried out if required on round-the clock basis including holidays as it is a Greenfield site. Contractor's quoted rates are deemed to include expenditure towards working on round-the clock basis and holidays. However, Contractor's representative shall be available for overseeing the works at all times.

III. TESTS, INSPECTION AND COMPLETION

1. Tests and Inspection

The Contractor shall carry out the various tests as enumerated in the technical specifications of this Bidding Document and technical documents that will be furnished to him during the performance of the work at no extra cost to the Owner.

All the tests either on the field or at outside laboratories concerning the execution of the work and supply of materials by the Contractor shall be carried out by Contractor at his cost.

The work is subject to inspection at all times by the Engineer-in- Charge. The Contractor shall carry out all instructions given during inspection and shall ensure that the work is being carried out according to the technical specifications of this bidding document, the technical documents that will be furnished to him during performance of work and the relevant codes of practice.

All results of inspection and tests will be recorded in the inspection reports, pro-forma of which will be approved by the Engineer-in- Charge. These reports shall form part of the completion documents. Any work not conforming to execution drawings, specifications or codes shall be rejected and the Contractor shall carry out the rectifications at his own cost.

2. Final Inspection

After completion of all tests as per specification the whole work will be subject to a final inspection to ensure that job has been completed as per requirement. If any defect is noticed, the Contractor will be notified by the Engineer-in-Charge and he shall make good the defects with utmost speed. If, however, the Contractor fails to attend to these defects within a reasonable time (time period shall be fixed by the Engineer-in-Charge) then Engineer-in-Charge may have defects rectified at Contractor's

cost by engaging a third party.

3. Inspection of Items

All inspection and tests on the items shall be made as required by specifications forming part of this contract. Various stages of inspection and testing shall be identified after receipt of Quality Assurance Program from the contractor / manufacturer. All incoming materials shall be accompanied by an IMIR (Incoming Material Inspection Report)

Inspection calls shall be given for association of Owner, as per mutually agreed program in prescribed pro-forma, giving details of item and attaching relevant test certificates and internal inspection report of the contractor.

The contractor shall ensure full and free access to the inspection engineer of Owner at the contractor's premises at any time during contract period to facilitate him to carry out inspection and testing assignments.

The contractor shall provide all instruments, tools, necessary testing and other inspection facilities to inspection engineer of Owner free of cost for carrying out inspection.

Where facilities for testing do not exist in the contractor's laboratories, samples and test pieces shall be drawn by the contractor in presence of Inspection Engineer of Owner and duly sealed by TIFR, HYDERABAD engineer and sent for tests in TIFR, HYDERABAD approved lab at the contractor's cost.

The contractor shall comply with the instructions of the Inspection Engineer fully and with promptitude. All inspections and tests shall be made as required by the specifications forming part of this contract. All costs towards testing etc. shall be borne by the contractor within their quoted rates.

4. Documentation

Upon completion of work, the Contractor shall complete all drawings to “As built” status (including all vendor / Sub – vendor's drawings for bought out items) and provide the Owner, the following:

5. Supervisory Personnel

Qualification and experience of key supervisory construction personnel to be deployed for this works shall be as given hereunder. CONTRACTOR shall submit bio data of key supervisory personnel meeting the requirement as given hereunder, after award, which will be reviewed and approved by Engineer-in-charge. However, deployment of qualified and experienced supervisory personnel of the CONTRACTOR shall be commensurate with the project work load and as approved by Engineer-in-Charge and / or OWNER.

Designation/ Category	Minimum Qualification	No. of Personnel	Discipline to which should belong
RESIDENT CONSTRUCTION MANAGER / RESIDENT ENGINEER / SITE-IN-CHARGE	Minimum Diploma with relevant field experience of minimum 5 years	1	Civil

SECTION-VII	TECHNICAL CONDITIONS & SPECIFICATIONS
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I. GENERAL NOTES:

- i) The detailed specifications given hereinafter are for the items of works described in the schedule of quantities attached herein, and shall be guidance for proper execution of work to the required standards.
- ii) It may also be noted that the specifications are of generalized nature and these shall be read in conjunction with the description of item in schedule of quantities and drawings. The work also includes all minor details of construction which are obviously and fairly intended and which may not have been referred to in these documents but are essential for the entire completion in accordance with standard Engineering practice.
- iii) Unless specifically otherwise mentioned, all the applicable codes and standards published by the Indian Standard Institution and all other standards which may be published by them before the date of receipt of tenders, shall govern in all respects of design, workmanship, quality and properties of materials and methods of testing, method of measurements etc. Wherever any reference to any Indian Standard Specifications occurs in the documents relating to this contract, the same shall be inclusive of all amendments issued there to or revisions thereof, if any, up to the date of receipt of tenders.
- iv) In case there is no I.S.I. specification for the particular work, such work shall be carried out in accordance with the instructions in all respects, and requirements of the Engineer-in-Charge. Wherever any reference to any Indian Standard Specification occurs in the documents relating to this contract, the same shall be inclusive of all amendments issued there to or revisions thereof, if any, up to the date of receipt of tenders.
- v) The work shall be carried out in a manner complying in all respects with the requirements of relevant bye-laws of the Municipal Committee/Municipal Corporation/Development Authority/Improvement Trust under the jurisdiction of which the work is to be executed or as directed by the Engineer-in-Charge and, unless otherwise mentioned, nothing extra shall be paid on this account.
- vi) Samples of various materials, fittings etc. proposed to be incorporated in the work shall be submitted by the contractor for approval of the Engineer-in-charge before order for bulk supply is placed.
- vii) The contractor shall take instructions from the Engineer-in-Charge regarding collection and stacking of materials in any place. No excavated earth or building materials shall be stacked on areas where other buildings, roads, services, compound walls etc. are to be constructed.
- viii) The contractor shall maintain in perfect condition all works executed till the completion of the entire work awarded to him. Where phased delivery is contemplated, this provision shall apply to each phase.

- ix) The contractor shall give a performance test of the entire installation(s) as per standard specifications before the work is finally accepted and nothing extra whatsoever shall be payable to the contractor for the test.
- x) The contractor shall clear the site thoroughly of all scaffolding materials and rubbish etc. left out of his work and dress the site around the building to the satisfaction of the Engineer-in-Charge before the work is considered as complete.
- xi) **Post construction inspection and testing:** After completion of the work and during maintenance period liability of the contractor, the work shall also be subjected to 'Post construction inspection and testing'. In case the materials or articles incorporated in the work are found to be inferior, though the sample collected for the same might have been passed at the time of execution, it shall be the responsibility of the contractor to replace the same at his own cost, failing which the Department may rectify the same at the risk and cost of the contractor or Department may accept the work as sub-standard, and cost be adjusted from the outstanding security deposit, as per the terms and conditions of the contract for the work.
- xii) The **Head Technical Services, TIFRH**, shall be the sole deciding authority as to the meaning, interpretations and implications for various provisions of the specifications and his decision in writing shall be final and binding on all concerned.
- xiii) In case any difference or discrepancy between the specifications and the description in the schedule of quantities, the schedule of quantities shall take precedence. In case of any difference or discrepancy between specifications and drawing, the specifications shall take precedence.

II - LIST OF INDIAN STANDARDS:

Following are the various pertinent Indian Standards, relevant to buildings work:

(All Latest Versions of I.S. codes shall be referred)

I. S. CODE NO.	SUBJECT
1. CARRIAGE OF MATERIALS	
4082-1996	Recommendations on stacking & storage of construction materials and components at site.
2. EARTH WORK	
1200 Pt. I-1992	Method of measurement of Earth work.
4081-1986	Safety code for Blasting and related drilling operations.
6313 (Part 2) 2001	Anti-Termite Measures in Buildings Part – 2 Pre-constructural chemical treatment.
3. MORTAR	
196-1966	Atmospheric conditions for testing (Reaffirmed - 1990)
269-1989	33 Grade Ordinary, rapid hardening and low heat Portland cement
383-1970	Coarse and fine aggregates from natural sources for concrete.
455-1989	Portland blast furnace slag cement
650-1991	Standard sand for testing of cement
712-1984	Building Limes
1489-1991	Portland pozzolana cement Fly ash based
1514-1990	Methods of sampling & Test for Quick Lime & Hydrated Lime. (Reaffirmed - 1996)
1542-1992	Sand for Plastering.
1727-1967	Methods of tests for pozzolanic materials
2250-1981	Code of practice for preparation and use of masonry mortar. (Reaffirm- 1990)
2386-1963	Methods of Test for Aggregates for Concrete
2386 Pt.I-1963	Particle size and shape
2386 Pt. II-1963	Estimation of deleterious materials and organic impurities
2386 Pt.III-1963	Specific gravity, density, voids, absorption and bulking
2686-1977	Cinder as fine aggregate for use of Lime Concrete. (Reaffirmed – 1992)
3025-1964	Methods of sampling & test (Physical & Chemical) water used in industry. (Reaffirmed-2003)
3068-1986	Broken brick (burnt clay) coarse aggregate for use in lime concrete (II-R.)
3182-1986	Broken brick (Burnt clay) fine aggregate for use in lime mortar
3812-1981	Fly Ash using as pozzolana and admixtures (Reaffirmed - 1999)
4031-1996	Methods of physical tests for hydraulic cement (Reaffirmed – 1996)

4032-1985.	Method of chemical analysis of hydraulic cement (Reaffirmed - 1990)
4098-1983	Lime pozzolana mixture (Reaffirmed - 1989)
6932 (Pt.I to X)	Methods of Test for Building Lime
6932 (Pt.I)-1973	Determination of insoluble residue, loss of ignition, silicon-dioxide, ferric & Alum. Oxide, calcium oxide & magnesium oxide insoluble matter.
6932 (Pt.II)-1973	Determination of carbon dioxide content
6932 (Pt.III)-1973	Determination of residue on slaking of quick lime.
6932 (Pt.IV)-1973	Determination of fineness of hydrated lime
6932 (Pt.V)-1973	Determination of unhydrated oxide
6932 (Pt.VI)-1973	Determination of volume yield of quick lime
6932 (Pt.VII)-1973	Determination of compressive and transverse strength.
6932(Pt.VIII)-1973	Determination of workability
6932 (Pt.IX)-1973	Determination of soundness
6932 (Pt.X)-1973	Determination of popping and pitting of hydrated Lime.
4. CONCRETE WORK	
383-1970	Coarse and fine aggregate from natural sources for concrete (Reaffirm - 1990)
456-2000	Code of practice for plain and reinforced concrete
516-1959	Method of test for strength of concrete (Reaffirmed in 2004)
1199-1959	Method of sampling and analysis of concrete
1200 (Pt.II)-1987	Methods of measurements of cement concrete work. (Reaffirm - 1992)
1322-1993	Bitumen felts for water proofing and damp proofing. (Reaffirm - 1998)
1661-1987(Pt.III)	Code of practice for application of cement lime plaster finishes.(Reaffirm- 1999)
2386-1977(Pt.1 to 8)	Methods of test for aggregate for concrete
2386 (Pt.I)-1963	Test for particle size and shape
2386 (Pt.II)-1963	Test for estimation of deleterious materials and organic impurities
2386 (Pt.III)-1963	Test for specific gravity, density, voids, absorption and bulking
2386 (Pt.IV)-1963	Mechanical properties
2645-1975	Specification for integral water proofing compounds
2686-1977	Specification for cinder aggregate for use in lime concrete. (Reaffirm - 1992)
3812-1981	Fly Ash using as pozzolana and admixtures for concrete. (Reaffirmed - 1999)
7861-1975 (Pt.I)	Hot weather concreting. .(Reaffirmed -1990)
7861-1981 (Pt.II)	Cold weather concreting. .(Reaffirmed -1992)
9103-1999	Admixture for concrete.
5. R.C.C. WORK	

