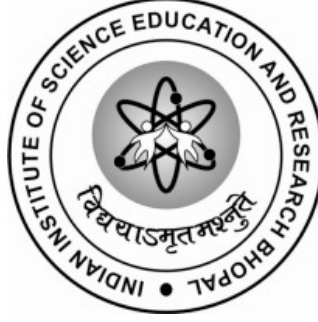


भारतीय विज्ञान शिक्षा एव अनुसंधान संस्थान भोपाल
INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH
(IISER) BHOPAL



NIT
(Eligibility cum Technical Bid Document)

Name of work: Construction of boundary wall near nallah at IISER Bhopal.

NIT No.: IWD/SE/NIT/2017-18/40 dated 05.02.2018

(Last date of submission of online bids upto 5:00 PM on 17.02.2018)

INSTITUTE WORKS DEPARTMENT
Bhopal Bypass Road, Bhauri
Bhopal – 462 066 (M.P.)

INDEX

Name of work: Construction of boundary wall near nallah at IISER Bhopal.

Sl. No.	Particulars	Pages
	Part – A (Eligibility cum Technical Bid Document)	
1.	Index	1
2.	Information and instructions for Bidders for e-tendering forming part of bid document.	2-9
3.	Form CPWD-6 (N.I.T.)	10-15
4.	Form CPWD-8 (Item Rate Tender & Contract for Works)	16-25
5.	Particular specification and special conditions	26-66
6.	List of approved make	67
7.	Integrity Bond	68-74
8.	Draft Agreement	75-76
9.	Form of Earnest Money Deposit (Bank Guarantee Bond)	77
10.	Financial Information (Form–A)	78
11.	Details of all works of similar nature of work completed during the last seven years (Ending upto previous day of last date of submission of online tender) (Form–C)	79
12.	Performance report of works referred in Form ‘C’ (Form–D)	80
13.	Structure & Organisation (Form-E)	81
14.	Application Form for Fund Transfer through RTGS / NEFT. (Form-F)	82
	Part–B (Financial Bid)	
15.	Schedule of Quantities	1-3

This NIT document contains:

Pages 01 to 82 only for Part-A

Page 01 to 03 only for Part-B

Superintending Engineer
IWD, IISER Bhopal

**INFORMATION AND INSTRUCTIONS FOR BIDDERS FOR e-TENDERING FORMING
PART OF BID DOCUMENT AND TO BE POSTED ON WEBSITE**

www.tenderwizard.com/IISERB

The Superintending Engineer, IWD, IISER Bhopal on behalf of the Board of Governors invites online item rate bids from eligible firms / contractors of repute in two bid system for the following work:

Sl. No.	Description	Details
1.	NIT No.	IWD/NIT/SE/2017-18/40 dated 05.02.2018
2.	Name of work & Location	Construction of boundary wall near nallah at IISER Bhopal.
3.	Estimated cost put to tender	Rs.23,29,679/-
4.	Earnest Money	Rs.46,594/- should be in the form of bank transfer (I-Collect) / challan at the campus branch of SBI, IISERB only. Bidders may visit if any assistance required:- https://www.onlinesbi.com/prelogin/icollecthome.htm
5.	Tender Processing fee (0.1% of the tendered amount + GST @ 18% subject to min. Rs.750/- and max. Rs.7,500/- excluding GST).	Rs.2,749/- including GST (Non-Refundable) through e-payment in favour of M/s ITI Ltd.
6.	Period of Completion	2 months
7.	Date of Pre bid meeting (Will be held in the Office of SE, IWD, IISER Bhopal, Bhopal Bypass Road, Bhauri, Bhopal 462 066).	NA
8.	Last date & time of online submission of bid.	17.02.2018 upto 5:00 PM
9.	Last date & time of submission of original hard copy of EMD (Physical EMD), affidavits, experience certificates, undertaking and other documents as specified in the press notice to the O/o The Superintending Engineer, IWD, IISER Bhopal by the bidder.	19.02.2018 upto 3:00 PM

Sl. No.	Description	Details
10.	Date & time of online opening of documents (Eligibility Document)	<p>The Eligibility cum Technical Bid Document shall be opened first at 3:30 PM 19.02.2018.</p> <p>The Financial bid shall be opened who qualify in the eligibility of technical bid. The time and date of opening of financial bid of the eligible bidder shall be communicated at a later date. The Institute shall not accept any loss or delay in transit as an excuse for late tendering.</p>
11.	Help Desk	9981783170, 011-49424365

INSTRUCTIONS TO THE TENDERERS / BIDDERS

1. The contractor submitting the tender should read the schedule of quantities, additional condition, additional specification, particular specification and other terms and condition given in the NIT and drawing. The tender should also read the **General condition of contract for CPWD work 2014** with correction slip issued upto **the last date of receipt of tenders**, which is available as Government of India Publications, however, provision included in the tender document shall prevail over the provision contained in the standard form. The set of drawings and NIT shall be available with the Superintending Engineer, IWD, IISER Bhopal. The contractor should also visit the site of work and acquaint himself with the site conditions before tendering. The following condition, which already form part of the tender condition are specially brought to his notice for compliance while filling the tender. They are requested to comply following instruction:
 - a) Tenders with any condition including that of conditional rebates shall be rejected forthwith.
 - b) Contractor must ensure to quote rate for each item. The column meant for quoting rate in figure appears in pink color and the moment rate is entered, it turns sky blue. In addition to this, while selecting any of the cells a warning appears that if any cell is left blank the same shall be treated as '0'. Therefore, if any cell is left blank and no rate is quoted by the bidder, rate of such item shall be treated as '0'. However, if a tenderer quotes nil rates against each item in item rate tender, the tender shall be treated as invalid and will not be considered as lowest tenderer.
 - c) The successful tenderer shall be required to submit a performance guarantee of 5% of the agreement amount within 15 days of issue of letter of intent. This period can be further extended by Engineer-in-charge upto a maximum period of 3 days on the written request of the contractor with late fee @ 0.1% per day of performance guarantee amount.
 - d) Labour cess, GST etc. or any other taxes as may be applicable shall be borne by the contractor himself. The tenderer shall quote the item rates considering all such taxes and nothing extra shall be paid.
 - e) It will be obligatory on part of the contractor / tenderer to tender and sign the tender documents for all the component parts. The department reserves right to accept tender in full or in part without assigning any reasons.
2. The firm / contractor who fulfill the following requirements shall be eligible to apply.
Joint ventures are not accepted.
 - a) Should have satisfactorily completed the works as mentioned below during the last seven years ending upto previous day of last date of submission of tenders.
 - i) **Three *similar works** each of value not less than **40%** value of Estimated Cost/ or completed **two similar works** each of value not less than **60% of Estimated Cost/ or completed one similar work** of value not less than **80%** of Estimated Cost.

- ii) The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7% per annum, calculated from the date of completion to the previous day of last date of submission of online tender.

***Similar work means:** Civil work.

- b) The bidder should have had average financial turnover (gross) of atleast 50% of estimated cost, on works during the immediate last three consecutive year balance sheets ending **31.03.2017**. Balance sheet duly audited by Chartered Accountant (**Scanned copy of certificate from CA/Audited Balance Sheet to be uploaded**). Year in which no turnover is shown would also be considered for working out the average. The multiplication factor of 7% per annum simple interest is not applicable on the Annual Turnover figures.
 - c) The bidder should have not incurred any loss (**profit after tax should be positive**) in more than two years during the last five consecutive years ending **31.03.2017**. **Balance sheet duly certified and audited by the Chartered Accountant to be uploaded.**
2. The bidder should have GST, ESI and EPF registration no. of concerned Government Authorities.
 3. Every page of the documents submitted by the applicant / firm shall be numbered & bear the stamped signature of the firm.
 4. The intending bidder must read the terms and conditions of CPWD-6 carefully. He should only submit his bid if he considers himself eligible and he is in possession of all the documents required.
 5. Information and instructions for bidders posted on website shall be form part of bid documents.
 6. The bid document consisting 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 free of cost www.tenderwizard.com/IISERB. The press notice can also be seen on www.iiserb.ac.in and www.eprocure.gov.in

Applicants are advised to keep visiting the above mentioned web-sites from time to time (till the deadline for bid submission) for any updates in respect of the tender documents, if any. Failure to do so shall not absolve the applicant of his liabilities to submit the applications complete in all respects including updates thereof, if any. An incomplete application may be liable for rejection.

But the bid can only be submitted after uploading the acknowledgement of online payment through SBI online toward EMD in favour of “**IISER Bhopal**” payable at Bhopal and processing fee in favour of ITI Limited and other documents as specified.

7. Those bidders not registered on the website mentioned above, are required to get registered beforehand. If needed they can be imparted training on online bidding process as per details available on the website.
8. The intending bidder must have valid class-III digital signature to submit the bid.
9. On opening date, the bidder can login and see the bid opening process. After opening of bids he will receive the competitor bid sheet.
10. Bidder can upload documents in the form of **JPG format and PDF format**.
11. The intending bidder has to upload the acknowledgement of e-payment of EMD in favour of "**IISER Bhopal**" or Bank Guarantee as part of the earnest money drawn on any Scheduled Bank while submitting his bid through e-tendering.

A part of earnest money is acceptable in the form of bank guarantee also. In such case, minimum 50% of earnest money or Rs.20 lakh, whichever is less, shall have to be deposited in shape prescribed above and balance may be deposited in the shape prescribed above, and the balance may be deposited in shape of Bank Guarantee of any scheduled bank having validity for six months or more from the last date of receipt of bids which is to be scanned and uploaded by the intending bidders.

Interested tenderers who wish to participate in the tender have also to make following payments mentioned at (i) & (ii) within the period of submission and comply with Sl. No. (iii) & (iv) as below.

- (i) E-tender processing fee – **Rs.2,749/-** if registration with tender processing fee is continued shall be payable to M/s ITI Limited through their e-gateway by credit / debit card, internet banking or RTGS / NEFT facility.
- (ii) The intending bidder has also to fill all the details of online payment through e-gateway of specified banks against EMD etc.
- (iii) Acknowledgement of submission of EMD and Bank Guarantee of any scheduled bank against EMD, if any shall be submitted upto **03:00 PM on 19.02.2018** in the office of "Superintending Engineer, IWD, IISER Bhopal, Bhopal Bypass Road, Bhauri, Bhopal-462 066."
- (iv) Copy of certificates of work experience, Audited Balance Sheets, and other necessary details/documents as per Performa shall be scanned and uploaded to the e-tendering website within the period of bid submission. However, certified copy of all the scanned and uploaded documents as specified in press notice shall have to be submitted by the bidder **upto 03:00 PM on 19.02.2018** physically in the office of "**Superintending Engineer, IWD, IISER Bhopal, Bhopal Bypass Road, Bhauri, Bhopal-462 066.**"

On line bid document submitted by intending bidders shall be opened only of those bidders, who have submitted the original hard copy of EMD as above at Sl. No. 11 (iii), deposited e-tender processing fee with M/s ITI Limited as applicable and Earnest money deposit and other documents scanned and uploaded are found in order.

12. The bidder must ensure to quote rate of each item. The column meant for quoting rate in figures appears in pink colour and the moment rate is entered, it turns sky blue.

In addition to this, while selecting any of the calls a warning appears that if cell is left blank the same shall be treated as "0" (ZERO).

Therefore, if any cell is left blank and no rate is quoted by the bidder, rate of such item shall be treated as "0" (ZERO).

13. The techno commercial bid shall be opened first on due date and time as mentioned above. The time and date of opening of price bid of firms/contractors qualifying the techno commercial bid shall be communicated to them at a later date by e-mail/post.
14. When bids are invited in Two (2) stage system and if it is desired to submit revised financial bid then it shall be mandatory to submit revised financial bid. If not submitted then the bid submitted earlier shall become invalid.
15. The department reserves the right to reject and prospective application without assigning any reason and to restrict the list of qualified contractors to any number deemed suitable by it, if too many bids are received satisfying the laid down criterion.
16. For filling the technical data sheet, it is advised to download the required pages and duly filled & scanned copy to be uploaded with technical bid.
17. Contractor shall not divert any advance payment or part thereof for any other purpose other than needed for completion of the contracted work. All advance payment received as per terms of the contract (i.e. mobilisation advance, secured advance against materials to be brought at site, secured against plant & machinery and / or for work done during interim stages etc.) are required in terms of material, labour, plant & machinery needed for required pace of progress for timely completion of work.
18. Integrity pact of the bid document shall be signed between Engineer-in-charge and the successful bidder after acceptance of the bid.
19. Site of work is available and will be handed over on as is where is basis.
20. Intending bidders are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their bid tenders, 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 of the circumstances which may influence or affect their tender. A tenderer shall be deemed to have full knowledge of the site

wherever he inspects it or not and no extra charge consequent upon any misunderstanding otherwise shall be allowed. The tenderer shall be responsible for arranging and maintaining at his own cost all materials, tools & plant, water, electricity, facilities for workers and all other services required for executing the work unless otherwise specifically provided for in the contract documents and has made himself aware of the scope and specification of the work to be done and of condition and rates at which store, tools and plant etc. will be issued to him by the Government and local condition and other factors having a bearing on the execution of the work.

21. The tender shall be accepted **only through online e-tendering process** and all details pertaining to the tender and guidelines for e-tendering are available on the website www.tenderwizard.com/IISERB
22. Intending contractors needs to register themselves on the e-tendering website www.tenderwizard.com/IISERB to get the USER ID and PASSWORD by paying required registration fee (Annual & non-refundable) through e-payment only and completing the steps specified on above referred website.
23. Special Note: The price bid and other documents has to be submitted separately online at www.tenderwizard.com/IISERB. The date of submission of online technical and financial will be as per tender notice.
24. Requirement for Vendors :-

P.C. Connected with Internet

Registration with portal www.tenderwizard.com/IISERB

Class-III Digital signature certificate in the name of the company of the vendor is mandatory (in the name of the company who will be submitting the EMD & general information. This may be obtained by calling out helpdesk (09981783170 and 011-49424365). Bids will not be recorded without digital signature certificate.

25. Bidders will have to pay Tender Processing **Rs.2,749/- including service tax** (Non-refundable) through e-payment in favour of M/s ITI Ltd.
26. Note: Please check the digital signature certificate. For more details bidders may visit e-tendering portal and download the help manuals uploaded in the website.
27. Information and instruction for bidders posted in website shall form part of bid document. List of document to be filled by the contractor in various forms as mentioned below, to be scanned and uploaded within the period of bid submission.

Sl. No.	Description
1.	EMD should be in the form of bank transfer (I-Collect) / challan at the campus branch of SBI, IISERB only. Bidders may visit if any assistance required:- https://www.onlinesbi.com/prelogin/icollecthome.htm or Bank Guarantee of any schedule bank as per para 8 of CPWD-6 form, against EMD.

2.	Certificate of financial turnover from chartered Accountant (Form-A) – Proforma enclosed.
3.	Details of all works of similar nature of work, completed during the last seven years (Ending up to previous day of last date of submission of online tender) (Form-C) – Proforma enclosed.
4.	Certificate of completed works duly certified by officer not below the rank of Executive Engineer-Performance report of works referred in Form C- (Form-D) - Proforma enclosed.
5.	Structure & Organisation (Form E) .
6.	Application Form for Fund Transfer through RTGS / NEFT (Form-F)
7.	a) Certificate of Registration for GST. b) Certificate of Registration for EPF. c) Certificate of Registration for ESI.

This tender notice can also be seen on Institute website: www.iiserb.ac.in & website: www.eprocure.gov.in.

अधीक्षण अभियंता
 संस्थान निर्माण विभाग
 भा.वि.शि.एवं अनु. सं. भोपाल
 Email: seiwd@iiserb.ac.in
 Phone: 0755 6692 508



**INDIAN INSTITUTE OF SCIENCE EDUCATION & RESEARCH BHOPAL
INSTITUTE WORKS DEPARTMENT**

Notice Inviting e-Tender

1. The Superintending Engineer, IWD, IISER Bhopal on behalf of the Board of Governors, IISER Bhopal invites online item rate bids in two envelope system from the eligible contractors for the following work:

Name of work	Estimated Cost	Earnest Money	Period
Construction of boundary wall near nallah at IISER Bhopal.	Rs.23,29,679/-	Rs.46,594/-	02 Months

1.2 Criteria of Eligibility:

- 1.2.1 Experience of having successfully completed works during the last seven years ending previous day of last date of submission of tenders.

- i) Completed **three *similar works** each of value not less than 40% value of Estimated Cost/ or completed **two *similar works** each of value not less than 60% value of Estimated Cost/ or completed **one *similar work** of value not less than 80% value of Estimated Cost.
- ii) The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7% per annum, calculated from the date of completion to the previous day of last date of submission of online tender.

****Similar work means:** Civil works.

- iii) The bidder should have had average financial turnover (gross) of at least 50% of the estimated cost, during the immediate last three consecutive year's balance sheets ending **31.03.2017**. Balance sheets duly audited and certified by the Chartered Accountant (Scanned copy of certificate from CA/Audited Balance Sheet) are to be uploaded. Year in which no turnover is shown would also be considered for working out the average. The multiplication factor of 7% per annum simple interest is not applicable on the Annual Turnover figures.
- iv) The bidder should have not incurred any loss (profit after tax should be positive) **in more than two years during the last five consecutive years ending 31.03.2017**. Balance sheets duly audited and certified by the Chartered Accountant are to be uploaded.
- 2) Agreement shall be drawn with the successful tenderer on prescribed Form No. **CPWD-8** which is available as a Govt. of India Publication. Tenderer shall quote his rates as per various terms and conditions of the said form, which will form part of the agreement.