432-1982	Mild steel & medium tensile steel bars and hard drawn steel wire for concrete reinforcement.
432 (Pt.I)-1982	Mild steel and medium tensile steel bars
456-2000	Code of practice for plain and reinforced concrete
457-1957	COP for general const. of plain & reinforced concrete for dams & other massive structure.
516-1959	Methods of test for strength of concrete
1161-1963	Specifications for steel tubes for structural purposes
1199-1959	Methods of sampling and analysis of concrete. (Reaffirmed - 1999)
1200 (Pt.II)-1974	Method of measurement of cement concrete work
1200(Pt.V)-1982	Method of measurement of form work. (Reaffirmed - 1989)
1343-1980	Code of practice for pre-stressed concrete.
1566-1982	Hard drawn steel wire fabric for concrete reinforcements (II Rev.) (Reff.1998)
1780-1961	Specifications for cold twisted steel bars for concrete reinforcement *
1785-1983 (Part-I & II)	Specifications for plain hard drawn steel wire for pre-stressed concrete
1786-1985	H.Y.S.D./ Cold twisted steel bars for concrete reinforcement Reaffirmed - 1990)
2090-1983	Specifications for high tensile steel bars used in prestressed concrete.
2204-1962	Code of practice for construction of reinforced concrete shell roof. (Reaffirmed - 1990)
2210-1988	Criteria for the design of shell structure and folded plates (Reaffirmed - 1998)
2502-1963	COP for bending and fixing of bars for concrete reinforcement. (Reaffirmed - 1999)
2750-1964	Specifications for steel scaffoldings
2751-1979(Reaf-1992)	COP for welding of mild steel bars used for reinforced concrete construction.
2911-1984	Code of practice for design & Construction of pile foundations
2911(Pt.I)-1979. (Reaf-97).	Design & construction of Pile Foundations - Bored precast concrete piles.
2911 (Pt.III)-1980	Under reamed pile foundations
2911 (Pt.IV)-1985	Load test on Piles
3201-1988	Criteria for design and construction of precast concrete trusses. (Reaffirmed - 1995)
3370. (Part I to IV)-1965	Code of practice for concrete structures for storage of liquids. (Reaffirmed(1999)
3385-1965	Code of practice for measurement of Civil Engineering works - Pile Foundation)
3414-1968	Code of practice for design and installation of joints in buildings. (Reaffirmed - 1990)
3558-1983(Reaf-91)	Code of practice for use of immersion vibrators for consolidating concrete

3696 (Pt.I & II)	I-1987: Safety code of scaffolds; II-1991: Safety code of ladders
3935-1966	Code of practice for composite construction. (Reaffirmed – 1998)
4014-1967 (Pt. & II)	COP for steel tubular scaffolding (I: Defination/Material; II: Safety Resolutions) (Raffir 1999)
4926-2003	Code of practice for Ready Mix Concrete
4990-1993	Specifications for plywood for concrete shuttering work. (Reaffirmed - 1998)
10262-1982	Code of practice for design mix. (Reaffirmed - 1999)
6. EQUIPMENTS	
460-1985(Pt-I,II& III)	Specification for test sieves. (Reaffirmed - 1998)
1791-1985	Specification for batch type concrete mixer. (Reaffirmed – 1990)
2430-1986	Methods for sampling of Aggregates for concrete.
2505-1992	General requirement for concrete vibrators, immersion type
2506-1985	General requirements for screed board concrete vibrators
2514-1963	Specification for concrete vibrating tables. (Reaffirmed - 1991)
3366-1965	Specification for pan vibrators. (Reaffirmed – 1991)
4656-1968	Specification for form vibrators for concrete. (Reaffirmed-1991)
2722-1964(Reaf-95)	Specification for portable swing weigh batchers for concrete (single and double bucket type).
2750-1964	Specification for steel scaffolding. (Reaffirmed – 1991)
7. DEMOLITION AND DISMANTLING:	
1200(Pt.XVIII)-1974	Method of measurements of demolition and dismantling
8. SAFETY CODES	
818-1968 (Reaf-03)	Safety and healthy requirements in Electric and gas welding and cutting operations.
3696 (Pt.I)-1987	Safety code for scaffolds
3696 (Pt.II)-1991	Safety code for ladders
3764-1992	Safety code for Excavation works
4081-1986	Safety code for blasting and related drilling operation
4130-1991	Safety code for Demolition of Building
5916-1970	Safety code for construction involving use of hot bituminous materials
6922-1973	Structural subject to underground blasts code of practice for safety and design of
7293-1974	Working with construction machinery- safety code for

III. MANDATORY TESTS:

NOTES:

1. The mandatory tests shall be carried out when the quantity of materials to incorporate in the work exceeds the minimum quantity specified.
2. Optional tests specified or any other tests, shall be carried out in case of specialized works or important structures as per direction of the Engineer-in-Charge.
3. Testing charges, including incidental charges and cost of sample for testing shall be born by the contractor for all mandatory tests.
4. Testing charges for optional tests shall be reimbursed by the Department. However, the incidental charges and cost of sample for testing shall be born by the contractor.
5. In case of non-IS materials, it shall be the responsibility of the contractor to establish the conformity of material with relevant IS specification by carrying out necessary tests. Testing charges including incidental charge and cost of sample for testing shall be borne by the contractor for such tests.

Annexure 'A'-THE MANDATORY TESTS SHALL BE AS FOLLOWS:

Material	Test	Field / laboratory test	Test procedure	Minimum quantity of material / Work for carrying out the test	Frequency of testing
Reinforced cement concrete work					
Water for construction purposes	Ph value Limits of Acidity Limits of Alkalinity Percentage of solids Chlorides Suspended matter Sulphates Inorganic solids Organic solids	Lab	IS 3025	Water from each source	Before commencement of work & thereafter: Mandatory - Once in one year from each source; Optional: once in 3 months from each source; Municipal supply - optional.
Reinforced cement concrete	a) slump test	Field	IS: 1199	a) 20 cu.m. for slabs, beams and connected columns . b) 5 Cu.m in case of cloumns	a) 20 cu.m. Part there of or more frequently as required by the Engr.-in-Charge. b) Every 5 Cu.m.

	b) cube test	Lab	IS: 516	a) 20 cu.m. In slab, beams, & connected columns. b) 5 cum in columns	Refer page no. 84 clause no. 6.7.1 for the frequency of test
Ready mixed cement concrete (IS-4926)	Cube test	Lab	IS-516 and as per para 6.3.2 of IS-4926-2003	50 cum	Refer page no. 84 clause no. 6.7.1 for the frequency of test
Note: for all other small items and where RCC done in a day is less than 5 cum, test may be carried out as required by Engineer-in-Charge.					

Material	Test	Field / laboratory test	Test procedure	Minimum quantity of material / Work for carrying out the test	Frequency of testing
Sand	Bulking of Sand	Field		20 CU.M.	Every 20 cu.m or part there of or more frequently as decided by Engineer-in-Charge
	Silt content	Field	IS:383	20 CU.M.	Every 20 cu.m or part there of or more frequently as decided by Engineer-in-Charge
	Particle size and distribution	Field or Laboratory as decided by the Engineer-in-Charge	IS:383	40 CU.M.	Every 40 cum. of fine aggregate / sand required in RCC. Work only
	Organic Impurities	Field	..DO..	20 CU.M.	Every 20 cu.m. or part thereof or more frequently as decided by the Engineer-in-Charge
	Chloride & sulphate content tests		Optional		Once in three months.

Cement	Test requirement	Fineness (m2/kg)	IS 4031 (Part-II)	Each fresh lot	Every 50 MT or part thereof
		Normal consistency	IS 4031 (Part-IV)		
		Setting time (minutes) a) Initial b) Final	IS 4031 (Part-V)		
		Soundness a) Le-Chat expansion (mm) b) Auto clave (%)	IS 4031 (Part-III)		
		Compressive strength(Mpa) a) 72+/-1 hr b)168+/-2hr	IS 4031 (Part-VI)		
Stone Aggregate	a) Percentage of soft or deleterious materials	General visual inspection/ Lab test where required by the Engineer-in-Charge	IS 2386 Part II	One test for each source	One test for each source
	b) Particle size distribution	Field / Lab	-	10 cu.m	Every 40 cum. Or part thereof and
	Once in three months for each source for coarse and fine aggregates required in RCC works, for a minimum quantity - 10 cum for coarse aggregate and 40 cum for fine aggregate.				
	a) Estimation of Organic impurities	Field / Lab	IS 2386 Part II	10 Cum	-do-
	b) Specific Gravity	Field / Lab	IS 2386	10 Cum	-do-
	c) Bulk Density	Field / Lab	IS 2386	10 Cum	-do-
	d) aggregate crushing strength	Field / Lab	IS 2386	10 Cum	-do-
	e) Aggregate impact value	Field / Lab	IS 2386	10 Cum	-do-

Material	Test	Field / laboratory test		Test procedure	Minimum quantity of material / Work for carrying out the test	Frequency of testing
Steel for RCC	Physical tests a) Tensile strength b) Retest c) Re-bound test d) Nominal mass e) Bend test f) Elongation test g) Proof stress	Lab / field	IS 1608 IS 1786 IS 1786 IS 1786 IS 1599 IS 1786 IS 1786	Each lot from each source from each diameter of bar	Below 100 Tonnes Dia < 10 mm one sample for each 25 tonnes or part thereof If dia is >10 mm but less than 16 mm: One sample each 35 tonnes or part thereof. If dia >16 mm one sample for each 45 tonnes	Above 100 Tonnes Dia < 10 mm one sample for each 40 tonnes or part thereof If dia is >10 mm but less than 16 mm One sample for each 45 tonnes or part thereof. If dia >16 mm one sample for each 50 tonnes.
	Chemical Tests: 1. Carbon Constituent 2. Sulphur 3. Phosphorus 4. Phosphorus & Sulphur	Lab	IS 1786			For every fresh lot of one truck or less as directed by the Engineer-in-Charge.
Soil core test	OMC Proctor density	Lab / field	As per IS 12175		Two for every 50 sqm	As per para 4.10 & 4.11 of this book

OTHER MANDATORY TESTS: Soil core tests; Testing aggregate - particle size distribution.

OPTIONAL TESTS: Testing aggregate-surface moisture, impact value spectrographic; alkali reaction; Dimensional tests of bricks; Testing structural steel; Chequered plate, Unit weight, Thickness, Chemical and physical properties.

TESTING, TOLERANCE, ACCEPTANCE AND MODE OF PAYMENT:

- a) The material should pass all tests and tolerance in dimensional, chemical, physical properties should be within the limit as stipulated in relevant IS for acceptance. Such materials shall be accepted as standard.
- b) Payment shall be restricted to standard unit mass, or as specified in the schedule of work, without making any cost adjustment towards mass or any other properties, provided the material pass all the tests and tolerances are within the specified limits.
- c) In case of non-standard materials, materials not covered under any IS Specifications, such as steel sections, the payment shall be made based on the actual unit weight basis as determined by testing at random sampling.

IV. STRUCTURAL STEEL:

4.1 SCOPE OF WORK:

The work covered by this specification consists of furnishing and erecting of structural steel complete in strict accordance with this specifications and the applicable drawings.

4.2 MATERIALS:

11.2.1 All structural steel shall be of standard sections as marked on the drawings and shall be free of scale, blisters, laminations, cracked edges and defects of any sort. If the structural steel is not supplied by the Department and the Contractor is required to bring such steel, the Contractor shall furnish duplicate copies of all mill orders and/ or also the test report received from the mills, to satisfy the Engineer-in-Charge.

11.2.2 All structural steel and electrodes shall comply in all respects with I.S.S. for structural steel.

4.3 WORKMANSHIP:

All workmanship shall be of first class quality in every respect to the greatest accuracy being observed to ensure that all parts will fit together properly on erection.

All ends shall be cut true to planes. They must fit the abutting surfaces closely.

All stiffeners shall be fit tightly at both ends.

All butt ends of compression members shall be in close contact through the area of the joints.

All holes in plates and section between 12 mm. and 20 mm. thick shall be punched to such diameter that 3 mm. of metal is left all around the hole to be cleaned out to correct size by reamer.

The base connection shall be provided as shown on drawings and the greatest accuracy of workmanship shall be ensured to provide the best connections.

Figured dimensions on the drawings shall be taken.

4.4 ERECTION AND MARKING:

Erection and fabrication shall be according to I.S. 800-1984 section-11. During erection, the work shall be securely braced and fastened temporarily to provide safety for all erection stresses etc. No permanent welding shall be done until proper alignment has been obtained.

Any part which do not fit accurately or which are not in accordance with the drawings and specifications shall be liable to rejection and if rejected, shall be at once be made good.

Engineer-in-Charge shall have full liberty at all reasonable times to enter the contractors premises for the purpose of inspecting the work and no work shall be taken down, painted or dispatched until it has been inspected and passed. The contractor shall supply free of charge all labour and tools required for testing of work.

4.5 DELIVERY AT SITE:

The contractor shall deliver the component parts of the steel work in an undamaged state at the site of the works and the Engineer-in-Charge shall be entitled to refuse acceptance of any portion which has been bent or otherwise damaged before actual delivery on work.

4.6 SHOP DRAWINGS:

The shop drawings of structural steel based on contract drawings shall be submitted to the Engineer-in-Charge. The necessary information for fabrication, erection, painting of structure etc. must be furnished immediately after acceptance of the tender.

4.7 PAINTING:

Painting should be strictly according to I.S. 1477-1971 (Part I-Pretreatment) and I.S. 1477-1971 (Part II-painting).

Painting should be carried out on dry surfaces free from dust, scale etc. The paint shall be approved by the Engineer-in-Charge.

One coat of shop paint (red lead) shall be applied on steel, except where it is to be encased in concrete or where surfaces are to be field welded.

4.8 WELDING:

Welding shall be in accordance with I.S. 816-1969, I.S. 819-1957, I.S. 1024-1979, I.S. 1261-1959, I.S. 1323-1982 and I.S. 9595-1980 as appropriate. For welding of any particular type of joint, welders shall give evidence of having satisfactory completed appropriate tests as described in any of I.S. 817-1966, I.S. 1393-1961, I.S. 7307 (Part-I)-1974, I.S. 7310 (Part-I)-1974 and I.S. 7318 (Part-I)-1974 as relevant.

4.8.1 Welding Consumables: Covered electrodes shall conform to I.S. 814 (Part-I)-1974 and I.S.814 (Part-II)-1974 or I.S. 1395-1982 as appropriate.

Filler rods and wires for gas welding shall conform to I.S. 1278-1972.

The bare wire electrodes for submerged arc welding shall conform to I.S. 7280-1974. The combination of arc and flash shall satisfy the requirements of I.S. 3613-1974.

The filler rods and bare electrodes for gas shielded metal, arc welding shall conform to I.S. 6419-1971 and I.S. 6560-1972 as appropriate.

4.8.2 Types of Welding: Arc welding (direct or alternating current) or Oxyacetylene welding may be used. Field welding may be used. Field welding shall be by D.C.

4.8.3 Size of Electrode Runs: The maximum gauge of the electrodes for welding any work and the size of run shall be based on the following tables.

Average thickness of plate or section	Maximum gauge or diameter of electrodes to be used.
Less than 3/16"	10 S.W.G.
3/16" and above but less than 5/16"	8 S.W.G.
5/16" and above but less than 3/8"	6 S.W.G.
3/8" and above but less than 5/8"	4 S.W.G.
5/8" and above but less than 1"	5/16" dia.
1" and above thick section	3/8" dia.

Note: On any straight weld the first run shall not ordinarily be deposited with a larger gauge electrode than No. 8 S.W.G. For subsequent runs the electrode shall not be increased by more than two electrode size between consecutive runs.

4.8.4 Welding Contractors: The contractor shall ensure that each welding operator employed on fabrication or erection is an efficient and dependable welder, who has passed qualifying tests on the types of welds which will be called upon to make. Sample test shall have to be given by the contractor to the entire satisfaction of the Engineer-in-charge.

4.8.5 Welding Procedure:

a) Welding should be done with the structural steel in flat position in a down hand manner wherever possible. Adequate steps shall be taken to maintain the correct arc length, rate of travel, current and polarity for the type of electrode and nature of work. Welding plant capacity shall be adequate to carry out the welding procedure laid down. Adequate means of measuring the current shall be available either as a part of the welding plant or by the provision of a portable ammeter. In checking the welding current, a tolerance of 10% or 30 amperes from the specified value whichever is less shall be permitted.

b) The welding procedure shall be such as to ensure that the weld metal can be fully and satisfactory deposited through the length and thickness of all joints so that distortion and shrinkage stresses are reduced to the minimum and thickness of welds meet the requirements of quality specified.

4.9 WORKMANSHIP:

4.9.1 Preparation of Fusion Faces: Fusion faces shall be cut by steering machine or gas cutting and later dressed by filing or grinding so that they shall be free from irregularities such as would interfere with the deposition of the specified size of weld to cause the defects. Fusion faces and the surrounding surfaces shall be free from heavy slag, oil paint or any substance which might affect the quality of the weld or impede the progress of welding. The welding face shall be free of rust and shall have metal shine surfaces.

The parts to be welded shall be brought into as close contact as possible and the gap due to faulty

workmanship or incorrect fit up shall not exceed 1/16". If separation of 1/16" or more occurs locally, the size of the fillet weld shall be increased at such position by an amount of equal to the width of the gap.

The parts to be welded shall be maintained to their correct position during welding. They shall be securely held in position by means of tack welds, service bolts, clamps or rings before commencing welding so as to prevent and relative movement due to distortion, wind or any other cause.

4.9.2 Step Back Method should be used to Avoid Distortion: The minimum leg length of a fillet weld as deposited should not be less than the specified size and the throat thickness as deposited should be not less than that tabulated below:

Throat Thickness of Fillet

Angle between fusion faces	60 ⁰ -90 ⁰	91 ⁰ -100 ⁰	101 ⁰ -106 ⁰	107 ⁰ -113 ⁰	114 ⁰ -120 ⁰
Throat thickness in cms.	0.70	0.65	0.60	0.55	0.50

In no case should a concave weld be deposited without the specific approval of the Engineer-in-Charge unless the leg length is increased above the specified length so that the resultant throat thickness is as great as would have been obtained by the deposition of a flat.

All welds shall be deposited in a pre-arranged order and sequence taking due account of the effects of distortion and shrinkage stresses.

After making each run of welding, all slag shall be removed and final run shall be protected by clean boiled linseed oil till approved.

The weld metal, as deposited, shall be free from crack, slag, excessive porosity, cavities and other faults.

The weld metal shall be properly fused with the parent metal without overlapping or serious undercutting at the toes of the weld.

The surfaces of the weld shall have a uniform and consistent contour and regular appearance.

In welds containing crack, porosity or cavities in which the weld metal tends to overlap on the parent metal without proper fusion, the defective portions of the welds shall be out cut and re-welded. Where serious under cutting occurs, additional weld metal shall be deposited to make good reduction. Testing of welded joints shall be done as per relevant IS codes 3600, 3613, 4260, 7205, 7215, 7307, 7310, 7318.

4.10 MODE OF MEASUREMENT:

All structural steel shall be measured on weight basis in metric tonnes or quintals or kgs. As mentioned in the schedule of quantities. The length or areas of various members including gusset plates shall be measured correct to two places of decimals and the net weight worked out from the standard steel tables approved by Indian Standard Institution. No separate measurements shall be taken for welding, riveting, bolting, field connections etc. The rate shall include cost of all labour, materials, scaffolding, transport and also cost of welding, riveting and bolting, field connections if any all to complete the job as per specifications.

V. READY MIX CONCRETE:

(SPECIFICATIONS FOR READY MIXED CONCRETE, CONFORMING TO IS-4926)

5.1 Ready mix Concrete shall conform to latest revision of IS: 4926 following are the requirement for supply of R.M.C

5.1.1 Concrete delivered at site shall be in a plastic condition and requiring no further treatment before being placed in the position in which it is to set and harden

5.1.2 The process of continuing the mixing of concrete at a reduced speed during transportation to prevent segregation.

5.1.3 Truck mounted equipment designed to agitate concrete during transportation to the site of delivery.

5.1.4 Concrete produced by completely mixing cement, aggregates, admixtures if any and water at a stationary central mixing plant and delivered in containers fitted with agitating devices. The concrete may also be transported without being agitated as a special case and as requested.

5.1.5 Concrete produced by placing cement, aggregates and admixtures, if any other than those to be added with mixing water, in a truck mixer at the batching plant, the addition of water and admixtures to be added along with mixing water, and the mixing being carried out entirely in the truck mixer either during the journey or on arrival at the site of delivery. No water shall be added to the aggregate and cement until the mixing of concrete commences.

5.2. MATERIALS:

5.2.1 The cement used shall be of specified grade ordinary Portland cement or low heat Portland cement conforming to IS: 269 or Portland slag cement conforming to IS: 455 or Portland-pozzolana cement conforming to IS: 1489 or rapid hardening. Portland cement conforming to IS: 8041 as may be specified at the time of placing the order. If the type is not specified, ordinary Portland cement shall be used.

5.2.2 Fly ash when used for partial replacement of cement, shall conform to the requirements of IS-3812 (Part I) and as specified by the users.

5.2.3 The aggregate shall conform to IS: 383. Fly ash when used as fine aggregate shall conform to the requirements of IS 3812 – (Part - II).

5.2.4 Water used for concrete shall conform to the requirement of IS 456-2000.

5.2.5 The admixtures shall conform to the requirements of IS: 456-2000 and their nature, quantities and methods of use shall also be specified. Fly ash when used as an admixture for concrete shall conform to IS: 3812 (Part II) – 1981. However, partial replacement of cement by fly ash shall not be more than 15% of designed requirement.

In case if fly ash is used more than 15%, the same shall be guided under table 5.1 of the IS, and in which case specific care shall be taken in terms of curing, protecting, repairing, finishing, de-shuttering etc. as detailed in the Chapter “FLY ASH CONCRETE”, here in after.

5.3. SUPPLY:

The ready-mixed concrete shall be manufactured and supplied on either of the following basis:

- i) Specified strength based on 28-day compressive strength of 15 -cm cubes tested in accordance with IS: 456-2000.
- ii) Specified mix proportion.

NOTE: Under special circumstances and as specified the strength of concrete in (a) above may be based on 28-day or 7-day flexural strength of concrete instead of compressive strength of 15-cm cube tested in accordance with IS: 456-2000.

5.3.1 When the concrete is manufactured and supplied on the basis of specified strength, the responsibility for the design of mix shall be that of the manufacturer and the concrete shall conform to the requirements specified.

5.3.2 When the concrete is manufactured and supplied on the basis of specified mix proportions, the responsibility for the design of the mix shall be that of the purchaser and the concrete shall conform to the requirements specified.

5.4. GENERAL REQUIREMENTS:

5.4.1 When a truck mixer or agitator is used for mixing or transportation concrete, no water from the truck-water system or from elsewhere shall added after the initial introduction of the mixing water for the batch, when no arrival at the site of the work, the slump of the concrete is less that specified, such additional water to bring the slump within limits shall be injected into the mixer under such pressure and direct flow that the requirements for uniformity specified.

5.4.2 Unless otherwise specified when a truck or agitator is used for transporting concrete, the concrete shall be delivered to the site of the work and discharge shall be complete within 1 ½ hour (when the prevailing atmospheric temperature above 20°C) and within 2 hours (when the prevailing atmosphere temperature is at or below 20°C) of adding the mixing water to the mix of cement and aggregate or adding the cement to the aggregate whichever is earlier.

5.4.3 The temperature of the concrete at the place and time of delivery shall be not less than 5°C. Unless otherwise required by the purchaser.

5.4.4 Adequate facilities shall be provided by the manufacturer/supplier to inspect the materials used the process of manufacture and methods of delivery of concrete. He shall also provide adequate facilities to take samples of the materials used.

5.4.5 The tests for consistency or workable shall be carried out in accordance with requirements of IS 1199 by such other method as may be agreed to between the purchaser and manufacturer.

5.4.6 The sampling and testing of concrete shall be done in accordance with the relevant requirements of IS 456, IS 1199 and IS 516.

5.4.7 The compressive strength and flexural strength tests shall be carried out in accordance with the requirement of IS: 516 and the acceptance criteria for concrete whether supplied on the basis

of specified strength or on the basis of mix proportion, shall conform to the requirements and other related requirements of IS: 456 -2000.

5.4.8 The testing shall be carried out in accordance with the requirements and the cost shall be borne by the Contractor.