- 3) The time allowed for carrying out the work will be **02 months (including rainy season)** from the date of start as defined in schedule “F” or from the first day of handing over of the site, whichever is later, in accordance with the phasing, if any, indicated in the Tender documents.
- 4) The site for the work is available.
- 5) Tender document consisting of plans, specifications, the schedule of quantities of the various types of items to be executed and the set of terms and conditions of contract to be complied with by the contractor whose bid may be accepted and other necessary documents can be seen free of cost from websites **www.tenderwizard.com/IISERB, www.eprocure.gov.in and www.iiserb.ac.in**. The Architectural plan can also be seen in the office of Superintending Engineer, IWD, IISER Bhopal. The standard publications like GCC 2014, DSR 2016 for civil work and electrical works, specifications for civil work and electrical works with amendment / correction slips upto the last date of submission of tender can be seen free of cost from website **www.tenderwizard.com/IISERB**.
- 6) After submission of tender the contractor can re-submit revised tender any number of times but before last time and date of submission of tender as notified.
- 7) While submitting the revised bid, contractor can revise the rate of one or more items(s) any number of times (he need not re-enter rate of all the items) but before last time and date of submission of tender as notified.
- 8) Earnest money of **Rs.46,594/- by bank transfer** in favour of Director, IISER Bhopal, payable at Bhopal. 50% of earnest money or Rs.20.00 lakh whichever is less, will have to be deposited in the shape prescribed above and balance amount of earnest money can be accepted in the form of Bank guarantee issued by a scheduled bank having validity for 6 months or more from the last date of receipt of bids which is to be scanned and uploaded by the intending bidders.

The acknowledgement of submission of EMD shall be deposited by all the intending bidders within the time and date of submission as mentioned in ‘Information and Instructions for Bidders for e-tendering’ of NIT, failing which the bids shall be rejected and uploaded documents shall not be verified.

The intending bidder has to fill all the details of SBI I collect (**acknowledgement of submission of EMD**) against cost of EMD etc.

Interested contractor who wish to participate in the tender has also to make following payments with in the period of bid submission.

- (i) Bidders will have to pay tender processing fee – **Rs.2,749/-** Including GST (Non-Refundable) through e-payment in favour of M/s ITI Ltd.
9. Copy of certificate or work experience and other necessary details/documents as per proforma given in NIT shall be scanned and uploaded documents as

specified in press notice shall have to be submitted by the bidder physically in the office of Superintending Engineer, IWD, IISER Bhopal.

Online bid documents submitted by intending bidders shall be opened only those bidders, who has deposited e-tender processing fee with M/s ITI Limited and Earnest money deposit and other documents scanned and uploaded are found in order.

10. The Eligibility cum Technical bid shall be opened first at **3:30 pm on 17.02.2017**. The Financial bid shall be opened of those bidders who qualify in the eligibility of Technical bid. The time and date of opening of financial bid of the eligible bidder shall be communicated at a later date. The institute shall not accept any loss or delay in transit as an excuse for late tendering.
11. The bid submitted shall become invalid and e-tender processing fee shall not be refunded if:
 - a) The bidder is found ineligible after opening of tender.
 - b) The bidder does not upload all the documents like completion certificates, turnover and affidavits (including EPF & ESI & GST registration) as stipulated in the NIT document. It is mandatory to upload scanned copies of all such documents.
 - c) If any discrepancy is noticed between the documents as uploaded at the time of submission of bid and hard copies as submitted physically by the lowest bidder in the office of SE, IWD, IISER Bhopal.
 - d) The bidder does not deposit acknowledgement of submission of EMD (SBI I Collect) within due date & time as mentioned in 'Information and Instruction for Bidders for e-tendering of NIT.
 - e) **If a tenderer quotes nil rates against each item in item rate tender, the tender shall be treated as invalid and will not be considered as lowest tenderer.**
 - f) In case of any discrepancy is noticed between the documents as uploaded at the time of submission of the bid online and hard copies as submitted physically in the office of Superintending Engineer, then the bid submitted shall become invalid and the Government shall, without prejudice to any other right or remedy, be at liberty to forfeit 50% of the said earnest money as aforesaid. Further the tender shall not be allowed to participate in the retendering process of the work.
12. After opening of technical bid, the deficiencies found in the bid of each bidder vis.-a-vis. requirement as per NIT may be communicated to individual bidders by email with a request to furnish required documents within the time prescribed, failing which it will be presumed that the individual bidder does not have any further documents to furnish and decision on bids will be taken accordingly.
13. The contractor whose tender is accepted will be required to furnish performance guarantee of 5% (five percent) of the tendered amount within the period specified in Schedule F. This guarantee shall be in the form of Fixed Deposit Receipts or Guarantee Bonds of any Scheduled Bank or in accordance with the prescribed form.

14. In case the contractor fails to deposit the said performance guarantee within the period as indicated in Schedule 'F' including the extended period if any, the Earnest money deposited by the contractor shall be forfeited automatically without any notice to the contractor. The earnest money deposited along with tender shall be returned after receiving the aforesaid performance guarantee.
15. The description of the work is as follows :-
- 15.1 Name of Work: Construction of boundary wall near nallah at IISER Bhopal.
- 15.1 **Estimated Cost** :Rs.23,29,679/-
- 15.2 **Period**: 2 (two) months, including rainy season, from the stipulated date of commencement of the work.
- 15.3 **Specifications**: CPWD Specifications 2009 (Vol.-I & II) with correction slips upto the last date of submission of tenders.
- 15.4 **General Conditions of Contract**: Work shall be executed in accordance with the General conditions of the contract for CPWD Works 2014 with correction slips upto **the last date of receipt of tenders.**
- 15.5 Copies of other drawings and documents pertaining to the works will be open for inspection by the tenderers at the office of the In-charge Superintending Engineer, IWD, IISER Bhopal.
- 15.6 Tenderers/Bidders are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their Tenders, 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, 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. The tenderer/Bidder shall be responsible for arranging and maintaining at his own cost all materials, tools & Plants, water, electricity, access facilities for workers and all other services required for executing the work unless otherwise specifically provided for in the contract documents. Submission of Tender by a tenderer implies that he has read this notice and all other contract documents and has made himself aware of the scope and specifications of the work to be done and of conditions and rates at which stores, tools and plant, etc. (if any) will be issued to him by the Government and local conditions and other factors having a bearing on the execution of the work.
- 15.7 Tenderers / Bidders are not allowed to make additions and alternations in the tender document. Any additions and alterations, if incorporated in the tender, shall be liable for rejection.

Conditional tenders violating of the spirit and the scope or the terms & conditions of the tender, are liable to be rejected without assigning any reason. Tenders with conditional rebate etc. shall be summarily rejected.

16. The competent authority on behalf of Board of Governors does not bind itself to accept the lowest or any other Tender and reserves to itself the authority to reject any or all the Tenders received without the assignment of any reason. All Tenders in which any of the prescribed condition is not fulfilled or any condition including that of conditional rebate is put forth by the tenderer shall be summarily rejected.
17. Canvassing whether directly or indirectly, in connection with tenders is strictly prohibited and the tenders submitted by the contractor who resort to canvassing will be liable to rejection.
18. The competent authority on behalf of the Board of Governors reserves to himself the right of accepting the whole or any part of the tender and the tenderer shall be bound to perform the same at the rate quoted.
19. The contractor shall not be permitted to tender/bid for works in the Institute (IISER Bhopal) if his near relative is posted in any capacity at IISER Bhopal. He shall also intimate the names of persons who are working with him in any capacity or are subsequently employed by him and who are near relatives to any employee in the IISER Bhopal. Any breach of this condition by the contractor would render him liable to be debarred from taking works in this Institute.
20. No Engineer of special rank or other special Officer employed in Engineering or Administrative duties in IISER Bhopal is allowed to work as a contractor for a period of two years after his retirement from Govt. Service without the previous permission of the Institute in writing. This contract is liable to be cancelled if either the contractor or any of his employees is found any time to be such a person who had not obtained the permission of the Govt. of India as aforesaid before submission of the Tender or engagement in the contractor's service.
21. The Tender/bid for the works shall remain open for acceptance for a period of **Sixty Days** from the date of opening of the tenders. If any tenderer / bidder withdraws his Tender before the said period or issue of letter of acceptance, whichever is earlier, makes any modifications in the terms and conditions of the tender which are not acceptable to the Department, then the Government shall, without prejudice to any other right or remedy, be at liberty to forfeit 50% of the said earnest money as aforesaid. Further the tenderer shall not be allowed to participate in the re-tendering process of the work.
22. This 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:-
 - a) The Notice Inviting Tender, all the documents including special conditions, particular specifications and drawings, if any, forming the tender as issued at the time of invitation of tender and acceptance thereof together with any correspondence leading thereto.
 - b) Standard C.P.W.D Form 8.

23. On acceptance of the tender by the competent authority, the letter of award will be issued by the Engineer in charge on behalf of the Board of Governors.
24. In the case of Item Rate Tenders, only rates quoted shall be considered. Any tender containing percentage below/above the rates quoted is liable to be rejected.
25. Tenderer must ensure to quote rate for each item. The column meant for quoting rate in figure appears in pink color and the moment rate is entered, it turns sky blue. In addition to this, while selecting any of the cells a warning appears that if any cell is left blank the same shall be treated as '0'. Therefore, if any cell is left blank and no rate is quoted by the bidder, rate of such item shall be treated as '0'. However, if a tenderer quotes nil rates against each item in item rate tender, the tender shall be treated as invalid and will not be considered as lowest tenderer.

Superintending Engineer
For and behalf of Board of Governors

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH BHOPAL
INSTITUTE WORKS DEPARTMENT

STATE	:	Madhya Pradesh	CIRCLE	:	IWD
BRANCH	:		DIVISION	:	EE-I, IWD
ZONE	:		SUB-DIVN.	:	

Item Rate Tender & Contract for works

- (A) **Tender for the work: Construction of boundary wall near nallah at IISER Bhopal.**
- (i) **To be submitted online by 5.00 P.M. on 17.02.2018 through website www.tenderwizrd.com/IISERB.**
- (ii) **To be opened in the presence of tenderers who may be present at 3.30 P.M. on 19.02.2018 in the office of Superintending Engineer, IWD, IISER Bhauri, Bhopal Bypass Road, Bhopal – 462 066.**

I/We have read and examined the notice inviting Tender, schedule, A, B, C, D, E, & F, specifications applicable, Drawings & Designs, General Rules and Directions, Conditions of Contract. Clauses of contract, Special conditions, Schedule of Rate & other documents and Rules referred to in the conditions of contract and all other contents in the technical bid document for the work.

I/We hereby quote for the execution of the work specified for the Board of Governors, IISER Bhopal within the time specified in Schedule 'F' Viz. Schedule of Quantities and in accordance in all respects with the specifications, designs, drawings and instructions in writing referred to in Rule-1 of General Rules and Directions and in Clause 11 of the Conditions of contract and with such materials as are provided for, by, and in respects in accordance with, such conditions so far as applicable.

We agree to keep the tender open for sixty (60) days from the date of opening of financial bid in case tenders are invited on 2 envelop system and not to make any modification in its terms and conditions.

A sum of **Rs.46,594/- as EMD** has been deposited in the form of bank transfer (I-Collect) at the campus branch of SBI, IISERB only. If I/We, fail to furnish the prescribed performance guarantee within prescribed period. I/We agree that the said Board of Governors or his successors, in office 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 Board of Governors or his successors in office shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the said performance guarantee absolutely. The said Performance Guarantee shall be a guarantee to execute all the works referred to in the tender documents upon the terms and conditions contained or referred to those in excess of that limit at the rates to be determined in accordance with the provision contained in clause 12.2 & 12.3 of the tender form. Further I/We agree that in case of forfeiture of Earnest Money or

Performance Guarantee as aforesaid, I/We shall be debarred for participation in the re-Tendering process of the work.

Further I/We agree that in case of forfeiture of Earnest Money or 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.

Dated

**Signature of Contractor
Postal Address**

**Witness:
Address:
Occupation:**

ACCEPTANCE

The above Tender (as modified by you as provided in the letters mentioned hereunder) is accepted by me for and on behalf of the Board of Governors for a sum of Rs. _____ (Rupees _____).

The letters referred to below shall form part of this contract Agreement:

- i)
- ii)
- iii)

For & on behalf of Board of Governors

Dated

Signature:
Designation: Executive Engineer-I
IWD, IISER Bhopal

SCHEDULES

SCHEDULE 'A'

Schedule of quantities -

SCHEDULE 'B'

Schedule of materials to be issued to the contractor:-

S. No	Description of Item	Quantity	Rate	Place of Issue
As specified in schedule of quantities, if any.				

SCHEDULE 'C'

Tools and plants to be hired to the contractor

Sl. No	Description	Hire charges per day	Place of Issue
1	2	3	4
-Nil-			

SCHEDULE 'D'

Extra schedule for specific requirements / documents for the work, if any. : Nil

SCHEDULE 'E'

Reference to General Conditions of Contract for CPWD works 2014 with amendments issued upto **the last date of submission of online tender.**

Name of work :	Construction of boundary wall near nallah at IISER Bhopal.
Estimated cost of work:	Rs.23,29,679/-
Earnest Money :	Rs.2,749/- (to be returned after receiving performance guarantee)
Performance Guarantee	5% of tendered value
Security Deposit	2.5% of tendered value or value of work done whichever is lower. OR 2.5% tender value plus 50% of PG for contracts involving maintenance of the building and services/other work after construction of same building and services / other work.

SCHEDULE 'F'

General Rules & Directions:

Office Inviting Tender :	In-charge SE, IWD, IISER Bhopal
Maximum percentage for quantity of items of work to be executed beyond which rates are to be determined in accordance with clauses 12.2 & 12.3.	See below

Definitions :

2 (v)	Engineer-in-charge	Executive Engineer-I, IWD, IISER Bhopal.
2 (viii)	Accepting Authority	Director, IISER Bhopal
2 (x)	Percentage on cost of material and labour to cover all overheads and profits.	15%
2 (xi)	Standard Schedule of Rates	Market Rates
2 (xii)	Department	Institute Works Department, IISER Bhopal.
9(ii)	Standard CPWD contract form	GCC 2014, CPWD Form-8 as amended upto the last date of submission of online tender.

Clause 1:

- | | |
|--|----------------|
| (i) Time allowed for submission of performance Guarantee, programme chart (Time & Progress) and applicable labour licenses, registration with EPFO, ESIC and BOCW Welfare Board or proof of applying thereof from the date of issue of letter of acceptance. | 15 days |
| (ii) Maximum allowable extension with late fee @ 0.1% per day of Performance Guarantee beyond the period provided in (i) above. | 7 days |

Clause 2:

Authority for fixing compensation under clause 2.	In-charge Superintending Engineer, IWD, IISER, Bhopal.
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Clause 2A:

Whether Clause 2A shall be applicable	Not applicable
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Clause 5:

Number of days from the date of issue of letter of acceptance for reckoning date of start.	22 days
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Mile stone(s) as per table given below:-

Sl. No.	Description of Milestone (Financial)	Time allowed	Amount to be withheld in case of non achievement of milestone
----- NA -----			
	Time allowed for execution of work :	2 (two) months	
	Authority to decide :	Engineer-in-charge IWD, IISER Bhopal	
	i. Extension of time :	In-charge, SE, IWD, IISER Bhopal	
	ii. Rescheduling of milestone :	In-charge, SE, IWD, IISER Bhopal	
	iii. Shifting of date of start in case of delay : in handing over of site.	In-charge, SE, IWD, IISER Bhopal	
Scheduling of handing over of site			
Part	Portion of site	Description	Time period handing over reckoned from date of issue of letter of intent.
Part A	Portion of without any hindrance	Complete site	10
Part B	Portion of with encumbrance	N.A.	-
Part C	Portions dependent on work of other agencies	N.A.	-
Scheduling of issue of Designs			
Part	Portion of Design	Description	Time period for issue of design reckoned from date of receipt of tender.
Part A	Portion already included in NIT	N.A.	-
Part B-1	Portions of Architectural Design to be issued	N.A.	-
Part B-2	Portions of Civil Design to be issued	N.A.	-
Part B-3	Portions of E&M Design to be issued	N.A.	-
Clause 5.4 Schedule of rate of recovery for delay in submission of the modified program in terms of delay in days.			
Sl. No.	Contract Value	Recovery Rate	
i.	Less than or equal to Rs.1 Cr.	Rs.500/-	
ii.	More than Rs.1 Cr. but less than or equal to Rs.5 Cr.	Rs.1,000/-	
iii.	More than Rs.5 Cr. but less than or equal to Rs.20 Cr.	Rs.2,500/-	
iv.	More than Rs.20 Cr.	Rs.5,000/-	
Clause 6,6 A			
Clause applicable – (6, or 6A)		6A	
Clause 7			

Gross work to be done together with net payment/adjustment of advances for material collected, if any, since the last such payment for being eligible to interim payment.		: 11.00 Lakh	
Clause -7A: No running account bill shall be paid for the work till the applicable labour licenses, registration with EPFO, ESIC and BCOW welfare board, whatever applicable is submitted by the contractor to the Engineer-in-charge.		Yes	
Clause 8B			
(i) This shall not apply for maintenance or up gradation contracts not involving any services.			
(ii) For other works, the limit shall be as below:			
Sl. No.	Contract Value	Limit	
i.	Less than or equal to Rs.1 Cr.	Rs. 2,000/-	
ii.	More than Rs.1 Cr. but less than or equal to Rs.5 Cr.	Rs.5,000/-	
iii.	More than Rs.5 Cr. but less than or equal to Rs.20 Cr.	Rs.25,000/-	
iv.	More than Rs.20 Cr.	Rs.50,000/-	
Clause : 10A List of testing equipment to be provided by the contractor at site lab.		As per work requirement.	
Clause : 10B(ii)			
Whether clause 10B (ii) shall be applicable		No	
Clause 10C Component of labour expressed as percent of value of work.		25%	
Clause 10 CA			
Sl. No.	Materials Covered under this clause	Nearest Materials (other than cement, reinforcement bars) for which All India Wholesale Price Index to be followed	Base Price of all materials covered under clause 10CA
		-NA-	

Clause 10 CC		: Not Applicable
Clause 10CC to be applicable in contracts with stipulated period of completion exceeding the period shown in next column.		12 Months.
Schedule of component of other Materials, Labour, POL etc. for price escalation.		
Component of civil (except material covered under clause 10CA) / Electrical construction Materials- expressed as percent of total value of work.		$X_m = \text{---}\%$
Component of labours- expressed as percent of total value of work		$Y = \text{----}\%$
Component of P.O.L.- expressed as percent of total value of work.		$Z = \text{----}\%$
Note :		
<p>1) X_m___% should be equal to (100) – (materials covered under clause 10CA i.e. cement, steel and other material specified in clause 10CA + component of labour + component of POL.</p> <p>2) Clause 10CC is not applicable in this tender as the stipulated time period for completion is 6 months (including rainy season).</p> <p>3) Clause 10CC will not be applicable even when time period for completion is extended beyond 12 months, when the competent authority grants extension of time with or without levy of compensation without prejudice to the Government of India (IISER Bhopal) to recover the liquidated damages on account of hindrances during the project (if any).</p>		

Clause 11:

Specifications to be followed for execution of Work.