5.4.9 The manufacturer shall keep batch records of the quantities by mass all the solid materials, of the total amount of water used in mixing and of the results of all tests. If required insisted, the manufacturer shall furnish certificates, at agreed intervals, giving this information.

5.4.10 Mode of measurement for ready mixed concrete (RMC) will be the same as mode of measurement for concrete work already mentioned at page No. 42 & 43 of clause 4.40. However, consumption of RMC shall be maintained at site. Wastage, spillover, wastage due to pump blockage etc. shall not be considered for payment.

5.5 FLY ASH CONCRETE:

NOTES:

- a) The fly ash should have consistent quality satisfying the requirements of Grade-1 FA of IS 3812 and Class-F of ASTM C-618.
- b) The source of fly ash should be so selected that test results of fly ash samples collected from these sources during last one year at frequency of maximum one month interval should satisfy the requirements of above codes.
- c) The characterization of fly ash which will be used should be done as per above two codes for each batch of fly ash.
- d) The fly ash should be stored in bins at the plant.
- e) All concrete should be manufactured at RMC plant.
- f) The mix proportion should be approved by competent authority. The information to be supplied for approval would be identified by the competent authority.
- g) Any change in mix proportion, after approval, should be concurred by appropriate authority.
- h) Samples to be taken, at each time of casting, for 7 days and 28 days.
- i) All ingredients of concrete should satisfy the requirements of relevant IS codes and specifications.

5.5.1 Curing, Protecting, Repairing and Finishing:

5.5.1.1 Curing: All concrete shall be cured by keeping it continuously damp for the period of time required for complete hydration and hardening to take place. Preference shall be given to the use of continuous sprays or ponded water, continuously saturated covering of sacking, canvas, hessain or other absorbent materials, or approved effective curing compounds applied with spraying equipment capable of producing a smooth, even textured coat. Extra precautions shall be exercised in curing concrete during cold and hot weather as outlined hereinafter the quality of curing water shall be the same as that used for mixing concrete.

Certain types of finish or preparation for overlaying concrete must be done at certain stages of curing process and special treatment may be required for specific concrete surface finish.

Curing of concrete made of high alumina cement and super sulphated cement shall be carried out as directed by Engineer-in-charge.

5.5.1.2 Curing of concrete with low water binder ratios having partial replacement of cement by pozzolanic materials.

5.5.1.3 The structural elements with concrete having water binder ratio less than or equal to 0.4 or partial replacement of cement by pozzolanic materials (5% or above replacement by silica fume or high reactivity metakaolin, or 15% or above by fly ash) shall be cured in two stages, initial curing and final curing.

- i) The initial curing should be started not later than 3 hours or initial setting time, whichever is lower, after placement of concrete. The concrete surface exposed to environment should be covered by plastic sheet or other type of impermeable covers. The initial curing should be continued upto a minimum period of 12 hours or 2 hours plus final setting time of concrete, whichever is higher.
- ii) Final curing should be done with water. It should commence immediately after initial curing and continue upto a minimum period of 14 days.

5.5.1.4 Curing with Water

Fresh concrete shall be kept continuously wet for a minimum period of 14 days from the date of placing of concrete, following a lapse of 12 to 24 hours after laying concrete. The curing of horizontal surfaces exposed to the drying winds shall however begin immediately the concrete has hardened. Water shall be applied to unformed concrete surfaces within 1 hour after concrete has set. Water shall be applied to formed surfaces immediately upon removal of forms. Quantity of water applied shall be controlled so as to prevent erosion of freshly placed concrete.

5.5.1.5 Continuous Spraying

Curing shall be assured by use of ample water supply under pressure in pipes, with all necessary appliances of hose sprinklers and spraying devices. Continuous fine mist spraying or sprinkling shall be used, unless otherwise specified or approved by Engineer-in-charge.

5.5.1.6 Alternate Curing Methods:

Whenever in the judgement of Engineer-in-charge, it may be necessary to omit the continuous spray method, covering of clean sand or other approved means such as wet gunny bags, which will prevent loss of moisture from the concrete, may be used. Any type of covering which would slain or damage the concrete during or after the curing period, will not be permitted. Covering shall be kept continuously wet during the curing period.

For curing of concrete in pavements, side-walks, floors, flat roofs or other level surfaces, the ponding method of curing is preferred. The method of containing the ponded water shall be approved by Engineer-in-charge. Special attention shall be given to edge and corner of the slab to ensure proper protection to these areas. The ponded areas shall be kept continuously filled

with water during the curing period.

5.5.1.7 Curing Compounds: Surface coating type curing compound shall be used only on special permission of Engineer-in-charge. Curing compounds shall be liquid type while pigmented, conforming to U.S Bureau of Reclamation Specification. No curing compound shall be used on surface where future blending with concrete water or acid proof membrane or painting is specified.

5.5.1.8 Curing Equipment: All equipment's and materials required for curing shall be on hand and ready for use before concrete is placed.

5.5.1.9 Mass Concrete Temperature Control Method: To keep the temperature difference between concrete core and concrete surface <20°C, and to keep maximum concrete temperature < 25°C, necessary steps are needed. Where in this work is divided into 2 steps namely precooling and post cooling.

5.5.1.10

Sl. No.	Mixed design with a mixture of fly ash and cold water	(Precooling):
1	Use mix design with the following mixture so that the concrete can be lowered. Mix design for M25:	initial temperature of the
2	Water Cement Ratio	: 0.43
3	Cement	: 270 kg
4	Fly Ash	: 80 kg (30%)
5	Sand	: 839 kg
6	Gravel	: 1109 kg
7	Water	: 150 kg
8	Water temperature (used ice water)	: 7 'C
9	Slump	: 10 ± 2 cm
10	Admixture: Type D: 0.72 kg, Type F	: 4.1 kg

Note: The contractor has to submit the mix design after vetting from JNTU orequivalent university.

5.5.1.11 Surface Insulation (Post Cooling): Surface insulation is performed as soon as the concrete surface hardened (1.5 hours of concrete pour time). Surface insulation is done by covering the surface area of concrete with a layer of plastic, 2 cm Styrofoam or wet sand with a thickness of 20cm. Surface insulation is performed for 14 days, or after concrete temperature difference < 20°C. After surface insulation is removed, proceed with curing using water or wetted cloth.

VI. STEEL FOR CONCRETE REINFORCEMENT:

6.1 SCOPE OF MATERIAL:

The contractor shall make his own arrangement for procurement of Reinforcement steel bars and wires for use in Reinforced Cement Concrete works. Unless otherwise specified in drawings / Schedule of quantities, the steel bars shall be of “High strength deformed steel bars and wires” conforming to the IS 1786 (latest revision), in the following strength grades:

- a) Fe 415, Fe 415D;
- b) Fe 500, Fe 500D;
- c) Fe 550, Fe 550D; and
- d) Fe 600.

Where “Fe” stands for specified minimum 0.2% proof / yield stress in N/mm^2 and “D” stands for same specified minimum 0.2% proof / yield stress but with enhanced specified minimum percentage elongation.

6.2 TERMINOLOGY:

Elongation: The increase in length of a tensile test piece under stress, expressed as a percentage of the original gauge of a standard piece.

Longitudinal Rib -A uniform continuous protrusion, parallel to the axis of the bar/wire (before cold-working, if any).

Nominal Diameter or Size- The diameter of a plain round bar/wire having the same mass per metre length as the deformed bar/wire.

Nominal Mass -The mass of the bar/wire of nominal diameter and of density 0.00785 kg/cumm per meter.

Nominal Perimeter - 3.14 times the nominal diameter of a deformed bar/Wire.

Percent Proof Stress -The stress at which a non-proportional elongation equal to 0.2% of the original gauge length takes place.

Uniform elongation - The elongation corresponding to the maximum load reached in a tensile test (also termed as percentage total elongation at maximum force).

Tensile Strength - The maximum load reached in a tensile test divided by the effective cross-sectional area of the gauge length portion of the test piece (also termed as ultimate tensile stress).

Transverse Rib - Any rib on the surface of a bar/wire other than a longitudinal rib.

Yield Stress - Stress (that is, load per unit cross sectional area) at which elongation first occurs in the test piece without increasing the load during the tensile test. In the case of steels with no such definite yield point, proof stress shall be applicable.

The high strength deformed steel bars and wires for concrete reinforcement shall be hot rolled steel without subsequent treatment or hot rolled steel with controlled cooling and tempering and cold worked

steel, and reinforcing bars and wires which may be subsequently coated.

Steel bars shall be supplied from M/s. Steel Authority of India Ltd. (SAIL) or M/s. TATA Steel (TISCO) or M/s. Rashtriya Ispat Nigam Ltd (RINL) or M/s. Indian Iron & Steel Co. (IISCO) Ltd., from their own plants rolled from virgin material, and shall be procured directly or from their authorized dealers and not from re-rollers or conversion agents. The contractor shall supply copy of Documentary evidence of purchase of steel from the specified manufacturers.

6.3 TESTS:

The contractor shall submit the test certificate of manufacturer. Regular tests on steel supplied by the contractor shall be performed by the contractor at the approved lab, in presence of the Departmental Engineers as per relevant Indian Standards. Engineer-in-charge may require Contractor to perform necessary tests of samples at random as per relevant B.I.S. All cost of such tests and incidentals to such tests shall be borne by the Contractor. The quality, grade, colour coding embossing marks etc. all shall be to the entire satisfaction of the Engineer-in-Charge. Steel not conforming to above test criteria shall be rejected.

The Chemical, Physical & Mechanical properties of the steel reinforcement bars shall be as per IS 1786. Unless otherwise specified, Selection and Preparation of Test Sample shall be as per the requirements of IS 2062.

All test pieces shall be selected either from the cuttings of bars / wires; or from any bar/wire after it has been cut to the required or specified size and the test piece taken from any part of it. In neither case, the test piece shall be detached from the bar/wire except in the presence of the EIC or his authorized representative.

The test pieces shall be full sections of the bars/wires and shall be subjected to physical tests without any further modifications. No reduction in size by machining or otherwise shall be permissible, except in case of bars of size 28 mm and above. No test piece shall be annealed or otherwise subjected to heat treatment. Any straightening which a test piece may require shall be done cold.

For the purpose of carrying out tests for tensile strength, proof stress, percentage elongation and percentage elongation at maximum force for bars 28 mm in diameter and above, deformations of the bars only may be machined. For such bars, the physical properties shall be calculated using the actual area obtained after machining. The following IS codes shall be referred for test methods:

S.N	Title	IS No	ISO No.
i	Mechanical testing of metals -Tensile testing	1608	6892
ii	Methods for bend test	1599 7438 & 1786	15630-1
iii	Method for re-bend test for metallic wires & bars	1786	15630-1

THE PROPERTIES AS PER IS 1786 – 2008 ARE REPRODUCED BELOW:

Chemical Composition of the bars shall conform to the following requirement:

Constituents	Maximum Permissible Percent							Permissible max. Variation
	Fe 415	Fe 415D	Fe 500	Fe 500D	Fe 550	Fe 550D	Fe 600	
Carbon	0.300	0.250	0.300	0.250	0.300	0.250	0.300	0.020%
Sulphur	0.060	0.045	0.055	0.040	0.055	0.040	0.040	0.005%
Phosphorus	0.060	0.045	0.055	0.040	0.050	0.040	0.040	0.005%
Sulphur & Phosphorus	0.110	0.085	0.105	0.075	0.100	0.075	0.075	0.010%

Notes:

- i) For welding of deformed bars, the recommendations of IS 9417 shall be followed.
- ii) In case of deviations from the specified maximum, two additional test samples shall be taken from the same batch and subjected to the test or tests in which the original sample failed. Should both additional test samples pass the test, the batch from which they were taken shall be deemed to comply with this standard. Should either of them fail, the batch shall be deemed not to comply with this standard

Mechanical Properties of High Strength Deformed Bars and Wires

Sl. No.	Property	Maximum Permissible Percent						
		Fe 415	Fe 415D	Fe 500	Fe 500D	Fe 550	Fe 550D	Fe 600
1	2	3	4	5	6	7	8	9
i	0.2 percent proof stress / yield stress, Min, N/mm ²	415.0	415.0		500.0	550.0	550.0	600.0
ii	Elongation, percent, Min. on gauge length $5.65 \sqrt{A}$, where A is the Cross – sectional area of the test piece	14.5	18.0	12.0	16.0	10.0	14.5	10.0
iii	Tensile strength, Min	10% more than the actual	12% more than the actual	8% more than the actual	10% more than the actual	6% more than the actual	8% more than the actual	6% more than the actual
		0.2% proof stress/yield stress but not less	0.2% proof stress/yield stress but not less	0.2% proof stress/yield stress but not less	0.2% proof stress/yield stress but not less	0.2% proof stress/yield stress but not less	0.2% proof stress/yield stress but not less	0.2% proof stress/yield stress but not less

		than 485.0 N/mm ²	than 500.0 N/mm ²	less than 1805.0 N/mm ²	than 565.0 N/mm ²	less than 585.0 N/mm ²	than 600.0 N/mm ²	less than 660.0 N/mm ²
iv	Total elongation at maximum force, percent, Min of gauge length $5.65 \sqrt{A}$, where A is the cross sectional area of the test piece	-	5	-	5	-	5	-

Note: To satisfy Clause 26 of IS 456 -2000, no mixing of different types of grades of bars shall be allowed in the same structural members as main reinforcement, without prior written approval of the Engineer-in-Charge.

6.4 STACKING & STORAGE:

Steel for reinforcement shall be stored in such a way as to prevent distorting and corrosion. The steel for reinforcement shall not be kept in direct contact with ground. Fresh / Fabricated reinforcement shall be carefully stored to prevent damage, distortion, corrosion and deteriorations. Care shall be taken to protect steel from exposure to saline atmosphere during storage, fabrication and use. It may be achieved by treating the surface of reinforcement with cement wash or by suitable methods. Bars of different classifications, sizes and lengths shall be stored separately to facilitate issue in such sizes and lengths to cause minimum wastage in cutting from standard length.

6.5 QUALITY:

Steel not conforming to specifications shall be rejected. All reinforcement shall be clean, free from grease, oil, paint, dirt, loose mill, scale, loose rust, dust, bituminous material or any other substances that will destroy or reduce the bond. All rods shall be thoroughly cleaned before being fabricated. Pitted and defective rods shall not be used. All bars shall be rigidly held in position before concreting. No welding of rods to obtain continuity shall be allowed unless approved by the Engineer-in-Charge. If welding is approved, the work shall be carried as per I.S. 2751, according to best modern practices and as directed by the Engineer-in-Charge. In all cases of important connections, tests shall be made to prove that the joints are of the full strength of bars welded. Substitution of reinforcement will not be permitted except upon written approval from Engineer-in-charge.

6.6 NOMINAL SIZES

The nominal sizes of bars/wires shall be 4mrn, 5mrn, 6mrn, 8mrn, 10mrn, 12mrn, 16mrn, 20mrn, 25 mm, 28mrn, 32mrn, 36mrn, 40 mm. (Other sizes viz. 7mrn, 18mrn, 22 mm, 45 mm and 50 mm may be procured on specific stipulations).

6.7 NOMINAL MASS

For the purpose of checking the nominal mass, the density of steel shall be taken as 0.00785 kg/mm³ of the cross-sectional area per meter. Unless otherwise specified, the tolerances on nominal mass shall be as per following Table.

Tolerances on Nominal Mass

SN	Nominal Size in mm	Tolerance on the nominal mass in Percent		
		Batch	Individual sample	Individual sample for coils only
1	2	3	4	5
i)	Up to and including 10	± 7	- 8	± 8
ii)	Over 10 up to and including 16	± 5	- 6	± 6
iii)	Over 16	± 3	- 4	± 4

6.8 LAPS:

Laps and splices for reinforcement shall be shown on the drawings. Splices in adjacent bars shall be staggered and the locations of all splices, except those specified on the drawings, shall be approved by the Engineer-in-Charge. The bars shall not be lapped unless the length required exceeds the maximum available lengths of bars at site.

6.9 BENDING:

All bars shall be accurately bent according to the sizes and shapes shown on the detailed working drawing / bar bending schedules. They shall be bent gradually by machine or other approved means. Reinforcing bars shall not be straightened and re-bent in a manner that will injure the materials. Bars containing cracks or splits shall be rejected. They shall be bent cold, except bars of over 25 mm. in diameter which may be bent hot if specifically approved by the Engineer-in-Charge. Bars that depend for their strength on cold working shall not be bent hot. Bars bent hot shall not be heated beyond cherry red colour (not exceeding 645°C) and after bending shall be allowed to cool slowly with out quenching. Bars incorrectly bent shall be used only after straightening and re-bending be such as shall not, in the opinion of the Engineer-in-Charge, injure the material. No reinforcement bar shall be bent when in position in the work without approval, whether or not it is partially embedded in hardened concrete. Bars having kinks or bends other than those required by design shall not be used.

BENDING AT CONSTRUCTION JOINTS:

Where reinforcement bars are bent aside at construction joints and afterwards bent back into their original position, care should be taken to ensure that at no time the radius of the bend is less than 4 bar diameters for plain mild steel or 6 bar diameters for deformed bars. Care shall also be taken when bending back bars to ensure that the concrete around the bar is not damaged.

6.10 FIXING / PLACING AND TOLERANCE ON PLACING:

Reinforcement shall be accurately fixed by any approved means maintained in the correct position as

shown in the drawings by the use of blocks, spacers and chairs as per I.S. 2502 to prevent displacement during placing and compaction of concrete. Bars intended to be in contact at crossing point shall be securely bound together at all such points with number 16 gauge annealed soft iron wire. The vertical distances required between successive layers of bars in beams or similar members shall be maintained by the provision of spacer bars at such intervals that the main bars do not perceptibly sag between adjacent spacer bars.

TOLERANCE ON PLACING OF REINFORCEMENT:

Unless otherwise specified, reinforcement shall be placed within the following tolerances:

	Tolerance in spacing
a) For effective depth, 200 mm or less	+ /- 10 mm
b) For effective depth, more than 200 mm	+ /- 15 mm

6.11 COVER TO REINFORCEMENT:

Nominal cover is the design depth of concrete cover to all steel reinforcements, including links. It is the dimension used in design and indicated in the drawings. It shall be not less than the diameter of the bar. Unless otherwise specified, cover to reinforcement shall be provided generally as per guidelines of IS 456.

Nominal cover to meet durability requirement:

Minimum values for the nominal cover of normal weight aggregate concrete which should be provided to all reinforcement, including links depending on the condition of exposure described in 4.4 above and as per (nominal cover to meet durability requirements).

However for a longitudinal reinforcing bar in a column nominal cover shall in any case not be less than 40 mm or less than the diameter of such bar. In the case of columns of minimum dimension of 200 mm or under, whose reinforcing bar do not exceed 12 mm , a nominal cover of 25 mm may be used.

For footings minimum cover shall be 50 mm.

Nominal cover to meet specified period of fire resistance

Minimum values of nominal cover of normal-weight aggregate concrete to be provided to all reinforcement including links to meet specified period of the resistance as per the tables given under clause 4.4.1 of this specifications.

The cover shall in no case be reduced by more than one third of specified cover or 5 mm whichever is less.

Unless indicated otherwise on the drawings, clear concrete cover for reinforcement (exclusive of plaster or other decorative finish shall be as follows:

a) At each end of reinforcing bar not less than 25mm, nor less than twice the diameter of such, bar.

b) For a longitudinal reinforcing bar not less than 25 mm, nor more than 40 mm, nor less than the diameter of such bar. In the case of column of maximum dimensions of 200 mm. or under, whose reinforcing bars do not exceed 12 mm, a cover of 25 mm. may be used.

c) For longitudinal reinforcing bar in a beam, not less than 25mm, nor less than diameter of such bar.

d) For tensile, compressive, shear, or other reinforcement in a slab, not less than 25 mm, nor less than the diameter of such bar, and

e) For any other reinforcement not less than 15 mm, nor less than the diameter of such bar.

f) Increased cover thickness may be provided when surfaces of concrete members are exposed to the action of harmful chemicals (as in the case of concrete in contact with earth faces contaminated with such chemicals), acid, vapour, saline atmosphere, sulphurous smoke (as in the case of steam-operated railways) etc. and such increase of cover may be between 15 mm. and 50 mm. beyond the figures given in (a to e) above as may be specified by the Engineer-in-Charge.

g) For reinforced concrete members, totally immersed in sea water, the cover shall be 40 mm. more than specified (a to e) above.

h) For reinforced concrete members, periodically immersed in sea water or subject to sea spray, the cover of concrete shall be 50 mm. more than that specified (a to e) above.

i) For concrete of grade M 25 and above, the additional thickness of cover specified in (f), (g) and (h) above may be reduced to half. In all such cases the cover should not exceed 75 mm.

j) Protection to reinforcement in case of concrete exposed to harmful surroundings may also be given by providing dense impermeable concrete with approved protective coating, as specified on the drawings. In such case the extra cover, mentioned in (h) and (i) above, may be reduced by the Engineer-in-Charge, to those shown on the drawing.

k) The correct cover shall be maintained by cement mortar briquettes or other approved means. Reinforcement for footings, grade beams and slabs on subgrade shall be supported on precast concrete blocks as approved by the Engineer-in-Charge. The use of pebbles or stones shall not be permitted.

l) The minimum clear distance between reinforcing bars shall be in accordance with I.S. 456 or as shown in drawing.

6.12 THE BARS SHALL BE KEPT IN CORRECT POSITION BY THE FOLLOWING METHODS.

a) In case of beam and slab construction precast cover blocks in cement mortar 1:2 (1 cement: 2 coarse sand) about 4 x 4 cm section and of thickness equal to the specified cover shall be placed between the bars and shuttering, so as to secure and maintain the requisite cover of concrete over reinforcement.

b) In case of cantilevered and doubly reinforced beams or slabs, the vertical distance between the horizontal bars shall be maintained by introducing chairs, spacers or support bars of steel at 1.0 metre

or at shorter spacing to avoid sagging.

c) In case of columns and walls, the vertical bars shall be kept in position by means of timber templates with slots accurately cut in them; or with block of cement mortar 1:2 (1 cement: 2 coarse sand) of required size suitably tied to the reinforcement to ensure that they are in correct position during concreting.

d) In case of other R.C.C. structure such as arches, domes, shells, storage tanks etc. a combination of cover blocks, spacers and templates shall be used as directed by Engineer-in-Charge.

6.13 INSPECTION:

Erected and secured reinforcement shall be inspected and approved by Engineer-in-Charge prior to placement of concrete.