- Civil works

CPWD Specifications 2009 (Vol.-I & II) with correction slips upto the last date of submission of tenders.

Clause 12: Project & original work.

Type of work:

12.2 & 12.3	Deviation limit beyond which clause 12.2 & 12.3 shall apply for this work.	30%
12.5	<ul style="list-style-type: none"> i) Deviation limit beyond which clause 12.2 & 12.3 shall apply for foundation work (except items mentioned in earth work subhead in DSR and related items). ii) Deviation limit for items mentioned in earth work subhead of DSR and related items. 	<ul style="list-style-type: none"> 30% 100%

Clause 16:

Competent Authority for deciding reduced rates

- i) **In-charge SE, IWD, IISER Bhopal upto 5% of the contract value.**
- ii) **Director, IISER Bhopal, for contract value beyond 5%.**

Clause 18:

List of Mandatory machinery, tools and plants: **As required.**
to be deployed by the contractor at site.

Note: The list of machinery, tools & plants to be deployed by the contractor at site are minimum. The contractor shall deploy additional machinery, tool & plants in order to maintain the progress of the work without any extra cost to the department.

Clause 19L:

The ESI and EPF contributions on the part of employer in respect of this contract shall be paid by the agency. These contributions on the part of the employer paid by the agency shall be reimbursed by the Engineer-in-charge to the agency on actual basis.

Clause 25:

Constitution of Dispute Redressal Committee (DRC)	Competent Authority to appoint DRC and Arbitrator
i) DRC shall consist of one Chairman and two members.	Director, IISER Bhopal
ii) Place of Arbitration	Bhopal

Clause 36 i)**Requirement of technical representative (s) and recovery rate:**

Sl. No	Minimum Qualification of Technical Representative	Discipline	Designation (Principal Technical/ Technical representative)	Minimum Experience	Number	Rate at which recovery shall be made from the contractor in the event of not fulfilling provision of clause 36(i)
1.	Degree / Diploma	Civil Engineering	Site Engineer/ Junior Engineer	1 year for degree holder. & 3 years for diploma holder.	1	Rs.30,000/- per month

Clause 42:

Schedule/statement for determining theoretical quantity of Cement & Bitumen on the basis of Delhi Schedule of Rates 2014 printed by C.P.W.D.

-NA-

Item	Variations permissible on theoretical quantities
a) Cement	2% plus / minus
b) Bitumen	2.5% plus only & nil on minus side
c) Steel reinforcement and structural steel sections for each diameter, section and category.	2% plus/minus
d) All other materials	Nil

RECOVERY RATES FOR QUANTITIES BEYOND PERMISSIBLE VARIATION

Sl. No.	Description of item	Rates in figures and words at which recovery shall be made from the contractor	
		Excess beyond permissible variation	Less use beyond the permissible variation
NA			

Particular Specification and Special Conditions

A. Special Conditions

1) DEFINITION:

In the Contract (as hereinafter defined) the following definitions words and expressions shall have the meaning hereby assigned to them except where the context otherwise required.

- i) *Institute* shall mean the IISER, Bhopal.
- ii) *The President* shall mean the Board of Governors, IISER Bhopal.
- iii) *The Engineer-in-charge*, who shall administer the work, shall mean the Executive Engineer(s)/ Sr. Project Engineer (E).
- iv) *Government or Govt. of India* shall mean the Indian Institute of Science Education and Research Bhopal represented by its Director.
- v) The term *Director General of Works* shall mean the Chairman, Building & Works Committee of the Institute.
- vi) *Accepting authority* shall mean the Chairman Building and Works Committee/Director, IISER, Bhopal or his authorized representative.
- vii) The term *SDG/ADG/Chief Engineer* shall mean the Director, IISER Bhopal
- viii) *Superintending Engineer* shall mean the In-charge Superintending Engineer of the Institute, who as overall In-charge and head of the Institute Works Department shall direct the contract.
- ix) *Architect* shall mean every partner of the firm M/s UpalGhosh Associates, New Delhi, appointed by the Institute for the work and in the event of ceasing to be the Architects, such other firms or persons as may be appointed by the Institute.
- ix) *Site Engineers* shall mean the Assistant Executive Engineer, Assistant Engineer & Jr. Engineer (Civil / Electrical) appointed by Institute works department.

2. DUTIES & POWERS:

2.1 *Site Engineers:*

The duties of the Site Engineer(s) are to watch and supervise the works and the workmanship in connection with the works, and to test and examine any materials to be used. He shall have no authority to relieve the contractor of any of his duties or obligations under the contract, except as expressly provided hereunder, nor to order any work involving delay or any extra payment by the Institute and to make any variation in the works.

The Engineer-in-charge, from time to time in writing, delegates to the Site Engineer(s) any of the powers and authorities vested in them. Any written instruction or written approval given by the Site Engineer (s) to the contractor within the terms of such delegation (but not otherwise) shall bind the contractor and the Institute as though it had been given by the Engineer-in-charge provided always as follows:

- a) Failure of the Site Engineer (s) to disapprove any work or materials shall not prejudice the power of the Engineer in-charge to subsequently disapprove such work or materials and to order the pulling down, removal or breaking up thereof.

- b) If the contractor is dissatisfied by reason of any decision of the Site Engineer (s), he shall be entitled to refer the matter to the Engineer-in-charge, who shall thereupon confirm reverse or vary such decision.

3. **ASSIGNMENT & SUBLETTING:**

3.1 The contractor shall not assign the contract or any part thereof or any benefit or interest therein or there under without the written consent of the Engineer in-charge. The whole of the works included in the contract shall be executed by the contractor except where otherwise provided in the contract. The contractor shall not sublet any part of the works without the written consent of the Engineer in-charge and such consent, if given, shall not relieve the contractor from any liability or obligation under the contract, and he shall be responsible for the acts, defaults and neglects of sub-contractor, his agents, servants or workmen, as if they were the acts, defaults or neglects of the contractor provided always that the provision of labour contracts on a piece work basis shall not be deemed to be a subletting under this clause.

4. **SCOPE OF CONTRACT:**

The contract comprises the construction of balance work, completion and rectification of defects for twelve (12) months after the completion, and the provision of all labour, materials, constructional plant, equipment and transportation, temporary works and everything, whether of a temporary or permanent nature required in and for such construction, completion and maintenance so far as the necessity for providing the same is specified in or reasonably to be inferred from the contract. The contractor shall make his own arrangements for the safe storage of materials, accommodation for his staff etc. and no claim for the temporary accommodation from the contractor shall be entertained.

The contractor shall carry out and complete the said work in every respect in accordance with this contract and as per the directions and to the satisfaction of the Engineer in-charge. Issue of further drawings and / or written instructions, detailed directions and explanations which are hereinafter collectively referred to as instructions of the Engineer in-charge in regards to:

- a) The variation or modification of the design, quality or quantity of works or the addition or omission or substitution of any work.
- b) Any discrepancy in the Drawings or between the Schedule of Quantities and / or Drawings and / or specifications.
- c) The removal from the site of any materials brought thereon by the contractor and the substitution of any other material thereof.
- d) The dismissal from the works of any persons employed thereupon.
- e) The opening up for inspection of any work covered up.
- f) The amending / making good of any defects.

The contractor shall forthwith comply with and duly execute any instructions of work comprised in such Engineer in-charge's instructions, provided always that the verbal instructions and explanations given to the contractor or his representative upon the works shall, if involving a variation, be confirmed in writing by the contractor within seven days and if not dissented in writing within a further seven days by the Engineer in-charge, such shall be deemed to be instructions of the Engineer in-charge within the scope of the contract.

5. CONTRACT DOCUMENT:

5.1 The several documents, forming the contract, are to be taken as mutually explanatory of one another and in case of ambiguities or discrepancies the same shall be explained and adjusted by the Engineer-in-charge who shall thereupon issue to the contractor its interpretation directing in what manner the work is to be carried out. In case the contractor feels aggrieved by the interpretation of the Engineer-in-charge then the matter shall be referred to the Superintending Engineer and his decision shall be final, conclusive and binding on both parties to the contract.

5.2 The drawing etc. shall remain in the custody of the Institute. Two complete sets of drawings, specification and Schedule of Quantities shall be furnished by the Engineer-in-charge to the contractor in such time, which must not delay the progress of the construction, and the Institute shall furnish copies of any additional drawings, which in their opinion may be necessary for the execution of any part of the work. One complete set shall be kept on the work site and the Engineer-in-charge and his representatives shall be, at all reasonable times, have access to the same. The contractor shall study the drawings thoroughly before the commencement of work. In case of any discrepancy, the contractor shall seek clarification before proceeding with the works. Figured dimensions are in all cases to be accepted in preference to the scaled sizes. Large-scale details shall take preference over small scale ones.

The contractor shall give adequate notice in writing to the Engineer-in-charge of any further drawings or specification that may be required for the execution of the works or otherwise under the contract.

The Engineer-in-charge shall have full powers and authority to supply to the contractor from time to time during the progress of the work such drawings and instructions as shall be necessary for proper execution and the contractor shall carry out and be bound by the same.

5.3 The successful tenderer shall be required to enter into an agreement with the Institute. The Schedule of Quantities & rates filled by the successful tenderer there in, the General Conditions of Contract 2014 for CPWD Works incorporating corrections upto the last date of receipt of tenders, CPWD specifications for Civil & Electrical Works, the Special conditions, additional specifications, minutes of the pre bid conference, negotiation letter and the award letter etc. shall form part of the agreement to be signed by the successful tenderer. The cost of stamp paper and stamp duty, required for the agreement, shall be borne by the contractor.

6. The contractor(s) shall give to the Municipality, police and other authorities all necessary notices etc. that may be required by law and obtain all requisite licenses for temporary obstructions, enclosures etc. and pay all fee, taxes and charges which may be levied on account of these operations in executing the contract. He shall make good any damage to the adjoining property whether public or private and shall supply and maintain lights either for illumination or for cautioning the public at night.
7. The Contractor(s) shall take instructions from the Engineer-in-Charge regarding collection and stacking of materials at any place. No excavated earth or building rubbish shall be stacked on areas where other buildings, roads, services and compound walls are to be constructed. However if any change is required, the same shall be done with the approval of Engineer-in-Charge & no extra payment shall be made on this account
8. Contractor(s) shall provide permanent bench marks, flag tops and other reference points for the proper execution of work and these shall be preserved till the end of the work. All such reference points shall be in relation to the levels and locations, given in the Architectural and other related services drawings.
9. Water tanks, taps, sanitary, water supply and drainage pipes, fittings and accessories should conform to bye-laws of municipal body/corporation, where CPWD specifications are not available. The Contractor (s) should engage approved, licensed plumbers for the work and get the materials (fixtures/fittings) tested, by the municipal Body/Corporation authorities wherever required at his own cost.
10. The work shall be carried out in accordance with the Architectural drawings and structural drawings, to be issued from time to time, by the Engineer-in-Charge. Before commencement of any item of work the contractor shall correlate all the relevant architectural and structural drawings, nomenclature of items and specifications etc. issued for the work and satisfy himself that the information available there from is complete and unambiguous. The figure and written dimension of the drawings shall be superseding the measurement by scale. The discrepancy, if any, shall be brought to the notice of the Engineer-in-charge before execution of the work. The contractor alone shall be responsible for any loss or damage occurring by the commencement of work on the basis of any erroneous and/ or incomplete information and no claim whatsoever shall be entertained on this account.
11. Other agencies will also simultaneously execute and install the works of air-conditioning, lifts, fire-fighting etc. of this work and the contractor shall afford necessary facilities for the same. The contractor shall leave such recesses, holes, opening etc. as may be required for the electric and other related works and nothing extra shall be payable on this account.
12. The contractor shall conduct his work, so as not to interfere with or hinder the progress or completion of the work being performed by other contractor(s) or by

the Engineer-in-Charge and shall as far as possible arrange his work and shall place and dispose off the materials being used or removed, so as not to interfere with the operations of other contractor or he shall arrange his work with that of the others in an acceptable and coordinated manner and shall perform it in proper sequence to the complete satisfaction of others.

13. The Architectural drawings given in the tender other than those indicated in nomenclature of items are only indicative of the nature of the work and materials/fixing involved unless and otherwise specifically mentioned. However, the work shall be executed in accordance with the drawings duly approved by the Engineer-in-Charge.
14. The contractor shall render all help and assistance in documenting the total sequence of this project by way of photography, slides, audio-video recording including photographs, slides, audio-videography etc. and nothing extra shall be payable to the contractor on this account.
15. The contractor shall be fully responsible for the safe custody of materials brought by him at site / issued to him even though the materials may be under double lock and key system. The contractor has to make his own arrangement like shed enclosure etc. for keeping the material, providing security etc. The contractor shall be allowed to make temporary structures for cement godown, installation of batch mixing plant, stores, labs, offices, sheds& labour huts etc. **(No labour huts shall be allowed to be built in the campus of IISER Bhopal)**. The contractor shall remove all the structures erected by him necessary for the execution of the work, after completion of the work and clean the site removing all structures in all respect as per the direction of Engineer-in-charge.
16. **SAFETY, HEALTH AND ENVIRONMENT**
 - a. The Contractor(s) shall take all precautions to avoid accidents by exhibiting necessary caution boards during day and night, speed limit boards, red flags, red lights and providing barriers hoarding written in English and Hindi. He shall be responsible for all damages and accidents caused to existing/new work due to negligence on his part. No hindrances shall be caused to traffic during the execution of the work. In case of any accident of labour / contractual staff the entire responsibility will rest on the part of the contractor and any compensation under such circumstances if becomes payable the same shall be entirely born by the contractor and department shall have no role on this account.
 - b. The contractor is required to follow the CPWD Safety code as prescribed in the General condition of the contract **2014 with correction slip issued upto last date of submission of online bids**.
 - c. The contractor shall assign to his workmen, tasks commensurate with their qualification, experience and state of health for driving of vehicles, handling and erection of materials and equipment. All lifting equipment shall be tested certified for its capacity before use. Adequate and suitable lighting at every work place and approach there to, shall be provided by the contractor before starting the actual operations at night.

- d. Hazardous and / or toxic materials such as solvent coating or thinners shall be stored in appropriate containers.
- e. All hazardous materials shall be labeled with the name of the materials, the hazards associated with its use and necessary precaution to be taken.
- f. Contractor shall ensure that during the performance of the work, all hazard to the health of personnel, have been identified, assessed and eliminated.
- g. Appropriate personal protective equipment such as helmets, gloves, goggles, aprons, safety belts etc. shall be provided to the workers employed at the work site as per the requirement and exposure to the hazardous materials or locations.
- h. The contractor has to follow the model rules for the protections of the Health and sanitary arrangement for the workers as provided in the General condition of the contract 2014 with correction slip issued upto last date of submission of bids.
- i. The contractor shall provide first aid facilities, drinking water facilities, washing facility, Latrines and urinals, shelter during rest, crèches, canteens, anti-malarial precautions, preventive action for communicable diseases, proper drainage, sewerage, etc. in compliance of model rules for the protection of Health and Sanitary arrangement for the workers.
- j. The wages of the labour shall be paid as per the guidelines provided in the CPWD contractor labour regulations.
- k. The contractor has to keep a record of all the workers employed at site, make daily attendance along with the location of the work and follow the CPWD contractors' labour regulation. All the labour record shall be made available for inspection and verification to the Engineer-in-charge or his authorized representative as and when required.

I. ENVIRONMENTAL MANAGEMENT PLAN

The contractor shall strictly adhere to the following conditions as part of his contractual obligations:

17.1 SITE

17.1.1 The contractor shall insure that adequate measures are taken for the prevention of erosion of the top soil during the construction. The contractor shall prepare and implement the erosion and sedimentation control plan (ESCP) provided to him after approval by the Engineer in Charge as part of larger Construction Management Plan (CMP). The contractor shall obtain the Erosion and Sedimentation Control Plan (ESCP) Guidelines if required from Engineer in Charge and then prepare "working plan" for following month's activities as CAD drawing showing the construction management, staging & ESCP. At no time soil should be allowed to erode away from the site and sediments should be trapped where necessary.

The contractor shall ensure that all the top soil excavated during construction works is neatly stacked and is not mixed with other excavated earth. The contractor shall take the clearance of the Engineer in Charge before any excavation. Top soil should be stripped to a depth of 20 cm (centimeters) from areas to be disturbed, for example proposed area for building, roads, paved areas, external services and area required for construction activities etc. it shall be stockpiled to a maximum height of 40 cm in designed areas, covered or stabilized with temporary seeding for erosion prevention and shall be reapplied to the site during plantation of the proposed vegetation or as directed by the engineer in charge. Top soil shall be separated from subsoil, debris and stones larger than 50 mm (millimeter) diameter. The stored top soil may be used as finished grade for planting areas.

17.1.2 The contractor should follow the construction plan as proposed by the Architect/ Engineer in Charge to minimize the site disturbance such soil pollution due to spilling. If required use of staging and spill prevention and control plan to restrict the spilling of the contaminating material on site needs to be restored. Protection of top soil from erosion by collection storage and reapplication of top soil, constructing sediment basin, contour trenching, mulching etc., may also be directed by the engineer in charge.

17.1.3 No excavated earth shall be removed from the campus unless suggested otherwise by Engineer in Charge. All subsoil shall be reused in backfilling/landscape, etc. as per the instruction of Engineer in charge. The surplus excavated earth shall be disposed of by the contractor as per the direction of engineer in charge at his own cost for reuse. A certificate of reuse as required by the Engineer- In- change shall be submitted by the contractor.

17.1.4 The contractor shall not change the natural gradient of the ground unless specifically instructed by the Engineer in Charge. This shall cover all natural features like water bodies, drainage gullies, slopes, mounds, depressions, etc. Existing drainage patterns through or into preservation area shall not be modified unless specifically directed by the Engineer-in Charge.

17.1.5 The contractor shall not carry out any work which results in the blockage of natural drainage.

17.1.6 The contractor shall ensure that existing grades of soil shall be maintained around existing vegetation and lowering or raising the levels around the vegetation is not allowed unless specifically directed by the Engineer-in-charge.

17.1.7 Contractor shall reduce pollution and land development impacts from automobiles use during construction.

17.1.8 Overloading of trucks is unlawful and creates the erosion and sedimentation problems, especially when loose materials like stone dust, excavated earth, sand

etc. are moved. Proper covering shall be used by the contractor. Also, no overloading shall be permitted.

17.2 CONSTRUCTION PHASE AND WORKER FACILITIES

17.2.1 The contractor shall specify and limit construction activity in pre-planned /designated areas and shall start construction work after securing the approval for the same from the Engineer in Charge. This shall include areas of construction, storage of materials, and material and personnel movement.

17.2.2 Preserve and protector Landscape during Construction

- a. The contractor shall ensure that no trees, existing or otherwise, shall be harmed and damaged to roots. These shall be prevented during trenching, placing backfill, driving or parking heavy equipment, dumping of trash and protected from oil, paint, and other materials detrimental to plant health. These activities shall be restricted to the areas outside of the canopy of the tree, or, from a safe distance from the tree/plant by means of barricading. Trees will not be used for support; their trunks shall not be damaged by cutting and carving or by nailing posters, advertisements or other material. Lighting of fires or carrying out heat or gas emitting construction activity within the ground, covered by canopy of the tree is not at all permitted.
- b. The contractor shall take steps to protect trees or saplings of any identified for preservation within the construction site using tree guards of approved specification.
- c. Contractor should limit all construction activity within the specified area as per the Construction Management Plan (CMP) approved by the Engineer in Charge.
- d. The contractor shall avoid cut and fill in the root zones, through delineating and fencing the drip line (the spread limit of canopy projected on the ground) of all trees or group of trees. The zones of movement of heavy equipment, parking, or excessive foot traffic shall be separated from the fenced plant protection zones.
- e. The contractor shall ensure that the maintenance activities during construction period shall be performed as needed to ensure that the vegetation remains healthy.

17.2.3 The contractor shall be required to develop and implement a waste management plan, quantifying material diversion goals. He shall establish goals for diversion from disposal in landfill and incinerators, if required, and adopt a construction waste management plan to achieve these goals. A project- wide policy of "Nothing leaves the site" shall be followed. The contractor's ingenuity is especially called

towards meeting this prerequisite/credit (as per IGBC LEED India, New Construction v1.0 & GRIHA, MNRE) and may consider recycling cardboard, metal, brick, acoustical tile, concrete, plastic, clean wood, glass, gypsum wallboard, carpet and insulation, designating a specific area(s) on the construction site for segregated or commingled collection of recyclable material, and track recycling efforts throughout the construction process, identifying construction haulers and recyclers to handle the designated materials at his cost. The diversion may include donation of materials to charitable organization and salvage of materials on-site.

17.2.4 Contractor shall collect all construction waste generated on site. He may consider at segregating wastes based on their utility and examine means of sending such waste to manufacturing units which use them as raw material or other site which require it for specific purpose. Typical construction debris could be broken bricks, steel bars, broken tiles, spilled concrete and mortar etc.

17.2.5 The contractor shall provide potable water and other amenities for all workers as per the contract.

17.2.6 The contractor shall provide the minimum level of sanitation and safety facilities for the workers at site as described in CPWD General Conditions of contract. The contractor shall ensure cleanliness of workplace with regard to the disposal of waste and effluent; provide clean drinking water and latrines and urinals as per applicable provisions. Adequate toilet facilities shall be provided for workmen within easy access of their place of work. The total no. to be provided shall not be less than 1 per 30 employees in any one shift. Toilet facilities shall be made as soon as practicable. Every toilet shall be so constructed that the occupant is sheltered from view and protected from the weather and falling object. Toilet facilities shall be maintained in a sanitary condition. A sufficient quantity of disinfectant shall be provided and natural or artificial illumination shall also be provided.

17.2.7 The contractor shall ensure that air pollution due to dust/generators is kept to a minimum, preventing any adverse effects on the workers and other people in and around the site. The contractor shall ensure proper screening, covering stockpiles, covering brick and leads of dusty materials, wheel –washing facility, gravel pit, and water spraying. Contractor shall also ensure the following activities to prevent air pollution during construction.

- a. Clear vegetation only from areas where work will start right away.
- b. Vegetate/mulch areas where vehicles do not ply.
- c. Apply gravel/landscaping rock to the areas where mulching/paving is impractical.
- d. Identity roads on-site if applicable that would be used for vehicular traffic. Upgrade vehicular roads (if these are unpaved) by increasing the surface strength by improving particle size, shape and mineral types that make up the surface & base and add surface gravel to reduce source of dust

emission to limit amount of fine particles (smaller than 0.075 mm) to 10-20%.

- e. Water spray, through a simple hose for small projects, to keep dust under control. Fine mist should be used to control fine particulate. However, this should be done with care so as not to waste water. Heavy watering can also create mud, which when tracked onto paved public roadways, must be promptly removed. Also, there must be an adequate supply of clean water nearby to ensure that spray nozzles don't get plugged.
 - f. Water spraying shall be done on:
 - Any dusty materials before transferring, loading and unloading.
 - Area where demolition work is being carried out.
 - Any un-paved main haul carried out.
 - Areas where excavation or earth moving activities are to be carried out.
- 17.2.7.1 The contractor shall ensure that the speed of vehicles within the site is limited to 10 km/hr.
- 17.2.7.2 All material storage should be adequately covered and contained so that they are not exposed to situations where winds on site could lead to dust/particulate emissions.
- 17.2.7.3 Spills of dirt or dusty materials will be cleaned up promptly so the spilled material does not become a source of fugitive dust and also to prevent seepage of pollutant laden water into the ground aquifers. When cleaning up the spill, ensure that the clean-up process does not generate additional dust. Similarly, spilled concrete slurries or liquid wastes should be contained /cleaned up immediately before they can infiltrate into the soil/ground for runoff in nearby areas.
- 17.2.7.4 Provide hoardings of not less than 3m high along the siteboundary, next to a road or other public area at his cost.
- 17.2.7.5 Provide dust screens, sheeting or netting to scaffold along the perimeter of the building at his cost.
- 17.2.7.6 Cover stockpiles of dusty material with impervious sheeting before they leave the site at his cost.
- 17.2.7.7 Cover dusty load on vehicles by impervious sheeting before they leave the site at his cost.
- 17.2.8 Contractor shall be required to provide an easily accessible area that services the entire building and is dedicated to the separation, collation and storage of materials for recycling including (at a minimum) paper, corrugated cardboard, glass, plastics, and metals. He shall coordinate size

and functionality of the recycling areas with the anticipated collections services for glass, plastic, office paper, newspaper, cardboard, and organic wastes to maximize the effectiveness of the dedicated areas. Consider employing cardboard balers, aluminum can crushers, recycling chutes, and collection bins at individual workstations to further enhance the recycling program.

- 17.2.9 The contractor shall ensure that no construction leach ate (e.g. cement slurry etc.), is allowed to percolate into the ground. Adequate precautions will be taken to safeguard against this including reduction of wasteful curing process, collection, basic filtering and reuse. The contractor shall follow requisite measures for collecting drainage water run-off from construction areas and material storage sites and diverting water flow away from such polluted areas. Temporary drainage channels, perimeter dike/swale, etc. shall be constructed to carry the pollutant-laden water directly to the treatment device or facility (municipal sewer line).
- 17.2.10 Staging (dividing a construction area into two or more areas to minimize the area of soil that will be exposed at any given time) should be done to separate undisturbed land from land disturbed by construction activity and material storage.
- 17.2.11 The contractor shall comply with the safety procedure, norms and guidelines (as applicable) as outlined in the document part 7 Constructional practices and safety, 2005 National Building code of India, Bureau of Indian Standards. A copy of all pertinent regulations and notices concerning accidents, injury and first- aid shall be prominently exhibited at the work site. Depending upon the scope & nature of work, a person qualified in first -aid shall be available at work site to render and direct first-aid to casualties. A telephone may be provided to first-aid assistant with telephone numbers of the hospitals displayed. Complete reports of all accidents and taken thereon shall be forwarded to the competent authorities.
- 17.2.12 The contractor shall ensure the following activates for construction workers safety, among other measures at his cost.
- a. Guarding all parts of dangerous machinery.
 - b. Precautionary sign for working on machinery.
 - c. Maintaining hoists and lifts, lifting machines, chains, ropes, and lifting tackles in good condition.
 - d. Durable and reusable formwork system to replace to timer framework and ensure that formwork where used is properly maintained.
 - e. Ensuring that walking surface or boards at height are of sound construction and are provided with safety rails or belts.

- f. Ensuring that walking surfaces or boards at height are of sound construction and provided with safety rails or belts.
 - g. Provide protective equipment; helmets etc.
 - h. Provide measures to prevent fires. Fire extinguishers and buckets of sand to be provided in the prone area and elsewhere.
 - i. Provide sufficient and suitable light for working during night time.
- 17.2.13 The storage of material shall be as per standard good practices as specified in Part 7, Section 2-Storage, Stacking and Handling practices, NBS 2005 and shall be to the satisfaction of the Engineer in Charge to ensure minimum wastage and to prevent any misuse, damage, inconvenience or accident. Watch and ward of Constrictor's materials shall be his own responsibility. There should be a proper planning of the layout for stacking and storage of different materials, components and equipment's with proper access and proper maneuverability of the vehicles carrying the materials. While planning the layout, the requirements of various materials, components and equipment's at different stages of construction shall be considered.
- 17.2.14 The contractor shall provide for adequate number of garbage bins around the construction site and the workers facilities and will be responsible for the proper utilization of these bins for any solid waste generated during the construction. The contractor shall ensure that the site and the workers facilities are kept litter free. Separate bins should be provided for plastic, glass metal, biological and paper waste and labeled in both Hindi and English with suitable symbols.
- 17.2.15 The contractor shall prepare and submit 'Spill prevention and control plans' before the start of construction, clearly stating measures to stop the source of the spill, to contain the spill, to dispose the contaminated material and hazardous wastes, and stating designation of personnel trained to prevent and control spills. Hazardous wastes include pesticides, paints, cleaners, and petroleum products.
- 17.2.15.1 Contractor shall collect & submit the relevant material certificates for materials if directed by the Engineer in Charge with high recycled (both post-industrial and post-consumer) content, including materials like RMC mix with fly-ash, glass with recycled content, calcium silicate boards etc.
- 17.2.16 Contractor shall collect the relevant material certificates for rapidly renewable materials such as bamboo, wool, cotton insulation, agrifiber, linoleum, wheat board, strawboard and cork etc.
- 17.2.17 Where possible, the contractor shall select materials/vendors, harvested and manufactured regionally a 800-km radius of the project site.

- 17.2.18 Contractor shall adopt an IAQ (Indoor Air Quality) management plan to protect the HVAC system during construction, control pollutant sources, and interrupt pathways for contamination. He shall sequence installation of materials to avoid contamination of absorptive materials such as insulation, carpeting, ceiling tile, and gypsum wallboard. He shall also protect stored on-site or installed absorptive materials from moisture damage.
- 17.2.19 The contractor shall ensure that a flush out of all internal spaces is conducted prior to handover. This shall comprise opening of all doors and windows for 14 days to vent out any toxic fumes due to paints, varnishes, polishes, etc.
- 17.2.20 The contractor shall make efforts to reduce the quantity of indoor air contaminants that are odorous or potentially irritating harmful to the comfort and well-being of installer and building occupants. Contractor shall ensure that the VOC (Volatile Organic Compounds) content of paints, coatings and primers used must not exceed the VOC content limits mentioned below in case items are/is available in schedule of quantities.
- Paints**
Non-flat-150 g/L, Flat (Mat)-50, g/L Anti corrosive/anti rust-250 g/L
- Coatings/Clear wood finishers**
Varnish-350 g/L, Lacquer-550 g/L, Floor coating -100 g/L, sealers stains-250 g/L.
- Sealers**
Waterproofing sealer-250 g/L, sanding sealer-275 g/L, other sealers -200 g/L.
- 17.2.21 The VOC (Volatile Organic Compounds) content of adhesives and sealants used if prescribed in the schedule of quantities must be less than VOC content limits mentioned: **Architectural Application** VOC Limit (g/l less water)
- Indore Carpet adhesives -50 g/L, carpet Pad adhesive -50 g/L, wood Flooring Adhesive -100 g/L, Rubber Floor Adhesives -60 g/L, Sub Floor Adhesives -50 g/L, Ceramic tiles Adhesive -65 g/LVCT and Asphalt Tile adhesives – 50 g/L,Dry Wall and panel Adhesive-50 g/L, Structural Glazing Adhesives -100 g/L, Multipurpose Construction Adhesive -70 g/LSubstrate Specific Application VOC Limit (g/l less water), Metal to Metal -30 g/L, Plastic foams – 50 g/L,Porous material (except wood)- 50 g/L, Wood-30 g/L, Fiber Glass-80g/L.
- 17.2.22 Wherever required, Contractor shall meet and carry out documentation of all activities on site, supplementation of information, and submittals in accordance with IGBC LEED India New Construction v1.0 or GRIHA program standards and guidelines, towards meeting the aforementioned building environmental rating standards(s) expert assistance shall be provided to him up on request.

- 17.2.23 Water use during construction: Contractor should spray curing water on concrete structure and shall not allow free flow of water. Concrete structure should be kept covered with thick cloth/gunny bags and water should be sprayed on them. Contactor shall do water ponding on all sunken slabs using cement and sand mortar.
- 17.2.24 The contractor shall remove from site all rubbish and debris generated by the works and keep works clean and tidy throughout the contract period. All the serviceable and non-service (malba) material shall be segregated and stored separately. The malba obtained during construction shall be collected in well-formed heaps at properly selected places, keeping in a view safe condition for workmen in the area. Materials which are likely to cause dust nuisance or undue environmental pollution in any other way, shall be removed from the site at the earliest and till then they shall be suitable covered. Glass & steel should be dumped or buried separately to prevent injury. The work of removal of debris should be carried out during day. In case of poor visibility artificial light may be provided.
- 17.2.25 The contractor shall provide O & M manuals wherever applicable.
- 17.2.26 The contractor shall make himself conversant with the site waste management program manual and actively contribute to its compilation by estimating the nature and volume of waste generated by the process/installation in question.
- 17.2.27 **MATERIALS & FIXTURES FOR THE PROJECT**
- a. Contractor will produce wherever feasible certificate regarding distance of the source of the relevant materials.
 - b. Unless otherwise stated cement used at site for reinforced concrete, present members, mortar plaster, building blocks, etc. shall be PPC (Portland Puzzolana Cement). The PPC must meet the requirements of IS 1489 (Part I) as regards to fly ash content in cement. The contractor shall obtain from the PPC manufacturer the certificate regarding fly ash content in the PPC in each batch of consignment.
 - c. The contractor has to comply as per MoEF issued notification 8.0.763(E) dated 14th Sept. 1999 containing directive for greater flyash utilization. Every construction agency engaged in the construction of buildings within a radius of 50 km radius of a Thermal Power Plant, have to use of 100 %fly ash based bricks/block in their construction.
 - d. The contractor shall ensure that all paints, polishes, adhesives and sealants used both internally and externally, on any surface, shall be Low VOC products. The contractor shall get prior approval from the engineer in charge before the application of any such materials.