6.14 MODE OF MEASUREMENT FOR REINFORCEMENT FOR R.C.C. WORKS:

Reinforcement as detailed in schedule of quantities shall be measured for payment lineally as per the cutting length nearest to a centimeter shown in bar bending schedule submitted by the contractor and approved by the Engineer-in-Charge and weight calculated based on the standard weights as per I.S.1786, as indicated in the following table:

Nominal size in mm	6	7	8	10	12	16	18	20
Cross Sectional area in mm ² .	28.30	38.50	50.30	78.60	113.10	201.20	254.60	314.30
Mass / Weight in Kg / RM	0.222	0.302	0.395	0.617	0.888	1.580	2.000	2.47

Nominal size in mm	22	25	28	32	36	40	45	50
Cross Sectional area in mm ²	380.30	491.10	614.00	804.60	1018.30	1257.20	1591.10	1964.30
Mass / Weight in Kg / RM	2.980	3.850	4.830	6.310	7.990	9.850	12.500	15.420

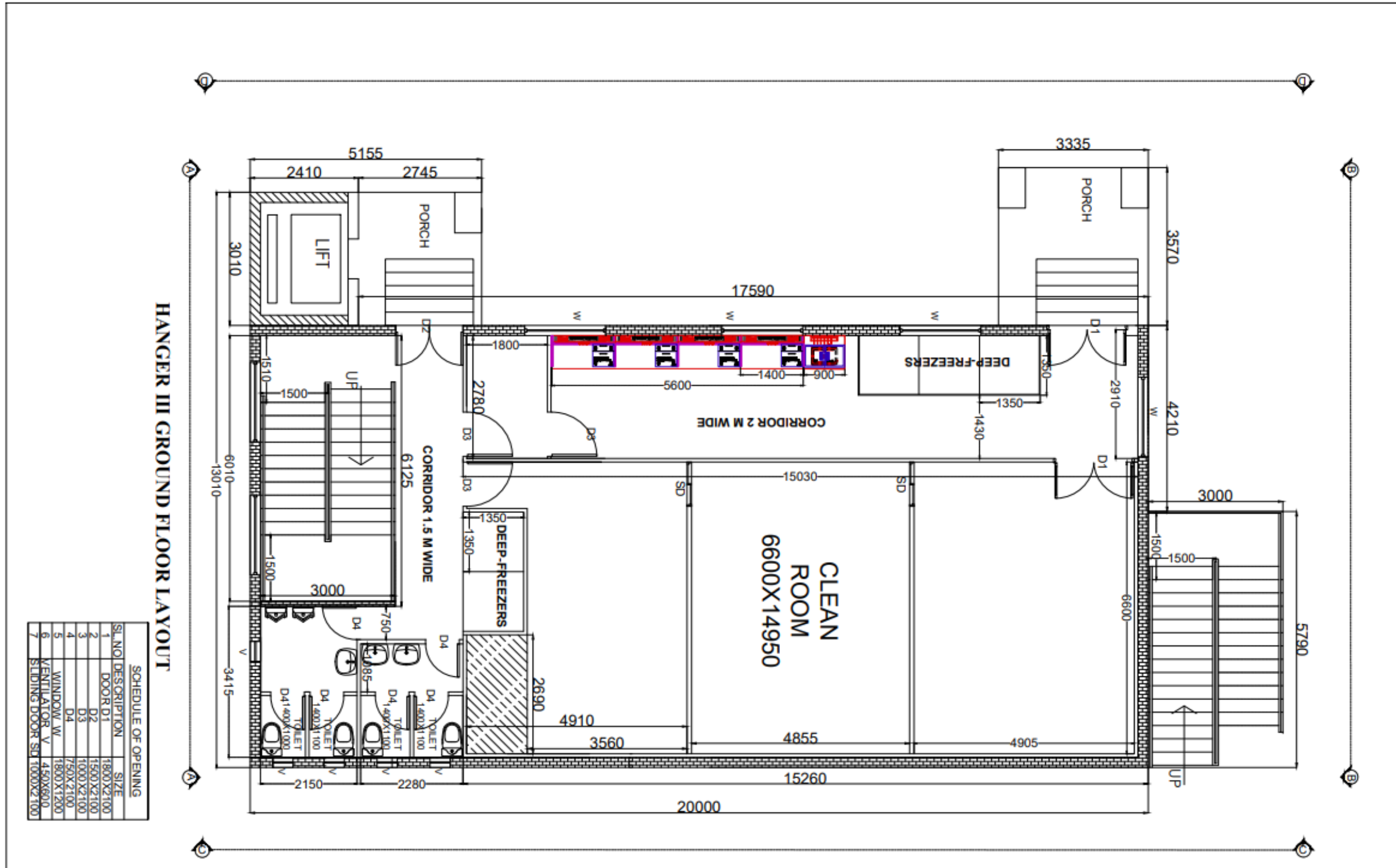
No allowance shall be made/ be measured in the weight for rolling margin. If weight of bar(s) found to be more than the standard weights, the measurement / payment shall be restricted to the standard weights as above. However, if weight of bar(s) found to be less than the standard weights (but within the permissible limit), the measurements / payment for the same shall be as per standard weights.

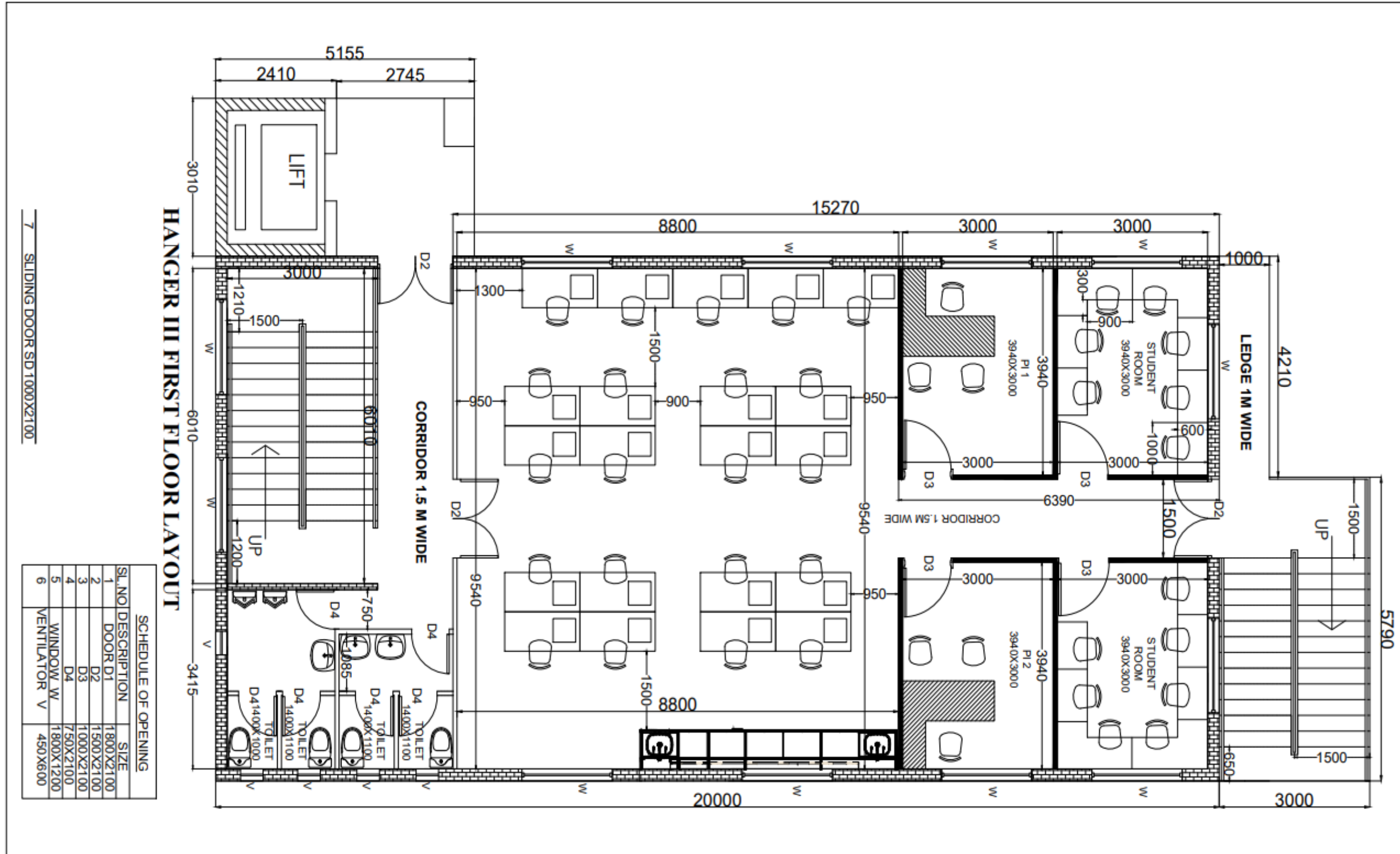
Only authorized laps shall be measured. The cost of steel used by the contractor in the reinforcement of beams, slabs and columns etc. will be paid as per the rate of reinforcement only upto the extent shown in the drawings. As far as possible laps in bars shall be avoided. Any laps and hooks provided by the contractor other than authorized as per approved bar bending schedule will be considered to have been provided by the contractor for his own convenience and shall not be measured for payment. Pins, chairs, spacers shall be provided by the contractor wherever required as per drawing and bar bending schedule and as directed by the Engineer-in-Charge and shall be measured for payment. Fan hooks as required shall be provided by the contractor under this item and shall be measured for payment.

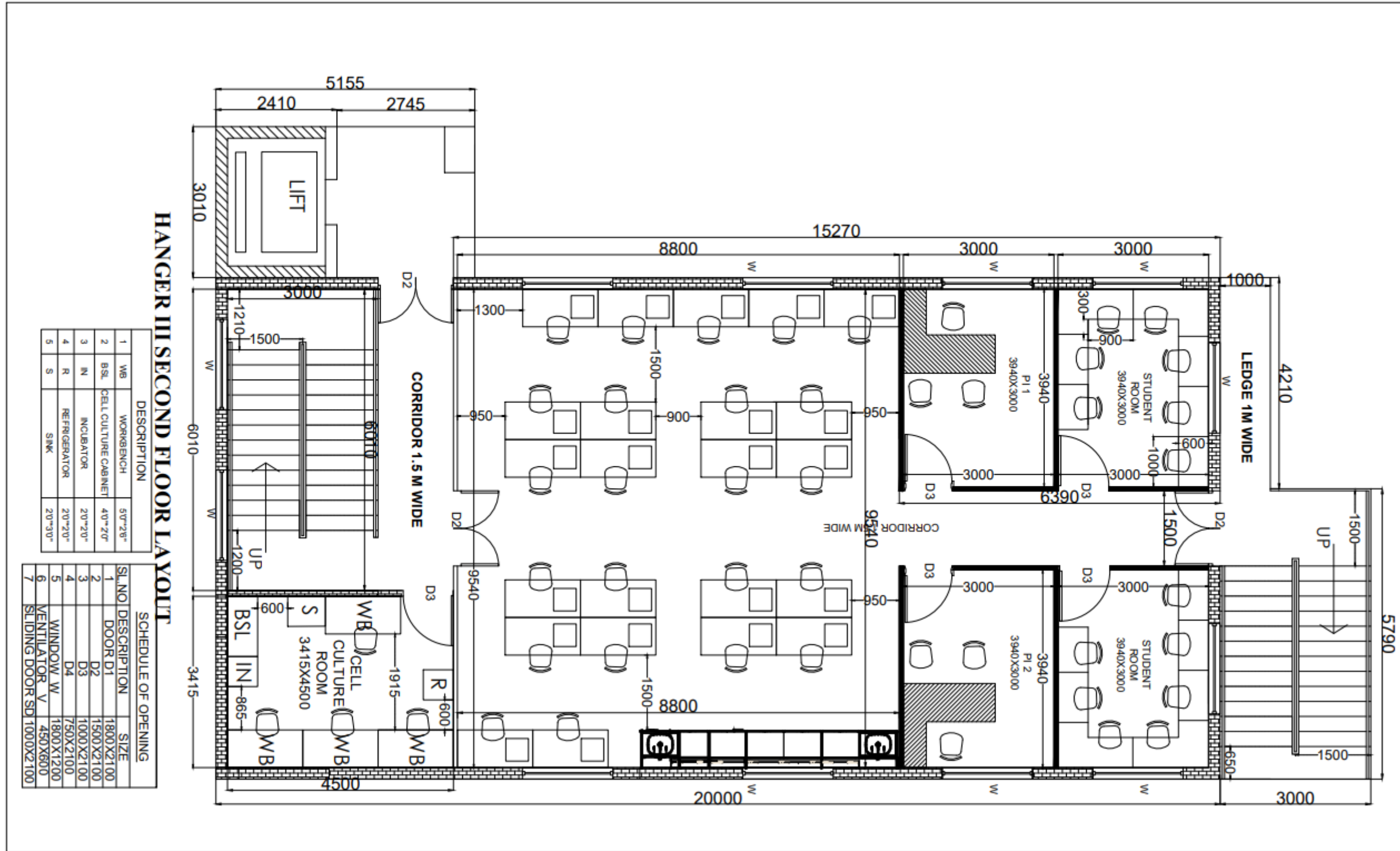
The rate shall include the cost of all materials and labour required for all above operations including transport, wastage, straightening, cutting, bending, binding and the binding wire required.

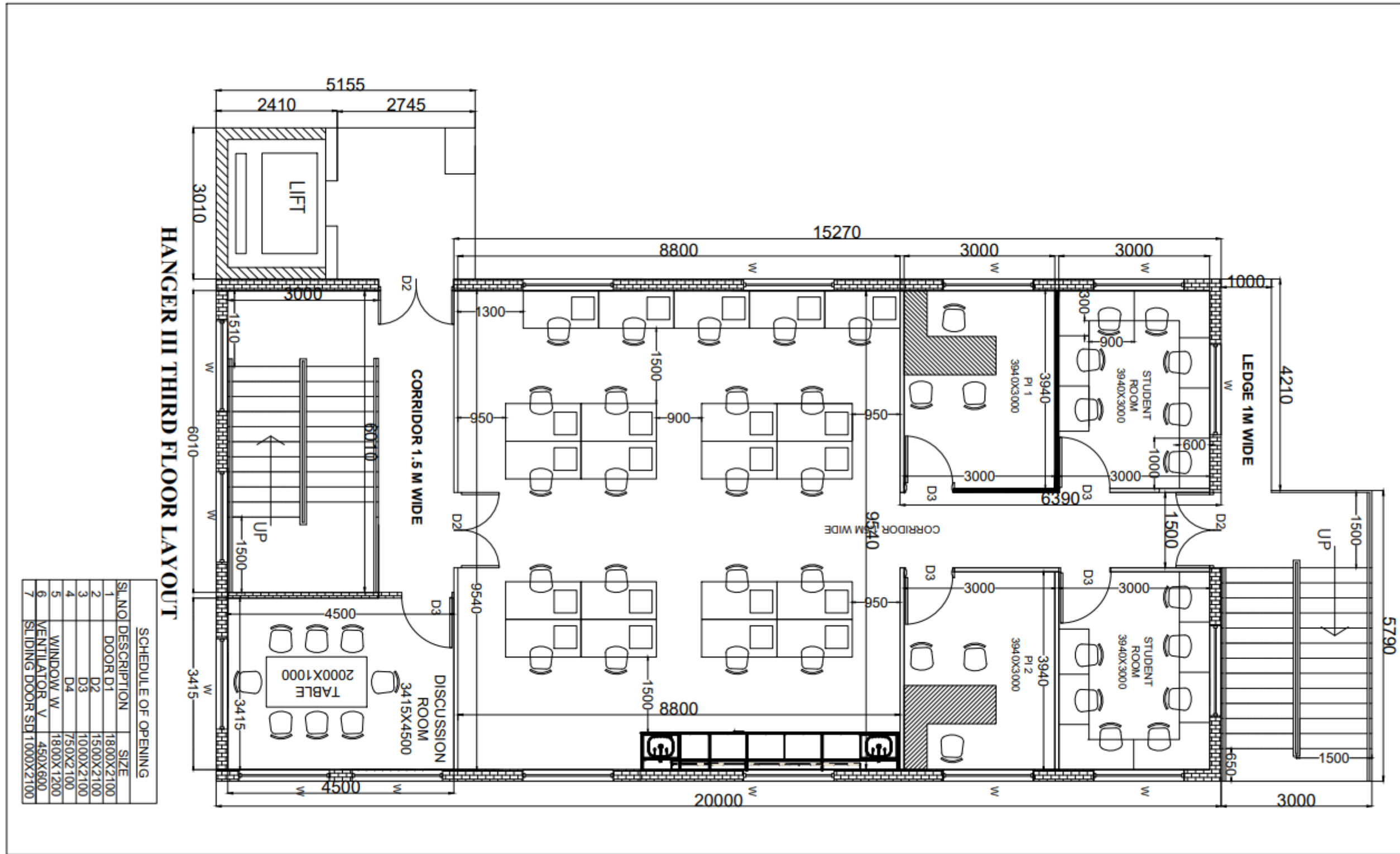
SECTION - VIII

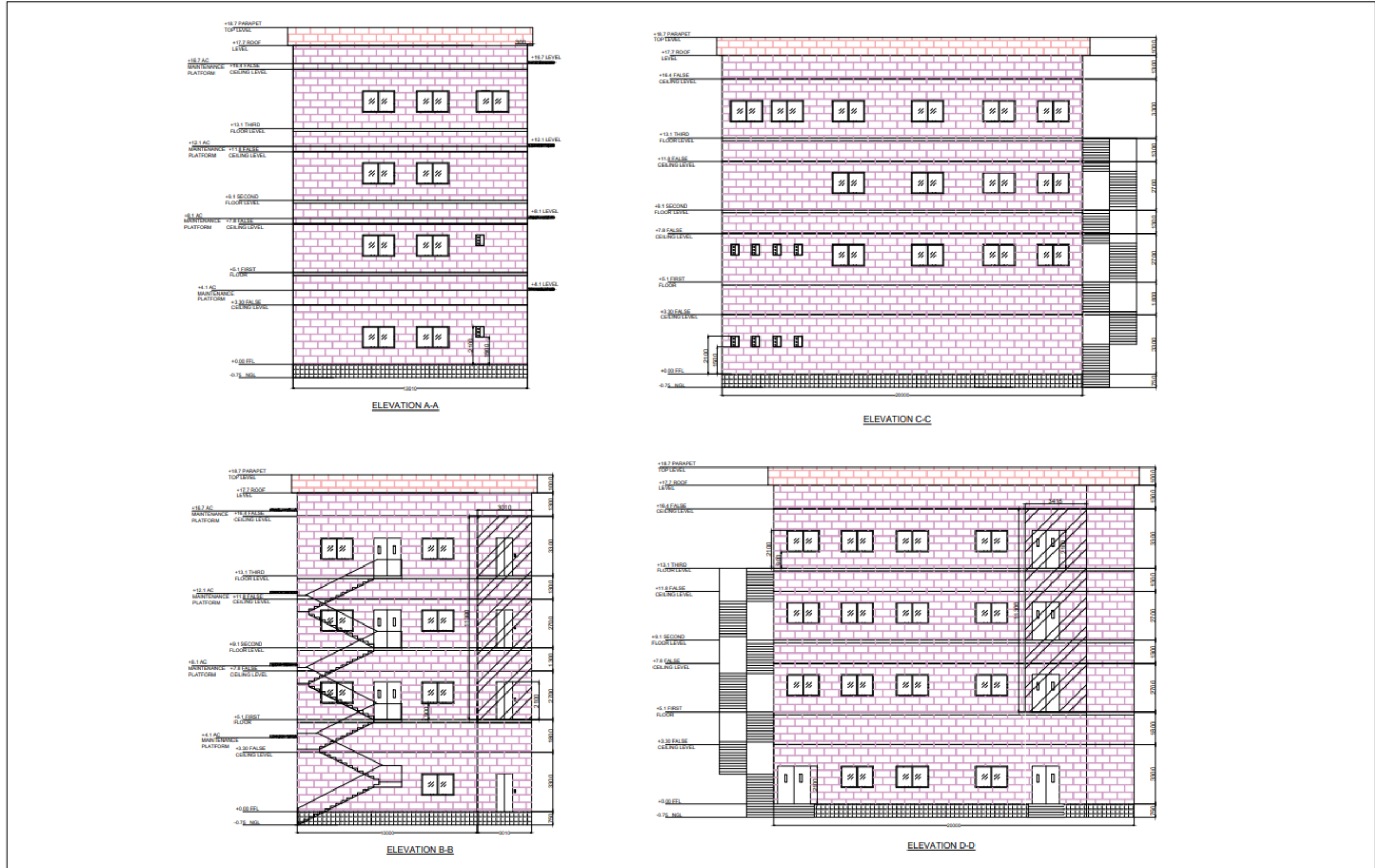
DRAWINGS













SECTION - IX	ANNEXURES
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Annexure-I

BANK GUARANTEE FORMAT FOR SECURITY DEPOSIT

(To be submitted on appropriate value of Non-Judicial stamp paper from any Scheduled Bank)

ORDER NO. _____ DTD. _____

To,
 Centre Director
 TIFR, Survey No. 36/P, Gopanpally (Village),
 Serilingampally (Mandal),
 Ranga Reddy Dist, Hyderabad-500046.

This deed of guarantee executed on the _____ day of _____ by the _____
 _____ (bank) (hereinafter referred to
 as "The Bank: which expression shall wherever the context so requires or admits means and includes its
 successors and assigns).

WHEREAS M/s. - _____ having their
 registered office at _____
 (hereinafter called "the Vendor/Contractor/Supplier") have conveyed to the Centre Director, TIFR,
 Hyderabad acceptance of the Purchase Order / Work Order (whichever is applicable)
 No. _____ Dated _____ for the
 (Hereinafter called the "Vendor/Contractor/Supplier").

In accordance with the terms as set out in the above quoted Purchase Order / Work Order, you have
 agreed to accept a bank guarantee for Rs. _____ (Rs. _____ only)
 equivalent to _____ (percent) of the value of the contract in lieu of security deposit to be valid
 upto _____ or any extension that may be agreed to. For this purpose,
 you have agreed to accept our Guarantee.

In consideration thereof, we hereby (Bank), at the request of M/s. _____
 Irrecoverably and unconditionally undertake and guarantee to refund to the Centre Director, TIFR,
 Hyderabad on behalf of the said Vendor/Contractor/Supplier a sum of Rs. _____ on
 demand and without any demure against any loss or damage that may be suffered by the TIFR,
 Hyderabad on receipt of your intimation that the M/s. _____ Have for
 no reason failed to comply with any of the terms and conditions of the said contract.

This guarantee shall be valid till (the date of completion of the work contained in the said order) as certified
 by you or till any extension of the date as may be agreed to by us. In the event, the guarantee shall expire
 30 days after the said order is satisfactorily completed by you as conforming to the terms and conditions of
 the contract.

This guarantee shall not be revoked without your express consent and shall not be affected by you
 granting time or any other indulgence to M/s. _____ which
 shall include but not be limited to postponement from time to time if the exercise of any power vested in
 you or any right that you may have against to exercise the same in any manner at any time and either to
 enforce any covenant contained or implied in the said contract or any other course or remedy or security
 available to you and our bank shall not be released from its obligation under this bank guarantee by your
 exercising any of your rights with regard to matters aforesaid or any of them or by reason of any other act
 or forbearance or other act of omission or commission on your part or any other indulgence shown by you or
 any other matter or thing whatsoever which under law would but for this provision have the effect of
 relieving our bank from its obligation under this guarantee.

We shall agree that you shall be entitled at your option to enforce this guarantee against our
 bank as a principal debtor by a mere demand in writing from you which shall be conclusive

Contractor's Signature with Stamp



evidence to us that such repayment is due and payable to you under the terms of the said contract and shall be binding on us notwithstanding any other security or guarantee that you may have in relation to M/s. _____ liabilities in respect of this premises.

This guarantee shall not be affected by any change in the constitution of our bank or of the companies or for any other reason whatsoever.

Not with standing anything herein contained our liability under this guarantee is restricted to Rs. _____ (Rupees _____ only) and the guarantee will remain in force up to _____ or any extension that may be agreed to unless a demand or claim is filled against us on or before that said date of expiry viz. _____ all your rights under this guarantee shall be forfeited and we shall be relieved and discharged from all liabilities hereunder.

IN WITNESS WHEREOF, the undersigned being duly authorized by the Directors of the Bank has hereunto set his hand at _____ this _____ day.

SIGNATURE OF BANK OFFICIAL WITH CODE

Bank Address:
 Name :
 Land Line No. :
 Mobile No. :
 Email address :
 Rubber Stamp
 :

SIGNATURE OF WITNESS: 1.



Annexure-II

FORM OF AGREEMENT

This Agreement is made on the _____ day of _____ 2023 between Tata Institute Of Fundamental Research(TIFR), Hyderabad for the entering into work(s) for 'Construction of MS Structure for National Center for Nutrition and metabolism at Plot-B, TIFR, Survey No. 36/P, Gopanpally (Village), Serilingampally (Mandal), Ranga Reddy Dist., Hyderabad-500 046, Telangana, India' (hereinafter called "The Employer") who enters into this Agreement of the one part and M/s _____ (herein after called "The Vendor/Contractor/Supplier") of the other part.

Whereas the Employer is desirous that certain works should be executed by the Vendor/Contractor/Supplier, viz _____ ("the Works") and has accepted a Bid by the Vendor/Contractor/Supplier for the execution and completion of the works and the remedying of any defects therein.