- e. All plumbing and sanitary fixtures installed shall be as per the prescription of the Engineer in Charge and shall adhere to the minimum LPM (liters per minute) and LPF (liters per flush) mentioned. The contractor shall employ 100% zero ODP (ozone depletion potential) insulation; HCFC (hydro-chlorofluorocarbon)/ CFC (chlorofluorocarbon) free HVAC and refrigeration equipment's and halon-free fire suppression and fire extinguishing systems.
- f. The contractor shall ensure that all composite wood products/agro-fibre products used for cabinet work, etc. do not contain any added urea formaldehyde resin.

17.2.28 RESOURCES CONSUMED DURING CONSTRUCTION

- a. The contractor shall ensure that the water and electricity is not wasted during construction. The Engineer in Charge can bring to the attention any such wastage and the contractor will have to ensure that the such bad practices are corrected.
- b. The contractor shall install necessary meters and measuring devices to record the consumption of water, electricity and diesel on a monthly basis for the entire tenure of the project.
- c. The contractor shall ensure that all run-off water from the site, during construction is collected and reused to the maximum.
- d. The contractor shall use treated recycled water of appropriate quality standards for construction, of available.
- e. No light shall be turned on during the period between 6:00AM to 6:00 PM, without the permission of the Engineer in Charge.

17.2.29 CONSTRUCTION WASTE

- Contractor shall ensure that wastage of construction materials is within 3%.
- a. All construction debris generated during construction shall be carefully segregated and stored in a demarcated waste yard. Clear, identifiable areas shall be provided for each waste type and measures employed to segregate the waste on site into inert, chemical, or hazardous wastes.
 - b. All construction debris shall be used for road preparation, back filling, etc., used if described in the schedule of quantities and as per the instruction of the Engineer in Charge, with necessary activities of sorting, crushing, etc.
 - c. No construction debris shall be taken away from the site, without the prior approval of the Engineer- in Charge.

- d. The contractor shall recycle the unused chemical/hazardous wastes such as oil, paint, batteries, and asbestos.
- e. If and when construction debris is taken out of the site, after prior permission from the Engineer in Charge, then the contractor shall ensure the safe disposal of all wastes and will only dispose of any such construction waste in approved dumping sites.

17.2.30 Documentation

- a. The contractor shall, during the entire tenure of the construction phase, submit the following records to the Engineer in Charge on monthly basis:
 - i. Water consumption in litres.
 - ii. Electricity consumption in 'kwh' units
 - iii. Diesel consumption in litres.
 - iv. Quantum of waste (volumetric/weight basis) generated at site and the suggested waste types divided into inert, chemical and hazardous wastes.
 - v. Digital photo documentation to demonstrate compliance of safety guidelines as specified here and in the Appendix on safety conditions.
- b. The contractor shall, during the entire tenure of the construction phase, submit the following records to the Engineer in charge on a fortnightly basis:
 - i. Quantities of material brought into the site, including the material issued to the contractor by the Engineer in charge.
 - ii. Quantities of construction debris (if at all) taken out of the site.
 - iii. Digital photographs of the works at site, the worker facilities, the waste and other material storage yard, pre-fabrication block making works, etc. as guided by the Engineer in Charge.
- c. The contractor shall submit a document after construction of the building, a brief description along with photograph records to show that other areas have not been disturbed during construction. The document should also include brief explanation and photographic records to show erosion and sedimentation control measures adopted. (Document CAD drawing showing site plan details of existing vegetation, existing buildings, existing slopes and site drainage pattern, staging and spill prevention measures, erosion and sedimentation control measures adopted for top soil preservation during construction.
- d. The contractor shall submit to the Engineer in Charge after construction of the building, a detailed as built quantification of the following:
 - i. Total materials used,
 - ii. Total top soil stacked and total and total reused.
 - iii. Total earth excavated
 - iv. Total waste generated,

- v. Total waste reused,
 - vi. Total water used,
 - vii. Total electricity, and
 - viii. Total diesel consumed.
- e. The contractor shall submit to the Engineer in Charge, before the start of construction, a site plan along with a narrative to demarcate areas on site from which top soil has to be gathered, designate area where it will be stored, measures adopted for top soil preservation and indicate areas where it will be reapplied after construction is complete.
 - f. The contractor shall submit to the engineer in charge, a detailed narrative (not more than 250 words) on provision for safe drinking water and sanitation facility for construction workers and site personal.
 - g. Provide supporting document from the manufacture of the cement specifying the fly ash content in the PPC used in reinforced concrete, if otherwise permitted.
 - h. Provide supporting document from the manufacture of the pre-cast building blocks specifying in the fly ash content of the blocks used in an infill wall system.
 - i. The contractor shall, at the end of construction of the building, submit to the Engineer in Charge submit following information, for all material brought to site for construction purpose, including manufacture's certifications, verifying information, and test data, where specification sections require data relating to environmental issues including but not limited to :
 - a) Source of products: supplier details and location of the supplier.
 - b) Project Recyclability: submit information to assist Owner and Contractor in recycling materials involved in shipping, handling, and delivery, and for temporary materials necessary for installation of products.
 - c) Recycled Content: Submit information regarding product post industrial recycled and post-consumer recycled content. Use of "Recycled Content Certification Form", to be provided by the Commissioning Authority appointed for the Project.
 - d) Product Recyclability: submit information regarding product and product's component's recyclability including potential resources accepting recyclable materials where ever applicable.
 - j. Provide financial certification of well-managed forest of origin to provide final documentation of certificate sustainability harvested status: acceptable wood "certified sustainably harvested" certifications shall include:

- a. Wood supplier's certificate issued by one of the Forest Stewardship Council-accredited certifying agencies;
- b. Supplier's invoice detailing the quantities of certified wood products for the project;
- c. Letter from one of a certifying agency corroborating that the products on the wood supplier's invoice originate from certified well-managed forests.
 - i. Clean tech: provide pollution clearance certificates from all manufactures of materials.
 - ii. Indoor Air quality and Environmental Issues: Submit emission test data, sourced from the manufactures, produced by acceptable testing laboratory listed in Quality Assurance Article for materials as required in each specific Specification section.
 - a. Certificates from the manufacturers of Low VOC paints, adhesives, sealant and polishes used at this particular project site.
 - b. Certification from manufactures of composite wood products/agro fibre products on the absence of added urea formaldehyde resin in the products supplied to them to this particular site.
 - c. Submit environmental and pollution clearance certificates for all diesel generator's installed as part of this project.
Provide total support to Engineer in charge and Green Building Consultants appointed by the Engineer in charge in completing all Green Building Rating related formalities, including signing of forms, providing signed letters in the contractor's letterhead whenever required.

17.2.31EQUIPMENT

- a. To ensure energy efficiency during and post construction all pumps, motors and engines used during construction or installed, shall be subject to approval and as per the specifications of the Engineer in Charge.
- b. All lighting installed by the contractor around the site and at the labour quarters during construction shall be CFL bulbs of the appropriate illumination levels. This condition is a must, unless specifically prescribed. The contractor is expected to go through all other conditions of the LEED & GRIHA rating stipulations.

Failure to adhere to any of the above mentioned items, without approval of the engineer in charge, shall be deemed as a violation of contract and the contractor shall held liable compensation as per terms of the agreement.

k. WATER POLLUTION

- i. The contractor will take all precautionary measures to prevent the waste water during construction to accumulate anywhere.
- ii. The wastewater arising from the project is to be disposed off in the manner that is acceptable to the Engineer-in-charge and conforming to Pollution Control norms.

I. AIR AND NOISE POLLUTION

- i. Contractor will use dust screens and sprinkle water around the site to arrest spreading of dust in the air and surrounding areas.
- ii. Contractor will ensure that all vehicles, equipment and machinery used for environmental emission standards/norms.
- iii. For controlling the noise from Vehicles, Plants and Equipments, the Contractor will conform the following:
 - a. All vehicles and equipment used in construction will be fitted with exhaust silencers.
 - b. Servicing of all construction vehicles and machinery will be done regularly and checked and if found defective will be replaced.
 - c. Noise emission from compactors (rollers) front loaders, concrete mixers, cranes (movable), vibrators and saws should be less than 75 db (A).
 - d. As per the Standards/Guidelines for control of Noise Pollution from Stationary Diesel be less than $94+10 \log_{10} (KVA)$. The standards also suggest construction of acoustic enclosure around the DG set and provision of proper exhaust muffler with insertion loss of minimum 25db(A) as mandatory.
 - e. Ambient noise levels should conform to residential standards both during day and night.
 - f. Adequate measures to reduce air and noise pollution during construction keeping in mind CPCB norms on noise limits.

17. RISK FROM ELECTRICAL EQUIPMENT

- a. The contractor will comply the relevant industrial electrical safety legislations.
- b. The contractor will take adequate precautions to prevent danger from electrical equipment i.e. no material will be so stacked or placed as to cause danger or inconvenience to person or the public.

- c. All necessary fencing and lights will be provided to protect the public.
- d. All electric machines to be used in the construction will conform to the relevant Indian Standards (IS) codes, will be free from patent defect, will be kept in good working order, will be regularly inspected and properly maintained as per IS provision and to the satisfaction of the Engineer-in-charge.

In case of any breach of the above provisions, the electric supply given for the work shall be disconnected & the contractor shall only be responsible for the loss/slow progress of the work.

18. PLANTATION/ PRESERVATION / CONSERVATION MEASURES.

- a. The contractor will take reasonable precaution to prevent his workmen and employees from removing and damaging any flora (plant/ vegetation) from the project area.
- b. All fossils, coins, articles of value of antiquity, structures and other remains or things of geological or archaeological interest, discovered on any project location during excavation / construction shall be property of the Government, and shall be dealt with as per provisions of the relevant legislation. The contractor will take reasonable precaution to prevent his workmen or any other persons from removing and damaging any such article or thing. He will, immediately upon discovery thereof official instructions of Engineer-In-Charge for dealing with the same, till then all work shall be stopped.

19. PROGRAMME CHART

- 21.1 The Contractor shall prepare an integrated programme chart for the execution of work, showing clearly all activities from the start of work to completion, with details of manpower, material, equipment and machinery required for the fulfillment of the programme within the stipulated period or earlier and submit the same for approval to the Engineer-in-Charge within ten days of award of the contract failing which Rs.1,000/- per day shall be recovered (non refundable) from the contractor till the date of actual submission.
- 21.2 The programme chart should include the following:
 - 21.3 Descriptive note explaining sequence of the various activities.
 - 21.4 Network (PERT / CPM / BAR CHART).
- 21.5 Programme for procurement of materials/ equipment/labour by the contractor.
- 21.6 If at any time, it appears to the Engineer-in-Charge that the actual progress of work does not conform to the approved programme referred above, the contractor shall produce a revised programme showing the modifications to the approved programme to ensure completion of the work. The modified schedule of programme shall be approved by the Superintending Engineer.

21.7 The submission for approval by the Engineer-in-Charge of such programme or the furnishing of such particulars shall not relieve the contractor of any of the duties or responsibilities under the contract. This is without prejudice to the right of Engineer-in-Charge to take action against the contractor as per terms and conditions of the agreement.

22 PROGRESS REPORT:

22.1 The contractor shall submit monthly progress report of the work in computerized form. The progress report shall contain the following information, apart from whatever else may be required as specified. Contractor shall give the Engineer-in-charge on 7th day of each month a progress report of work done during previous month failing which Rs.500/- per day shall be recovered (non refundable) from the contractor till the date of its actual submission.

- (i) Project information, giving the broad features of the contract.
- (ii) Introduction, giving a brief scope of the work under the contract and the broad structural or other details.
- (iii) Construction schedule of the various works with a bar chart for the next quarter showing the mile stone, targeted tasks and upto date progress.
- (iv) Progress chart of the various components of the work that are planned and achieved for the month as well as cumulative upto the month, with reasons for deviations, if any in a tabular format.
- (v) Plant and machinery statement, i/c those deployed on the work and their working status.
- (vi) Man power statement indicating individually the names of all the staff deployed on the work along with their designations.
- (vii) Financial Statement i/c the broad details of all the running account payments received upto date, such as gross value of work done, advances taken, recoveries effected, amounts with held, net payments received etc.
- (viii) Statement showing the extra & substituted items submitted by the contractors and the payment received against them, items pending for sanction / decision by the department , broad details of the bank guarantees, indicating clearly their validity periods, broad details of the insurance policies taken by the contractor, if any , the advances received and adjusted.
- (ix) Progress photographs in colour of the various items / components of the work done upto date to indicate visually the actual progress of work.
- (x) Quality assurance and quality control tests conducted during the month, with the result thereof.

- 22.2 If the work is carried out in more than one shift or during night, no claim on this account shall be entertained. The contractor has to take permission from the police authorities etc. if required for work during night hours. No claim / hindrance on this account shall be considered if work is not allowed during night time. The requisite supervision shall be made available by the department along with necessary issue of material under joint custody.
- 22.3 Existing drains, pipes, cables, over-head wires, sewer lines, water lines and similar services encountered in the course of the execution of work shall be protected against the damage by the contractor at his own expense. In case the same are to be removed and diverted, the same shall be payable to the contractor. The contractor shall work out the cost and the same shall be approved by Engineer-in-Charge. The contractor shall not store materials or otherwise occupy any part of the site in a manner likely to hinder the operation of such services.
- 22.4 The Contractor shall be responsible for the watch and ward / guard of the buildings safety, fittings and fixtures & protection of flooring doors & windows etc. provided by him/ supplied to him against pilferage and breakage during the period of installations and thereafter till the entire work as per agreement is physically handed over to the department. No extra payment shall be made on this account.

23 QUALITY ASSURANCE:

- 23.1 The contractor shall establish, document and maintain an effective quality assurance system as outlined in the specifications and various codes and standards.
- 23.2 The bidder shall understand scope of the balance work, drawing, specifications and standards etc. attached with the tender or to be followed and shall seek clarification, if any before submission of the tender.
- 23.3 The quality assurance system plans / procedures / method statement to be followed shall be furnished in the form of quality assurance manual. It should cover quality assurance, plan procedure, specifications, frequency of the inspection, testing, acceptance criteria, method of sampling, testing etc to be followed for quality and the details of the person responsible. It is obligatory on the bidder to obtain the approval of every quality assurance document with Engineer-in-charge before he starts using particular document for execution of work.
- 23.4 The approval of quality assurance by Engineer-in-charge does not absolve the contractor of the contractual obligations towards executing the work as per the laid down specification of the work.
- 23.5 The contractor shall produce the quality control, records, on the formats approved by Engineer-in-charge in the quality assurance plan.
- 23.6 The contractor shall ensure towards the enforcement of quality assurance plan by his all specialized agencies as approved by the Engineer-in-charge.

- 23.7 The Engineer-in-charge reserve the right to inspect / witness, review any or stages of the work at shop / site as deemed necessary for quality assurance and / or timely completion of work.
- 23.8 The contractor has to ensure the deployment of quality assurance and quality control engineer (s) depending upon the quantum of work. This QA/QC group shall be fully responsible to carry out the work as per standards and all codes requirements. In case Engineer-in-charge feels that contractor's QA/Q Engineer(s) are incompetent or insufficient, contractor has to deploy other experiences Engineer(s) as per site requirement and to the full satisfaction of Engineer-in-charge.
- 23.9 The contractor is required to review the quality assurance program at all appropriate stages to ensure the quality, completion of activities in time etc. and if required should deploy additional manpower and resources to ensure the quality and timely completion of the project.
- 23.10 If the contractor fails to deploy the quality assurance team, the necessary recovery shall be made from the contractor's bill as per the rates provided for in the schedule – F (Clause 36(i)) of the agreement.
- 23.11 The contractor shall be fully responsible for the safe custody of materials brought by him / issued to him even though the materials may be under double lock and key system.
- 23.12 The contractor shall procure the required materials in advance so that there is sufficient time for testing of the materials and clearance of the same before use in the work. The contractor shall provide at his own cost suitable weighing and measuring arrangements at site for checking the weight / dimensions as may be necessary for execution of work. The sealed samples are to be handed over to the approved testing lab by contractor at his own cost.
- 24 The Cement Godown of capacity to store a minimum of 2000 bags of cement as per the sketch of cement godown shown in general condition of contract shall be constructed at site of work for which no extra payment shall be made. The Godown shall be provided with a single door with two locks. The keys of one lock shall remain with Engineer-in-charge of the work and that of other lock with the authorized agent of the contractor at the site of work so that the cement is issued from godowns according to the daily requirement with the knowledge of both parties. The account of daily receipt and issue of cement shall be maintained by the contractor in Cement Register in the prescribed Performa.

25 TESTING OF MATERIALS

- 25.1 Mandatory Tests as per frequency prescribed in CPWD specifications-2009 (Vol.1 & 2) are to be carried out in field / approved laboratory by the contractor at his own cost. The records for such testing shall be maintained by the contractor in prescribed Performa approved by the Engineer-in-charge.
- 25.2 90 % of the total tests shall be done at the laboratory established at the site by the contractor and remaining 10% in the laboratories mentioned in para 16 of

particular Specification of Civil Works. This percentage may be varied by the Engineer-in-charge depending on the site conditions.

26. TESTING OF MATERIALS AT SITE

A site laboratory with the minimum following equipment (conforming to I.S. standards) shall be established and maintained by the contractor within one month from the award of work:-

Details of the equipment to be kept in the lab are given below:

26.1 Balances

- (i) 7 kg. to 10 kg. capacity, semi-self indication type – accuracy 10gm.
- (ii) 500 gm. Capacity, semi-self indicating type –accuracy 1gm
- (iii) Pan balance-5 kg capacity –accuracy 10 gms.

27.2 Ovens-electrically operated, thermostatically controlled upto 110⁰C – sensitivity 1⁰C.

27.3 Sieves: as per IS 460-1962.

- a. I.S. sieves-450 mm internal dia, of sizes 100 mm , 80 mm ,63 mm 50mm,40 mm,25mm, 20mm, 12.5mm,10mm, 6.3mm, 4.75mm, complete with lid and pan.
- b. I.S. sieves -200mm internal dia, (Brass frame) consisting of 2.36 mm , 1.18mm, 600 microns, 425 microns, 300 microns, 212 microns, 150 microns, 90 microns, 75 microns with lid and pan
- d. Sieve shaker capable of 200 mm and 450mm dia sieves, manually operated with timing switch assembly.
- e. Equipment for slump test-slump cone, steel plate, tamping rod, steel scale, scoop.
- f. Dial gauges, 25mm travel -0.01 mm/ Division least count -2 nos.
- g. 100 tonnes compression testing machine, electrical cum manually operated.
- h. Graduated measuring cylinders 200ml capacity -6 Nos.
- i. Enamel trays (for efflorescence test for bricks).
 - i) 300mm x 250 mm x 40 mm – 2 Sets.
 - ii) Circular plates of 250 mm dia. – 4 nos.
- j. Hammer for concrete testing.
- k. Moisture meter for timber.
- l. ISI Marked 150x150x150 mm CC Cube moulds – minimum 48 Nos.
- m. Other equipment as required by the Engineer-in-charge.

n. All necessary tests as per the Contract/CPWD specifications/relevant BIS codes shall be carried out on all the materials whether ISI marked or otherwise. Wherever Contract /CPWD specifications/relevant BIS codes do not specify the frequency of tests, the same shall be carried out as per the directions of the Engineer-in-Charge. Nothing extra whatsoever shall be payable on this account.

o. Testing At Manufacturer's Place

All materials which are specified to be tested at the manufacturer's works shall satisfactorily pass the tests in presence of the authorized representative of Engineer-in-charge before being used in the work. In case all requisite testing facilities are not available at the manufacturer's premises, such testing shall be conducted at laboratory approved by the Engineer-in-charge. The charges for such testing shall be borne by the contractor.

The standard sectional weights referred to in Table 5.4 Para 5.3.4 in CPWD Specifications 2009 shall be considered for conversion of length of various sizes of TMT bars into weight.

However, the average sectional weight of each diameter shall be arrived on the basis of samples of each lot from steel received at site. In case the actual weight of steel is less than the standard coefficient given in CPWD Specification but is within the tolerance limit of acceptance, the same (actual weight) shall be taken into account for working out the variations between the actual and standard coefficient & contractor shall be paid for the actual weight of steel in this case.

However, nothing extra shall be payable in case the actual weight of steel is more than the standard coefficient mentioned above in Table -5.4 Para -5.3.4 of CPWD specifications.

28 Maintenance of Register of tests

28.1 **All the registers of tests shall be maintained by the contractor.** The registers shall be in prescribed Performa approved by the Engineer-in-charge.

28.2 All Samples of materials including Cement Concrete Cubes shall be taken jointly with Contractor by JE and out of this at least 50% samples shall be taken in presence of AE in charge. If there is no JE, all Samples of materials including Cement Concrete Cubes shall be taken by AE jointly with Contractor. All the necessary assistance shall be provided by the contractor. Cost of sample materials is to be borne by the contractor and he shall be responsible for safe custody of samples to be tested at site.

28.3 All the test in field lab setup at Construction Site shall be carried out by the Engineering Staff deployed by the contractor which shall be 100% witnessed by JE and 50% of tests shall be witnessed by AE-in-charge. At least 10% of the tests are to be witnessed by the Executive Engineer.

28.4 All the entries in the registers will be made by the designated Engineering Staff of the contractor and same will be regularly reviewed by JE/AE/EE.

28.5 Contractor shall be responsible for safe custody of all the test registers.

29 Maintenance of Material at Site (MAS) Register

29.1 All the MAS registers including Cement, Steel and Paints register shall be maintained by the contractor. The registers shall be in prescribed Performa approved by the Engineer-in-charge.

29.1.1 Each of the entry of receipt of material at site shall be 100% test checked by JE or AE.

29.1.2 Each MAS Register shall be checked by JE at least twice a week and at least once a week by AE. If there is no JE then MAS registers will be checked by AE at least twice a week.

29.1.3 Cement Register shall be reviewed by EE at least once in a month.

30 Submission of copy of all test registers, MAS registers along with each alternate running account bill and final bill is mandatory. The receipt of registers shall be acknowledged by the Accounts Officer by signing the copies and register to confirm receipt in IWD Office.

If all the test registers and MAS registers are not submitted along with each alternate running account bill and final bill no payment shall be released to the contractor.

31 Tool & Plants

The contractor shall, at his own cost and risk, provide and operate all the required equipment, T&P and machinery as required at site.

In case the contractor fails to arrange the above T& P at site within 10 days of the notice & recoveries shall be made from the Engineer-in-Charge to do so .

B. Particular specifications for Civil Work

1. Except for the items, for which particular specifications are given or where it is specifically mentioned otherwise in the description of the items in the schedule of quantities, the work shall generally be carried-out in accordance with the "CPWD Specifications, 2009 Vol. I to II with correction slips upto the last date of submission of tender (Hereinafter to be referred to as CPWD Specifications) and instructions of Engineer-in-Charge. Whenever CPWD Specifications are silent, the latest IS Codes / Specifications shall be followed. However, **all hardware material such as nuts/bolts/screws/washers etc. to be used in the work shall be Stainless steel in wood work, sanitary, plumbing and drainage work.**

2. The Contractor shall have to engage highly experienced skilled labour, deploy modern T & P and other equipments to execute the work. Many items like stone slab in platform, wall and floor tiles and grit wash, plaster, factory made windows fixing with dash fasteners and sealing with poly sulphide sealants, Railing in balcony and stair case and other specialized flooring work, wood work, will

specially require engagement of well skilled workers having experience particularly in execution of such items.

3. Samples of all material and fittings to be used in the work in respect of brand, manufacture and quality shall be got approved from the Engineer-in-Charge, well in advance of actual execution and shall be preserved till the completion of the work. Articles bearing ISI certification mark shall only be used unless no manufacturer has got ISI mark for that particular material. Any material / fitting whose sample has not been approved in advance and any other unapproved material brought by the contractor shall be immediately removed as soon as directed failing which the Engineer-in-charge shall have the power to remove the same at cost of the contractor.
4. Unless otherwise specified in the schedule of quantities, the rates tendered by the contractor shall be all inclusive and shall apply to all heights, floors including terrace, leads and depths and nothing extra shall be payable on this accounts.
5. The contractor shall give performance test of the entire installation(s) as per the standing specifications before the work is finally accepted and nothing extra what-so-ever shall be payable to the contractor for the test.
6. Any cement slurry added over base surface (or) for continuation of concreting for better bond is deemed to have been built in the items and nothing extra be payable (or) extra cement considered in consumption on this account.
7. The Contractor shall bear all incidental charges for cartage, storage and safe custody of materials issued by department/arranged by the contractor.
8. For water proofing treatment of all types of work; the Contractor(s) shall submit for the approval of the Engineer-in-Charge, the names of specialized agencies, of repute along with their technical capability proposed to be engaged by him within three months from the date of award who have executed satisfactorily at least one similar work of equal or more magnitude or two similar works of minimum 50% magnitude (Financial) of water proofing items.
9. The contractor has to submit guarantee bond for water proofing work executed under water proofing sub head. Final payment for water proofing shall be released only after submission of valid guarantee bond by the contractor.

10. **SAMPLES FOR TESTING**

Samples of materials required for testing shall be provided free of charge by the contractor. The cost of tests shall also be borne by the contractor.

If any load testing or special testing is to be done for concrete whose strength is doubtful, the cost of the same shall be borne by the contractor.

In case there is any discrepancy in frequency of testing as given in list of mandatory tests, and that in individual sub-heads of work as per CPWD specifications higher of the two frequencies of testing shall be followed and nothing extra shall be payable on this account.

11. Payment for items of "RCC work", brick work and concrete work above different floor shall be made at the rates provided for these items. For operation for these rates, the floor level shall be considered as top of the main structural slab in that floor viz. Top of RCC slab in main room and not top of any sunken or depressed floor for laboratory Kitchen / W.C. and toilet slabs.
12. Before starting the casting work, the contractor has to provide initial & final, spot level by the total station method and three sets of spot level drawings are to be submitted by the contractor to the Engineer-in-charge and nothing extra shall be paid on this account.
13. **CEMENT**
 - 13.1 The contractor shall procure 43 grade (conforming to IS 8112) ordinary Portland cement, as required in the work, from reputed manufacturers of cement having a production capacity not less than one million tonnes or more per annum, such as ACC, Ultra-Tech, Jay Pee Rewa, Vikram, Shree Cement, Birla Cement, JK Cement as approved by the Ministry of Industry, Government of India, and holding license to use ISI certification mark for their product. Engineer-in-charge may change the brand of Cement depending upon availability in local market, if needed. In case of non-availability of OPC, PPC conforming to IS: 1489 (part-1) of equivalent grade may be considered only in non-structural work with the approval of Superintending Engineer IISER Bhopal.
 - 13.2 The supply of cement shall be taken in 50 kg. bags bearing manufacturer's name and ISI marking. Samples of cement arranged by the contractor shall be got tested by him in accordance with provisions of relevant BIS codes as soon as it is brought at site. In case the test results indicate that the cement arranged by the contractor does not conform to the relevant BIS codes, the same shall stand rejected, and it shall be removed from the site by the contractor at his own cost within a week's time of written order from the Engineer- in-charge to do so.
 - 13.3 The cement shall be brought at site in bulk supply of minimum 50 tonnes or as decided by the Engineer- in- charge. Cement bags shall be stored in two separate godowns, one for tested cement and the other for fresh cement (under testing) to be constructed by the contractor at his own cost as per sketch at page-97 of General condition of Contract 2014 with weatherproof roofs and walls. The size of the cement godowns is indicated in the sketch for guidance and a store of minimum 4000 bags capacity storage shall be constructed. The actual size of godowns shall be as per site requirements and nothing extra shall be paid for the same. The decision of the Engineer-in-charge regarding the capacity needed will be final.
 - 13.4 The actual issue and consumption of cement on work shall be regulated and proper accounts maintained as provided in clause 10 of the contract. The theoretical consumption of cement shall be worked out as per procedure prescribed in clause 42 of the contract and shall be governed by conditions laid therein. In case the cement consumption is less than theoretical consumption including permissible variation, recovery at the rate so prescribed shall be made. In case of excess consumption no adjustment need to made.

13.5 The cement brought to the site and the cement remaining unused after completion of the work shall not be removed from site without the written permission of the Engineer-in-charge.

13.6 The damaged cement shall be removed from the site immediately by the contractor on receipt of a notice in writing from the Engineer-in-charge. If he does not do so within 3 days of receipt of such notice, the Engineer-in-charge shall get it removed at the cost of the contractor.

14. **STEEL REINFORCEMENT**

14.1 The contractor shall procure TMT steel reinforcement bars Fe 500D conforming to the relevant manufacturers' specifications from the main producers only.

14.2 The contractor shall have to obtain and furnish test certificates to the Engineer-in-charge in respect of all supplies of steel brought by him to the site of work.

14.3 Samples shall also be taken and got tested by the contractor as per the provisions in this regard in relevant BIS codes. In case the test results indicate that the steel arranged by the contractor does not conform to BIS codes, the same shall stand rejected, and it shall be removed from the site of work by the contractor at his cost within a week time of written orders from the Engineer-in-charge to do so.

14.4 The steel reinforcement bars shall be brought to the site in bulk supply of 9 tonnes or more, or as decided by the Engineer-in-charge.

14.5 The steel reinforcement bars shall be stored by the contractor at site of work in such a way as to prevent their distortion and corrosion, and nothing extra shall be paid on this account. Bars of different sizes and lengths shall be stored separately to facilitate easy counting and checking.

14.6 For checking nominal mass, tensile strength, bend test, re-bend test etc. specimens of sufficient length shall be cut from each size of the bar at random, and at frequency not less than that specified below:

Size of bar	For consignment below 100 tonnes	For consignment above 100 tonnes
Under 10 mm dia. bars	One sample for each 25 tonnes or part thereof	One sample for each 40 tonnes or part there of
10 mm to 16 mm dia. bars	One sample for each 35 tonnes or part there of	One sample for each 45 tonnes or part there of
Over 16 mm dia. bars	One sample for each 45 tonnes or part there of	One sample for each 50 tonnes or part there of

14.7 The actual issue and consumption of steel on work shall be regulated and proper accounts maintained as provided in clause 10 of the contract. The theoretical consumption of steel shall be worked out as per procedure prescribed in clause 42 of the contract and shall be governed by conditions laid therein. In case the consumption is less than theoretical consumption including permissible variations recovery at the rate so prescribed shall be made. In case of excess consumption no adjustment need to be made.

14.8 The steel brought to site and the steel remaining unused after completion of work shall not be removed from site without the written permission of the Engineer-in-charge.

15. **RCC WORK (DESIGN- MIX CONCRETE)**

15.1 The RCC work shall be done with Design Mix Concrete as per CPWD Specifications-2009(Vol.-I & II) unless otherwise specified. In the nomenclature of items wherever letter M has been indicated, the same shall imply for the Design Mix Concrete. For the nominal mix in RCC, CPWD Specifications and relevant IS Codes shall be followed. The Design Mix Concrete will be designated based on the principles given in IS: 456-2000. The contractor shall design mixes for each class of concrete indicating that the concrete ingredients and proportions will result in concrete mix meeting requirements specified. In case of use of admixture and or white cement, the mix shall be designed without these admixtures. The specifications mentioned here-in-below shall be followed for Design Mix Concrete.

15.2 Coarse Aggregate
As per CPWD specifications.

15.3 Fine Aggregate
As per CPWD specifications.

15.4 Water

It shall conform to requirements laid down in IS 456: 2000 and CPWD specification.

15.5 Cement: - Cement arranged by the Contractor will be OPC (grey) of Grade-43 conforming to IS: 8112. The record of white cement shall be kept in the same Performa and same manner as applicable for the grey cement.

15.6 Admixtures: Wherever .required, admixtures of approved quality shall be mixed with concrete as specified. The admixtures shall conform to IS: 9103. The chloride content in the admixture shall satisfy the requirements of BS:5075. The total amount of chlorides in the admixtures mixed concrete shall also satisfy the requirements of IS: 456-2000.

15.6.1 Admixtures may be added (By maintaining the minimum cement content as specified above) in case of specific technical requirement so as to meet the workability I slump requirement or for any other reason. But nothing extra is to be paid to contractor on account of adding admixtures.

The minimum cement content and maximum water cement ratio of concrete of various grades shall be as below:

Sl. No.	Grade Designation	Minimum Cement content (Kg. per cum)	Maximum Water Cement Ratio
(i)	M-25	320	0.50
(ii)	M-30	330	0.45
(iii)	M-35	340	0.45

Note 1: In case where the quantity of cement required is higher/lesser than the specified in the nomenclature of items of Schedule of quantity to achieve desired strength based on an approved mix design, it shall be payable to the contractor/ recoverable from the contractor.

- I) In the designation of a concrete mix letter M refers to the mix and number to the specified characteristic compressive strength of 15x15cmx15cm – cube 28 days expressed in N/mm².
 - II) ***If design mix allows lesser/higher use of cement than the cement specified in the nomenclature of items of Schedule of quantity to achieve desired strength without adding admixture then payment/recovery @ quoted by the agency per MT shall be made for higher/lesser consumption of cement.***
 - III) It is specifically highlighted that in addition to the above requirement the maximum cement content for any grade shall be limited to 400kg/cum.
 - IV) The minimum/maximum cement content for design mix concrete shall be maintained as per the quantity mentioned above.
- 15.7 The concrete mix design/laboratory tests with and without cement admixture if to be used by the contractor will be carried out by the contractor from laboratory at approved by Engineer-in-charge at his own cost.

The various ingredients for mix design/laboratory tests shall be sent to the laboratory through the Engineer-in-charge and the samples of such aggregate, cement shall be preserved at site by the contractor.

- 15.8 The contractor shall submit the mix design report from any of approved laboratory for approval of Engineer-in-charge within 30 days from the date of issue to letter of acceptance of the tender. No concreting shall be done until the mix design is approved. In case of white Portland cement and the likely use of admixtures where CC / RCC is done using concrete pumps in concrete with ordinary Portland / white Portland cement the contractor shall design and test the concrete mix by using trial mixes with white cement and /or admixtures also for which nothing extra shall be payable.

15.9 In case of change of source of characteristic properties of the ingredients used in the concrete mix during the work, a revised laboratory mix design report conducted at approved laboratory or laboratory established at site shall be submitted by the contractor as per the direction of Engineer-in-charge.