Now this Agreement witnessed as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to.
2. The following documents shall be deemed to form and be read and construed as part of this Agreement, viz:
 - (a) The Letter of Award;
 - (b) The said Bid;
 - (c) The General Conditions of Contract;
 - (d) Prequalification document
 - (e) Instructions to Bidders and Specific Conditions of Contract;
 - (f) The Specification;
 - (g) The Drawings;
 - (h) The Price Bid
 - (i) Any other relevant documents referred to in this Agreement or in the aforementioned documents
3. In consideration of the payments to be made by the Employer to the Vendor/Contractor/Supplier as hereinafter mentioned, the Vendor/Contractor/Supplier hereby covenants with the Employer to execute and complete the Works and remedy any defects therein in conformity in all respects with the provisions of this work.
4. The Employer hereby covenants to pay the Vendor/Contractor/Supplier in consideration of the execution and completion of the Works and the remedying of defects therein the Contract Price or only such other sums as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

In Witness whereof the parties hereto have caused this Agreement to be executed the day and year first before written. Signed, Sealed, and Delivered by the Said.

Binding Signature for and on behalf of TIFR-Hyderabad.

Binding Signature of Vendor/Contractor/Supplier _____ In the presence of
Witness (1):

Witness (2):



ANNEXURE -III

PROFORMA FOR PERFORMANCE BANK GURANTEE

(On a stamp paper of appropriate value from any Nationalized Bank or Scheduled Bank)

1. In consideration of the TATA INSTITUTE OF FUNDAMENTAL RESEARCH (TIFR) having agreed under the terms and conditions of Work Order No.....dated made between TIFR, Hyderabad and M/s.....(hereinafter called "The said Vendor/Contractor/Supplier{s} ") for the work(hereinafter called "the said Work Order") having agreed to production of an irrevocable bank Guarantee for Rs (Rupees..... only), as a security / guarantee from the Vendor/Contractor/Supplier(s) for compliance of his obligations in accordance with the terms and conditions in the said Work Order, we. (Indicate the name of the Bank) (Hereinafter referred to as "The Bank") hereby undertake to pay to the TIFR, Hyderabad an amount not exceeding Rs.....(Rs.....only) on demand by the TIFR, Hyderabad.
2. We (indicate the name of Bank) do hereby undertake to pay the amounts due and payable under this guarantee without any demur, merely on a demand from the TIFR, Hyderabad stating that the amount claimed is required to meet the recoveries due or likely to be due from the said Vendor/Contractor/Supplier(s). Any such demand made on the bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs..... (Rupees only).
3. We, the said bank, further undertake to pay to the TIFR, Hyderabad any money so demanded not withstanding any dispute or disputes raised by the Vendor/Contractor/Supplier(s) in any suit or proceeding pending before any Court or Tribunal relating thereto, our liability under this present being absolute and unequivocal. The payment so made by us under this bond shall be a valid discharge of our liability for payment thereunder and the Vendor/Contractor/Supplier(s) shall have no claim against us for making such payment.
4. We (indicate the name of Bank) further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Work Order and that it shall continue to be enforceable till all the dues of the TIFR, Hyderabad under or by virtue of the Work order have been fully paid and its claims satisfied or discharged or Purchase Officer on behalf of the TIFR, Hyderabad certifies that the terms and conditions of the said Work Order have been fully and properly carried out by the said Vendor/Contractor/Supplier(s) and accordingly discharges this guarantee.
5. We (indicate the name of Bank) further agree with the TIFR, Hyderabad that the TIFR, Hyderabad shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Work Order or to extend time of performance by the said Vendor/Contractor/Supplier(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the TIFR, Hyderabad against the said Vendor/Contractor/Supplier(s) and to forbear or enforce any of the terms and conditions relating to the said Work Order and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Vendor/Contractor/Supplier(s) or for any forbearance, act of omission on the part of the TIFR, Hyderabad or any indulgence by the TIFR, Hyderabad to the said Vendor/Contractor/Supplier(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.
6. This guarantee will not be discharged due to the change in the constitution of the Bank or the Vendor/Contractor/Supplier(s).
7. We, (indicate the name of Bank) lastly undertake not to revoke this guarantee except with the previous consent of the TIFR, Hyderabad in writing.
8. This guarantee shall be valid up to....., unless extended on demand by TIFR, Hyderabad. Notwithstanding anything mentioned above, our liability against this guarantee is restricted to Rs..... (Rupees only) and unless a claim in writing is lodged with us within six months of the date of expiry or the extended date of expiry of this guarantee, all our liability under this guarantee shall stand discharged.

Signed and sealed Dated theday of.....2023 for
 (Indicate the name of Bank)

** (Note: The Letter of Intent shall form part of the Agreement)



Annexure-IV
Site Visit Declaration Certificate
(To be submitted on company's letter head)

CERTIFICATE OF TENDERER'S VISIT TO SITE

1. This is to certify that I_(Name of bidder or his Representative) am from_____ (Name of Firm of tendering) visited the site at TIFR, Hyderabad in connection with the Tender for Construction of MS Structure for National Center for Nutrition and metabolism at Plot-B, TIFR, Survey No. 36/P, Gopanpally (Village), Serilingampally (Mandal), Ranga Reddy Dist., Hyderabad-500046, Telangana, India.
2. Having previously studied the contract documents, I carefully examined the site.
3. I have made myself familiar with all the local conditions likely to influence the works and the cost thereof.
4. I further certify that I am satisfied with the description of the work and the explanations given by the said Representative and that I understand perfectly the work to be done as specified and implied in the execution of the contract.

Signed by tendering firm representative and name:

Signed by tenderer and name:

Date: _____



Annexure-V

List of Documents to be enclosed along with the bid submission:

01	Proof of registration with Government / Semi Government organizations like CPWD, MES, BSNL, Railways, State PWDs etc. in appropriate class OR having experience in execution of similar nature of works.	
02	The applicant should have satisfactorily completed the works as mentioned below during the last seven years ending previous day of last date of submission of tenders : (i) One work costing not less than Rs.158.75 Lakh (or) (ii) Two works each costing not less than Rs.119.06 lakh (or) (iii) Three works costing not less than Rs.79.37 lakh (Work completion certificates along with work order and BOQ)	
03	Annual Turnover during three previous financial years ending March 31, 2023 duly certified by CA and also provide P&L Statements.	
04	PAN & GST copies of the Firm	
05	A valid Labour License / Declaration	
06	Income Tax returns for the last three consecutive financial years ended on March 31, 2023 audited by CA	
07	A valid Solvency Certificate for note less than Rs.79.37 lakhs	
08	Undertaking by the Tenderer as per the specified format	
09	Site Visit Declaration Certificate	
10	Acceptance of Terms & Conditions of the tender by signing every page of the tender document with stamp.	
11	Details of Tender Fee & EMD	

Please fill and enclose this sheet along with technical documents.



Annexure-VI

List of Approved Makes

Sl. No.	Name of Material	Make
	Civil Items	
1 (a)	Cement (Portland Pozzolana Cement)	ACC, Ultra Tech., Birla cements, or Equivalent.
1 (b)	Cement (Ordinary Portland Cement)	ACC, Ultra Tech., Birla cements, or Equivalent.
2	Reinforcement Steel	TATA, SAIL, RINL, JINDAL or any BIS approved License holder/ manufacturer
3	Structural Steel	TATA, SAIL, RINL, JINDAL or any BIS approved License holder/ manufacturer



TATA INSTITUTE OF FUNDAMENTAL RESEARCH
(Autonomous Institution of the Department of Atomic Energy, Government of India)
Survey No.36/P, Gopanpally Village, Serilingampally Mandal, Ranga Reddy
District, Hyderabad-500046, Telangana

SECTION - X

FINANCIAL BID

**INVITATION OF BIDS
FOR**

**Construction of MS Structure for National Center for Nutrition and metabolism
at
Plot B, TIFR, Survey No. 36/P, Gopanpally Village, Serilingampally
Mandal, Ranga Reddy District, Hyderabad.**

FINANCIAL BID

PART –II



SCHEDULE OF QUANTITIES

**Construction of MS Structure for National Center for Nutrition and metabolism at Plot-B, TIFR,
SurveyNo.36/P, Gopanpally (Village), Serilingampally (Mandal), Ranga Reddy District,
Hyderabad**

Sr.No.	Item Description	Unit	Qty	Rate	Total Price in INR
1	STRUCTURAL STEEL WORK(Supply and Fabrication): Supplying, fabricating, HS structural steel works similar to Pre-Engineering building structures using columns, canopies, rafter , sub rafters and Purlins at all elevations/levels/heights including aligning/levelling, providing and fixing bolts, nuts, washers, angles, channels, joists, rails, tees, plates, rounds, squares, etc., of various sizes and other structural steel sections conforming to latest IS 2062-Grade A & B as applicable including straightening, cutting, welding, bending to shape, bolting, cleaning the rust and scales. Scope is inclusive of following finishes ie. Grit / sand blasting and applying one coat of Red Oxide Primer DFT 30 Microns and synthetic enamel paint DFT 35 microns. Only paint touch up wherever needed to be done after erection. The rate to include the cost of all materials, labours, tools, tackles, cranes, devices, fasteners, welding, connection required for work shop and packing pieces, fabrication in the work shop, transportation to site as per specifications and drawing complete.(E350 Grade material) Make: JSW, Tata Steel, RINL, SAIL etc with ISI	Ton	105		
2	STRUCTURAL STEEL WORK(Erection): Hoisting and erecting in position HS structural steel works similar to = Pre-Engineering building structures using columns, canopies, rafter, sub rafters and Purlins at all elevations/ levels/ heights including aligning/leveling, providing and fixing bolts, nuts, washers, angles, channels, joists, rails, tees, plates, rounds, squares,etc., of various sizes and other structural steel sections conforming to latest IS 2062-Grade A & B as applicable. The rate to include the cost of all tools, tackles, cranes, devices, fasteners and erection at site as per specifications and drawing complete.	Ton	105		



3	<p>SUPPLY AND FIXING OF DECK SHEET: Supply & fixing of Structural deck shall be 0.8mm thick GI system having minimum rib depth of 50mm & effective cover width of 960mm having embossments on the top of the flange & side of ribs, profile shall have a zinc coating of 275g/SqM and steel grade confirming to 550mpa fixed to structural steel girders with the help of shear struds in between and edge from and steel bracket end and with necessary butt welding joint of two sheets to be jointed at structural steel girders all complete as per the direction of Engineer-in-Charge. The shear struds, edges form, steel brackets, shall be placed at required height. The Rate also Inclusive of EDGE Angle of 175 X 250 X 4 MM at the periphery. Make: JSW, Tata Bluescope, etc with ISI</p>	Sqm	920		
4	<p>REINFORCED CEMENT CONCRETE WITHOUT SHUTTERING: Providing and laying in position M-25 grade concrete for reinforced cement concrete work, using cement content as per approved design mix, excluding the cost of centering, shuttering finishing, cost of admixtures in recommended proportions as per IS : 9103 to accelerate/ retard setting of concrete, improve workability without impairing strength and durability as per direction of the Engineer - in - charge. (Note:- Cement content considered in this item is @ 330 kg/cum. Excess/less cement used as per design mix is payable/recoverable separately). RMC Make: Ultratech, Aparna or equivalent</p>	Cum	140		
5	<p>REINFORCEMENT STEEL: Supplying and Fabricating and Fixing in position TMT Steel Reinforcements of Grade Fe-500 conforming to IS at all levels and positions including the Cost of transport, Straightening, Cutting, Bending, Cranking, Binding, Welding, Provision of necessary Chairs and Spacers, Preparation of bar bending schedule, Drawings, getting the same approved etc., as per Drawings and Specifications and including Cost of binding wire, Labor etc., all complete for Reinforced Concrete. Only approved chairs, spacers & overlaps shall be used. Make: Tata, JINDAL, RINL, SAIL or equivalent</p>	Ton	14		
				Total In Rs.	
				GST @ 18%	
				Grand Total In Rs.	

Note 1: TIFR, Hyderabad has right to delete any of above items from scope of work or may increase/reduce quantities as per its requirement during execution of work. No claim or compensation for such deletion/increase/decrease will be accepted/paid to contractor. Payment will be made as per actual quantities executed at tender rates.

Note 2: Site must be clean and remove all the debris after completion of work.