15.10 Approval of Design Mix:

The mix design for a specified grade of concrete shall be done for a target mean compressive strength $\tau_{ck} = f_{ck} + 1.65s$.

Where, f_{ck} = Characteristic compressive of 28 days
s = Standard deviation which depends on degree of quality control.

The degree of quality control for this work is 'good' for which the standard deviation(s) obtained for different grades of concrete shall be as follows:

Grade of Concrete	For 'good' quality of control
M25	5.0
M30	6.0

Of the six specimen of each set three shall be tested at seven days and remaining three at 28 days. The preliminary tests at seven days are intended only to indicate the strength to be attained at 28 days.

15.11 Batching

The batching plant shall conform to IS:4925, it shall have the facilities of presetting the quantity to be weighed with automatic cutoff when the same is achieved. Concreting at places may have to be resorted to through concrete pump of which nothing extra shall be paid.

15.12 All other operations in concreting work like Mixing, Slump, Laying placing of concrete, compaction curing etc. not mentioned in this particular specification for Design Mix of concrete shall be as per CPWD specification.

15.13 Work Strength Test

Test specimen

Work strength test shall be conducted in accordance with IS:456 on random sampling. Each test shall be conducted on six specimen, three of which shall be tested at 7 days and remaining three at 28 days.

Test results of sample

The test result of the sample shall be average of the strength of three specimen. The individual variation shall not be more than 15% of the average. If more the test results of the sample are invalid. 90% of the total test shall be done at the laboratory established at site by contractor and remaining 10% in the laboratory of CPWD or in any other laboratory as directed by the Engineer-in-charge.

Lotsize

The minimum frequency of sampling of concrete of each grade shall be according with the following:

Quantity of concrete in the work cubic metre per day	Number of samples.
1-5	1
6-15	2
16-30	3
31-50	4
51 & above	4+ one additional sample for additional 50 cubic metre or part thereof.

Note : At least one sample shall be taken from each shift.

15.14 Acceptance Criteria

- 15.14.1 Compressive Strength : The concrete shall be deemed to comply with the strength requirements when both the following condition are met:
- Any individual test result is not less than $(f_{ck}-4)$ N/mm²
 - The mean of test result from any group of four consecutive samples is greater than or equal to $(f_{ck}+.825 \times \text{established standard deviation})$ (rounded off two nearest 0.5 N/mm²) or $(f_{ck}+4)$ N/mm², whichever is greater.
- 15.14.2 Flexural Strength: When both the following conditions are met, the concrete complies with the specified flexural strength.
- The mean strength determined from any group of four consecutive test results exceeds the specified characteristic strength by at least 0.3 N/mm²
 - The strength determined from any test result is not less than the specified characteristic strength/ 0.3 N/mm².
- 15.14.3 Quantity of Concrete Represented by Strength Test Results : The quantity of concrete represented by a group of four consecutive test results shall include the batches from which the first and last samples were taken together with all intervening batches.

For the individual test result requirements is strength $\geq (f_{ck}- 4)$ N/mm², or in item (b) of 15.14.2. Only the particular batch from which the sample was taken shall be at risk.

Where the mean rate of sampling is not specified the maximum quantity of concrete that four consecutive test results represent shall be limited to 60 m³.

All test specimens shall be made compacted, cured and tested in compliance with IS:526 and test result interpreted in accordance with

IS:456 for acceptance of concrete strength, field specimens test results shall not be less than values given in table 5.6 of CPWD Specifications (Vol.-I) 2009.

- 15.14.4 If the concrete is deemed not to comply pursuant to 15.14 the structural adequacy of the parts affected shall be investigated and any consequential action as needed shall be taken.
- 15.14.5 Concrete of each grade shall be assessed separately.
- 15.14.6 Concrete is liable to be rejected if it is porous or honeycombed, its planning has been interrupted without providing a proper construction joint the reinforcement has been displaced beyond the tolerance specified, or construction tolerance have not been met. However the hardened concrete may be accepted after carrying out suitable remedial measured to the satisfaction of the Engineer-in-charge for which nothing extra is payable to the contractor.
- 15.15 Only MS centering and scaffolding material unless & otherwise specified shall be used for all RCC work. Only M.S. centering/shuttering and scaffolding material unless & otherwise specified shall be used for all R.C.C. work to give an even finish of concrete surface. However, Laminated shuttering-Ply may be used for certain situations like Beam Bottoms, Beam Corners, Beam Sides, RCC slab sides and stair cases etc. for which no deduction / extra shall be made on this account.
- 15.16 In order to keep the floor finish as per architectural drawings and to provide required thickness of the flooring as per specifications, the level of top surface of RCC shall be accordingly adjusted at the time of its centering, shuttering and casting for which nothing extra shall be paid to the Contractor.
- 15.17 In case of rejection of concrete as governed by the para "Acceptance Criteria" as above, the work for which samples have failed shall be redone at the cost of contractors. However, the Engineer-in-Charge may order for additional tests (like cutting cores, ultrasonic pulse velocity, and rebound hammer test etc.) to be carried out at the cost of contractor to ascertain, if the portion of structure wherein concrete represented by the sample has been used, can be retained on the basis of results of individual or combination of these tests. The Contractor shall take remedial measures necessary to retain the structure as approved by the Engineer-in-Charge without any extra cost. However, for payment, the basis of rate payable to contractor shall be governed by the 28 days cube test results and reduced rates shall be regulated in accordance with Para 5.4.10.5 D (D-3) of CPWD Specification.
- 15.18 Engineer-in-charge may allow the use of nominal mix RCC in smaller members like lintel, chajjas & shelf etc. at his discretion.
- 15.19 Nothing extra shall be paid for the centering and shuttering circular in shape wherever the form work is having a mean radius exceeding 6m in plan.

The item for shuttering in staircase includes shuttering in steps form.

- 15.20 **Measurement:** As per CPWD specifications.

15.21 **Tolerances:** As per CPWD specifications.

15.22 **Rate:**

15.22.1 The rate includes the cost of material and labour involved in all the operations described above except for the cost of centering, shuttering & reinforcement which will be paid separately.

15.22.2 In case of actual average compressive strength being less than specified strength which shall be governed by para 'Acceptance Criteria' as above the rate payable shall be worked out accordingly on prorata basis.

15.22.3 In case of rejection of concrete on account of unacceptable compressive strength governed by para 'Acceptance Criteria' as above the work for which samples have failed shall be redone at the cost of contractors. However, the Engineer-in-charge may order for additional test (like cutting cores, ultrasonic pulse velocity test, load tests on structure of part of structure etc.) to be carried out at the cost of contractor to ascertain if the portion of structure wherein concrete represented by the sample has been used, can be retained on the basis of results of individual or combination of these tests. The contractor shall take remedial measures necessary to retain the structure as approved by the Engineer-in-charge without any extra cost. However for payment the basis of rate payable to contractor shall be governed by the 28 days cube test results and reduced rates shall be regulated in accordance with relevant para.

15.22.4 Necessary arrangements shall be made for field tests and all required equipments shall be arranged by establishing field lab by the agency for mandatory tests of the material as specified in CPWD specifications or as per direction of Engineer-in-charge. Nothing extra shall be paid on this account.

16. The Concrete mix design / laboratory tests with admixture (if to be used by contractor at his own cost) and without admixture will be carried out by the contractor through govt. institute, IITs, NITs, Central & State research Centre or Centrally funded laboratories.

The expenditure on account of conducting design mix from the laboratory/ test house shall be borne by the Contractor.

The various ingredients for mix design / laboratory tests shall be sent to the lab / test houses through the Engineer-in-Charge and the samples of such aggregates sent shall be preserved at site by the department.

In the event, if the above mentioned laboratories are unable to carry out the requisite design / testing, the contractor may have it done from any other laboratory with prior approval of the Engineer-in-Charge.

17. **READY MIX CONCRETE (RMC) FROM RMC PRODUCER**

17.1 The contractor shall be allowed to arrange Ready MIX concrete (RMC) from the RMC producing plants approved by the Engineer-in-charge. Nothing extra whatsoever shall be payable on this account.

- 17.2 The contractor shall, within 15 days of award of the work, submit the text of MOU proposed to be entered between purchaser (the contractor) and supplier (RMC producer) to the Engineer-in-Charge for his approval. The contractor shall draw the MOU with approved RMC producer and submit the copy to Engineer-in-Charge within a week of such approval. The contractor will not be allowed to use ready mixed-concrete without completion of above stated formalities.
- 17.3 Notwithstanding the approval granted by Engineer-in-Charge in aforesaid manner or provisions in CPWD specifications 2009, the contractor shall be fully responsible and accountable for quality of concrete including input control, transportation and placement etc.
- 17.4 For all purposes the contractor shall carry out fully, the responsibilities of the 'placement contractor' and the 'manufacturer of concrete'.
- 17.5 The Engineer-in-Charge will reserve right to inspect at any stage and reject the concrete if he is not satisfied about quality of product at the user's end.
- 17.6 The Engineer-in-charge reserves the right to exercise control over the:-
- 17.6.1 Ingredients, water and admixtures purchased, stored and to be used in the concrete including conducting of tests for checking quality of materials, recording of test results and declaring the materials fit or unfit for use in production of mix.
- 17.6.2 Calibration check of the RMC plant.
- 17.6.3 Weight and quantity check on the ingredients, water and admixtures added for batch mixing.
- 17.6.4 Time of mixing of concrete.
- 17.6.5 Testing of fresh concrete, recordings of results and declaring the mix fit or unfit for use. This will include continuous control on the workability during production and taking corrective action, if required.
- 17.6.6 For exercising such control, the Engineer-in-charge shall periodically depute his authorized representative at the RMC plant. It shall be responsibility of the contractor to ensure that all necessary equipment, manpower & facilities are made available to Engineer-in-Charge and/or his authorized representative at RMC plant.
- 17.7 All required relevant records of RMC shall be made available to the Engineer-in-Charge or his authorized representative. Engineer-in-Charge shall, as required, specify guidelines & additional procedures for quality control & other parameters in respect of materials, production & transportation of concrete mix which shall be binding on the contractor & the RMC plant. Only concrete as approved in design mix by Engineer-in-Charge shall be produced in RMC Plant and transported to the site. 43-Grade OPC (Conforming to IS-8112) of brand/make/source as approved by Engineer-in-Charge shall only be used for production of concrete.
- 17.8 It shall be the responsibility of the contractor to ensure fulfillment of all the specification criterion of RMC at the point of placement of RMC.

18. QUALITY CONTROL OF READY-MIXED CONCRETE

It shall be the responsibility of the contractor to ensure that RMC producer provides all necessary testing equipments and takes all necessary measures to ensure Quality Control of ready mixed concrete. In general the required measures shall be:-

- 18.1 **Control of purchased material quality:**RMC producer shall ensure that all the materials purchased and used in the production of concrete conform to the stipulation of the relevant agreed standards and the requirements of the concrete mix design and quality control procedures. This shall be accomplished by visual checks, sampling and testing, certification from material supplier and information/data from materials supplier. Necessary equipment for the testing of all material shall be provided and maintained in calibrated condition at the plant by the RMC producer.
- 18.2 **Control of material storage:-** Adequate and effective storage arrangement shall be provided by RMC producer at RMC plant for reliable transfer and feed systems, drainage of aggregates, prevention of freezing or excessive solar heating of aggregate, prevention of contamination etc.
- 18.3 **Record of mix design and mix design modification:-**RMC producer shall ensure that record of mix design and mix design modification is readily available in his computer at RMC plant for inspection of Engineer-in-Charge or his authorized representative at any time. Any modification in mix design shall be done only after the approval of Engineer-in-Charge.
- 18.4 **Transfer and weighing equipment:-** RMC producer shall ensure that a documented calibration procedure is in place. Proper calibration records shall be made available indicating date of next calibration due & corrective action taken. RMC producer shall ensure additional calibration checks whenever required by E-in-C in writing to contractor. RMC producer shall also maintain a daily production record including details of customers to whom RMC was supplied including details of mixes supplied. Record shall also be maintained of what materials were used for each day's production including water and admixtures. The accuracy of measuring equipment shall be within $\pm 2\%$ of quantity of cement & $\pm 3\%$ of quantity of aggregate, admixture and water being measured.
- 18.5 **Maintenance of Plant, Truck Mixers and Pumps:-**Plant, Truck Mixers and Pumps should be well maintained so as to not hamper any operation of production, transportation and placement of concrete.
- 18.6 **Production of concrete at RMC producing plant**
 - 18.6.1 Weighing (correct reading of batch data and accurate weighing) :-For each load, written, printed or graphical records shall be made of the weights of the materials batched, the estimated slumps, the total amount of water added to the load, the delivery tickets number for that load and the time of loading the concrete into the truck.

- 18.6.2 Visual observation of concrete during production and delivery or during sampling and testing of fresh concrete (assessment of uniformity, cohesion, workability, adjustment to water content). : - The workability of the concrete shall be controlled on a continuous basis during production. The batch mix found unfit shall not be loaded into the truck for transportation. Necessary corrective action shall be taken in the production of mix as required for further batches.
- 18.6.3 Adequate testing equipment at the plant including equipment for measuring surface moisture content of aggregates shall be provided by the RMC producer.
- 18.6.4 Making corresponding adjustments at the plant automatically or manually to batched quantities to allow for observed, measured or reported changes in materials or concrete qualities.
- 18.6.5 Sampling of concrete, testing, monitoring of results.
- 18.6.6 Diagnosis and correction of faults identified from observations/complaints.
- 18.6.7 Control of designed and the prescribed mixes: a quality control system shall be operated to control the strength of designed mixes to the required levels. The system shall include continuous analysis of results from cube tests.
- 18.7 Ready mix concrete shall be arranged in quantity as required at site of work. The ready mix concrete shall be supplied as per the pre-agreed schedule approved by Engineer-in-Charge. Nothing extra shall be payable on this account.
- 18.8 The Engineer-in-charge reserves the right to approve RMC producing plants not mentioned in the list of approved RMC plants if they fulfill all the necessary conditions.
- 18.9 Only M.S. centering/shuttering and scaffolding material unless & otherwise specified shall be used for all R.C.C. work to give an even finish of concrete surface. However, Laminated shuttering-Ply may be used for certain situations like Beam Bottoms, Beam Corners, Beam Sides, RCC slab sides and stair cases etc. for which no deduction / extra payment shall be made.
- 18.10 In order to keep the floor finish as per architectural drawings and to provide required thickness of the flooring as per specifications, the level of top surface of RCC shall be accordingly adjusted at the time of its centering, shuttering and casting for which nothing extra shall be paid to the Contractor.
- 18.11 In case of rejection of concrete as governed by the para "Acceptance Criteria" as above, the work for which samples have failed shall be redone at the cost of contractors. However, the Engineer-in-Charge may order for additional tests (like cutting cores, ultrasonic pulse velocity, and rebound hammer test etc.) to be carried out at the cost of contractor to ascertain, if the portion of structure wherein concrete represented by the sample has been used, can be retained on the basis of results of individual or combination of these tests. The Contractor shall take remedial measures necessary to retain the structure as approved by the Engineer-in-Charge without any extra cost. However, for payment, the basis of rate payable to contractor shall be governed by the 28 days cube test results and reduced rates

shall be regulated in accordance with Para 5.4.10.5 D (D-3) of CPWD Specification 2009 Vol-I.

- 18.12 Engineer-in-charge may allow the use of nominal mix RCC in smaller members like lintel, chajjas & shelf etc. at his discretion.

19. VACUUM DEWATERED CONCRETE

- 19.1 Vacuum processing removes surplus water from the concrete to provide quicker setting and earlier maximum strength properties. Vacuum dewatering takes place immediately after the screeding operation.

- 19.2 Upon the surface of the wet concrete is placed a bubble formed two layer composite plastic called as a filter pad. The top cover is a fibre reinforcement coated plastic cloth that acts as a sealing membrane. It is placed over the filter pads, projecting slightly outside on all sides. The border of the top cover rests directly upon the wet concrete to produce an air tight seal.

The filter pad and top cover unit together called as suction mat is connected with suction hose to a Vacuum pump. The normal atmospheric pressure in the pump is reduced to 80% of the atmospheric pressure compresses the concrete.

Concrete is subjected to pressure of:

Air pressure	1.00 Kg. /Sq. cm
Depression	0.20 Kg. /Sq. cm
Effective	0.80 Kg. / Sq. cm

- 19.3 This pressure of about 0.80 kg/sq. cm compresses the concrete and compacts the aggregate. At the same time the excess water which is not required for the Hydration process of the cement is extracted from the concrete and continuously discharged with the air. After completion of dewatering, the Vacuum treated concrete surface should be such as which can be immediately walked upon without leaving foot prints.

19.4 Floating and Trowelling

Immediately after Vacuum dewatering the surface is power floated with a skim-floater. The floater disc leaves a rather rough surface which is suitable for parking decks and industrial floors for which a non-slippery surface is required. For achieving a smoother surface, the surface is trowelled with the same machine provided with trowelling blades.

The floating and trowelling operations should take place within one hour from concreting.

19.5 Curing

After trowelling, which is at the last step of the Vacuum dewatering method, concrete is cured in the normal way. The surface is covered with a plastic sheet and curing compound may be used. In hot climate concrete is to be covered with wet burlap and kept moist. Curing must be attended with care to prevent damage from wind and sun in order to achieve optimum finished quality.

19.6 Cleaning of Equipment

The filter pads and all other equipment should be completely cleaned at the end of the day's concreting as per specialist's standards and shall be got checked by Engineer-In-Charge before commencement of next day's concreting.

19.7 Base

If the floors are placed directly on the ground, it shall be ensured that the base surface have a sufficient bearing capacity.

19.8 Services

The position of the pipes for water and cutouts for utilities like drainage, heating, electric supply and telephones must be fixed before V.D. concreting starts, so that they do not hinder the concreting work.

19.9 Joints

Through vacuum processing, shrinkage is reduced by 50% to 75% compared to that normal concrete. Correspondingly joint spacing can be increased on Vacuum dewatered floors. Joint-less bays upto 65 approx. 200 sqm. Are possible, however the stability of the base and the construction including reinforcement is to be calculated with regard to traffic loads.

19.10 Cement

Cement (Ordinary Portland) shall be used as binding agent. The total filler content consisting of cement and fine particles should be limited to minimum.

19.11 Water

The slump must be controlled between 8 to 12 cm for optimum workability of concrete for VD applications.

19.12 Shop Drawings

Shop drawings shall be prepared prior to commencement of the work for planning of joints and the quantum of the day's concreting.

19.13 Admixture

A pre test of the admixtures if used, is to be carried out in order to determine their suitability for vacuum dewatered concrete.

19.14 Standards

DIN 1045 or equivalent International Standards are valid for Vacuum dewatered concrete flooring.

19.15 Quality

The improved properties of Vacuum dewatered concrete should be ascertained by taking cube specimens and getting them tested through specialized equipment.

19.16 Vacuum Dewatering (VD) process

The machineries used and the standard work cycle process for VD concreting shall be as per the approved specialist's standard requirements.

Tremix and Dynapak are the approved specialists.

19.17 Leveling

Surface vibrator available in lengths of 3 to 12m comprising of a light alloy double beam (with rods to prevent deflection) must be used for leveling.

19.18 Drietop Floor Hardener

Drietop Floor hardener FH manufactured by M.C. Bauchemie or approved equivalent.

19.19 Execution

When the surface is free from residual bleed water and is sufficiently hardened to allow heavy traffic and when the surface leaves any impression of about 2 to 3mm the try shake, surface hardener like Drietop FH manufactured by MC- Bauchemie (India) Private Ltd. can be broadcasted. The broadcasting should be done in two operations which are perpendicular to each other. The surface can be cured in a normal way. The floors can be cured in a normal way. After completion of curing the surface should give a look of well prepared surface which is free from oil, grease and remains of form oil or curing compound. The surface should be free from dust, laitance and completely dried. Surface driers can be used if residual moisture is observed on the surface.

19.20 Measurement:- The mode of measurement shall as follows:

19.21 The length, breadth and depth or thickness shall be measured correct to a cm and the consolidated cubical contents of the concrete shall be calculated to the nearest 0.01 cubic metre.

19.22 Rates

The rate shall include the cost of material, labour, machinery/equipment and testing for Vacuum dewatering processing involved in all operations described above including specialist's supervision, if so required by Engineer-In-Charge. (Reinforced steel used in the flooring shall be paid separately)

LIST OF APPROVED MAKE

The contractor shall obtain prior approval from the Engineer-in-charge before placing order for any specific material.

1.	Cement	ACC/ Ultratech/ JayPee Rewa/ Vikram/ Shree Cement/ Birla
2.	Paints, Primer & Distemper	I.C.I.(DULUX)/BERGER/ASIAN PAINTS/NEROLAC
3.	G.I. & M.S. pipes	TATA / JINDAL
4.	G.I. Fittings	KENT/ UNIK
5.	Steel Reinforcement	TISCO/ SAIL/ RINL/ Jindal Steel & Power Ltd./ JSW Steel
6.	Structural Steel Sections	ISI marked

To

.....
.....
.....

Sub: NIT No.: IWD/SE/NIT/2017-18/40 dated 05.02.2018 for the work Construction of boundary wall near nallah at IISER Bhopal.

Dear Sir,

It is here by declared that IISER Bhopal is committed to follow the principle of transparency, equity and competitiveness in public procurement.

The subject Notice Inviting Tender (NIT) is an invitation to offer made on the condition that the Bidder will sign the integrity Agreement, which is an integral part of tender/bid documents, failing which the tenderer/bidder will stand disqualified from the tendering process and the bid of the bidder would be summarily rejected.

This declaration shall form part and parcel of the Integrity Agreement and signing of the same shall be deemed as acceptance and signing of the Integrity Agreement on behalf of the IISER Bhopal.

Yours faithfully,

Executive Engineer-I
IWD, IISER Bhopal

To
The Executive Engineer-I
IWD, IISER Bhopal

Sub: Submission of Tender for the work of Construction of boundary wall near nallah at
IISER Bhopal.

Dear Sir,

I/We acknowledge that IISER Bhopal is committed to follow the principles thereof as enumerated in the Integrity Agreement enclosed with the tender/bid document.

I/We agree that the Notice Inviting Tender (NIT) is an invitation to offer made on the condition that I/We will sign the enclosed integrity Agreement, which is an integral part of tender documents, failing which I/We will stand disqualified from the tendering process. I/We acknowledge that THE MAKING OF THE BID SHALL BE REGARDED AS AN UNCONDITIONAL AND ABSOLUTE ACCEPTANCE of this condition of the NIT.

I/We confirm acceptance and compliance with the Integrity Agreement in letter and spirit and further agree that execution of the said Integrity Agreement shall be separate and distinct from the main contract, which will come into existence when tender/bid is finally accepted by IISER Bhopal. I/We acknowledge and accept the duration of the Integrity Agreement, which shall be in the line with Article 1 of the enclosed Integrity Agreement.

I/We acknowledge that in the event of my/our failure to sign and accept the Integrity Agreement, while submitting the tender/bid, IISER Bhopal shall have unqualified, absolute and unfettered right to disqualify the tenderer/bidder and reject the tender/bid in accordance with terms and conditions of the tender/bid.

Yours faithfully,

(Duly authorized signatory of the Bidder)

To be signed by the bidder and same signatory competent / authorised to sign the relevant contract on behalf of IISER Bhopal.

INTEGRITY AGREEMENT

This Integrity Agreement is made at on thisday of 20.....

BETWEEN

Board of Governors represented through Executive Engineer-I, IWD, IISER Bhopal, (Hereinafter referred as the IWD, Bhopal 'Principal/Owner', which expression shall unless repugnant to the meaning or context hereof include its successors and permitted assigns)

AND

..... (Name and Address of the Individual/firm/Company)through (Hereinafter referred to as the (Details of duly authorized signatory)

“**Bidder/Contractor**” and which expression shall unless repugnant to the meaning or context hereof include its successors and permitted assigns)

Preamble

WHEREAS the Principal / Owner has floated the Tender (NIT No.) (hereinafter referred to as “**Tender/Bid**”) and intends to award, under laid down organizational procedure, contract for.....
(Name of work)hereinafter referred to as the “**Contract**”.

AND WHEREAS the Principal/Owner values full compliance with all relevant laws of the land, rules, regulations, economic use of resources and of fairness/transparency in its relation with its Bidder(s) and Contractor(s).

AND WHEREAS to meet the purpose aforesaid both the parties have agreed to enter into this Integrity Agreement (hereinafter referred to as “**Integrity Pact**” or “**Pact**”), the terms and conditions of which shall also be read as integral part and parcel of the Tender/Bid documents and Contract between the parties.

NOW, THEREFORE, in consideration of mutual covenants contained in this Pact, the parties hereby agree as follows and this Pact witnesses as under:

Article 1: Commitment of the Principal/Owner

- 1) The Principal/Owner commits itself to take all measures necessary to prevent corruption and to observe the following principles:
 - (a) No employee of the Principal/Owner, personally or through any of his/her family members, will in connection with the Tender, or the execution of the Contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.

- (b) The Principal/Owner will, during the Tender process, treat all Bidder(s) with equity and reason. The Principal/Owner will, in particular, before and during the Tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential / additional information through which the Bidder(s) could obtain an advantage in relation to the Tender process or the Contract execution.
 - (c) The Principal/Owner shall endeavour to exclude from the Tender process any person, whose conduct in the past has been of biased nature.
- 2) If the Principal/Owner obtains information on the conduct of any of its employees which is a criminal offence under the Indian Penal code (IPC)/Prevention of Corruption Act, 1988 (PC Act) or is in violation of the principles herein mentioned or if there be a substantive suspicion in this regard, the Principal/Owner will inform the Chief Vigilance Officer and in addition can also initiate disciplinary actions as per its internal laid down policies and procedures.

Article 2: Commitment of the Bidder(s)/Contractor(s)

- 1) It is required that each Bidder/Contractor (including their respective officers, employees and agents) adhere to the highest ethical standards, and report to the Government / Department all suspected acts of fraud or corruption or Coercion or Collusion of which it has knowledge or becomes aware, during the tendering process and throughout the negotiation or award of a contract.
- 2) The Bidder(s)/Contractor(s) commit himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the Tender process and during the Contract execution:
- a) The Bidder(s)/Contractor(s) will not, directly or through any other person or firm, offer, promise or give to any of the Principal/Owner's employees involved in the Tender process or execution of the Contract or to any third person any material or other benefit which he/she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the Tender process or during the execution of the Contract.
 - b) The Bidder(s)/Contractor(s) will not enter with other Bidder(s) into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to cartelize in the bidding process.
 - c) The Bidder(s)/Contractor(s) will not commit any offence under the relevant IPC/PC Act. Further the Bidder(s)/Contractor(s) will not use improperly, (for the purpose of competition or personal gain), or pass on to others, any information or documents provided by the Principal/Owner as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.
 - d) The Bidder(s)/Contractor(s) of foreign origin shall disclose the names and addresses of agents/representatives in India, if any. Similarly Bidder(s)/Contractor(s) of Indian Nationality shall disclose names and addresses

of foreign agents/representatives, if any. Either the Indian agent on behalf of the foreign principal or the foreign principal directly could bid in a tender but not both. Further, in cases where an agent participate in a tender on behalf of one manufacturer, he shall not be allowed to quote on behalf of another manufacturer along with the first manufacturer in a subsequent/parallel tender for the same item.

- e) The Bidder(s)/Contractor(s) will, when presenting his bid, disclose (with each tender as per proforma enclosed) any and all payments he has made, is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the Contract.
- 3) The Bidder(s)/Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.
- 4) The Bidder(s)/Contractor(s) will not, directly or through any other person or firm indulge in fraudulent **practice means a wilful misrepresentation or omission of facts or submission of fake/forged documents in order to induce public official to act in reliance thereof, with the purpose of obtaining unjust advantage by or causing damage to justified interest of others and/or to influence the procurement process to the detriment of the Government interests.**
- 5) The Bidder(s)/Contractor(s) will not, directly or through any other person or firm use Coercive Practices (means the act of obtaining something, compelling an action or influencing a decision through intimidation, threat or the use of force directly or indirectly, where potential or actual injury may befall upon a person, his/her reputation or property to influence their participation in the tendering process).

Article 3: Consequences of Breach

Without prejudice to any rights that may be available to the Principal/Owner under law or the Contractor its established policies and laid down procedures, the Principal/Owner shall have the following rights in case of breach of this Integrity Pact by the Bidder(s)/Contractor(s) and the Bidder/ Contractor accepts and undertakes to respect and uphold the Principal/Owner's absolute right:

- i. If the Bidder(s)/Contractor(s), either before award or during execution of Contract has committed a transgression through a violation of Article 2 above or in any other form, such as to put his reliability or credibility in question, the Principal/Owner after giving 14 days notice to the contractor shall have powers to disqualify the Bidder(s)/Contractor(s) from the Tender process or terminate/determine the Contract, if already executed or exclude the Bidder/Contractor from future contract award processes. The imposition and duration of the exclusion will be determined by the severity of transgression and determined by the Principal/Owner. Such exclusion may be forever or for a limited period as decided by the Principal/Owner.
- 2) **Forfeiture of EMD/Performance Guarantee/Security Deposit:** If the Principal/Owner has disqualified the Bidder(s) from the Tender process prior to the award of the Contract or terminated/determined the Contract or has accrued the right to terminate/determine the contract according to Article 3(1), the

Principal/Owner apart from exercising any legal rights that may have accrued to the Principal/Owner, may in its considered opinion forfeit the entire amount of Earnest Money Deposit, Performance Guarantee and Security Deposit of the Bidder/Contractor.

- 3) **Criminal Liability:** If the Principal/Owner obtains knowledge of conduct of a Bidder or Contractor, or of an employee or a representative or an associate of a bidder or Contractor which constitutes corruption within the meaning of Indian Penal code (IPC)/Prevention of Corruption Act, or if the Principal/Owner has substantive suspicion in this regard, the Principal/Owner will inform the same to law enforcing agencies for further investigation.

Article 4: Previous Transgression

- 1) The Bidder declares that no previous transgressions occurred in the last 5 years with any other Company in any country confirming to the anticorruption approach or with Central Government or State Government or any other Central/State Public Sector Enterprises in India that could justify his exclusion from the Tender process.
- 2) If the Bidder makes incorrect statement on this subject, he can be disqualified from the Tender process or action can be taken for banning of business dealings/ holiday listing of the Bidder/Contractor as deemed fit by the Principal/ Owner.
- 3) If the Bidder/Contractor can prove that he has resorted / recouped the damage caused by him and has installed a suitable corruption prevention system, the Principal/Owner may, at its own discretion, revoke the exclusion prematurely.

Article 5: Equal Treatment of all Bidders/Contractors/Subcontractors

- 1) The Bidder(s)/Contractor(s) undertake(s) to demand from all subcontractors a commitment in conformity with this Integrity Pact. The Bidder/Contractor shall be responsible for any violation(s) of the principles laid down in this agreement/Pact by any of its Subcontractors/ sub-vendors.
- 2) The Principal/Owner will enter into Pacts on identical terms as this one with all Bidders and Contractors.
- 3) The Principal/Owner will disqualify Bidders, who do not submit, the duly signed Pact between the Principal/Owner and the bidder, along with the Tender or violate its provisions at any stage of the Tender process, from the Tender process.

Article 6- Duration of the Pact

This Pact begins when both the parties have legally signed it. It expires for the Contractor/Vendor 14 Months after the completion of work under the contract or till the continuation of defect liability period, whichever is more and for all other bidders, till the Contract has been awarded.

If any claim is made/lodged during the time, the same shall be binding and continue to be valid despite the lapse of this Pacts as specified above, unless it is discharged/determined by the Competent Authority, CPWD.

Article 7- Other Provisions

- 1) This Pact is subject to Indian Law, place of performance and jurisdiction is the **Head quarters of the Division** of the Principal/Owner, who has floated the Tender.
- 2) Changes and supplements need to be made in writing. Side agreements have not been made.
- 3) If the Contractor is a partnership or a consortium, this Pact must be signed by all the partners or by one or more partner holding power of attorney signed by all partners and consortium members. In case of a Company, the Pact must be signed by a representative duly authorized by board resolution.
- 4) Should one or several provisions of this Pact turn out to be invalid; the remainder of this Pact remains valid. In this case, the parties will strive to come to an agreement to their original intensions.
- 5) It is agreed term and condition that any dispute or difference arising between the parties with regard to the terms of this Integrity Agreement / Pact, any action taken by the Owner/Principal in accordance with this Integrity Agreement/ Pact or interpretation thereof shall not be subject to arbitration.

Article 8- LEGAL AND PRIOR RIGHTS

All rights and remedies of the parties hereto shall be in addition to all the other legal rights and remedies belonging to such parties under the Contract and/or law and the same shall be deemed to be cumulative and not alternative to such legal rights and remedies aforesaid. For the sake of brevity, both the Parties agree that this Integrity Pact will have precedence over the Tender/Contact documents with regard any of the provisions covered under this Integrity Pact.

IN WITNESS WHEREOF the parties have signed and executed this Integrity Pact at the place and date first above mentioned in the presence of following witnesses:

.....

(For and on behalf of Principal/Owner)

(For and on behalf of Bidder/Contractor)

WITNESSES:

1.
(signature, name and address)

2.
(signature, name and address)

Place

Date

DRAFT AGREEMENT

AGREEMENT made this _____ day of _____ Two Thousand _____ between the Indian Institute Science Education & Research Bhopal incorporated as Institutions of National Importance body corporate under the umbrella of the NIT (Amendment) Act, 2012 (NIT Act 2007). **(The act was further amended in 2014, entitled the NITSER Act 2014)** through its Director IISER Bhopal (hereinafter referred to as "The Institute and M/s _____" (Hereinafter referred to as "The Contractor") which expression shall include his/their respective heirs, executors, administrators and assigns of the other part.

WHEREAS the Institute is desirous for " _____ " and has caused drawings and specifications describing the work to be done and WHEREAS the said drawings as per list attached, the specifications, the priced Schedule of Quantities the conditions of tender and the conditions of contract have been signed by or on behalf of the parties hereto AND WHEREAS the contractor has agreed to execute upon and subject to the condition set forth (herein after referred to as 'the said conditions') the work shown upon the said drawings and described in the said specification and the said priced Schedule of Quantity 'at the respective rates mentioned in the priced Schedule of Quantities.

AND WHEREAS the contractor has deposited by Cash / FDR a sum of Rs. _____/- (Rupees _____ only), with the Institute for the due performance of this agreement.

NOW IT IS HEREBY AGREED AS FOLLOWS:

1. In consideration of the payments to be made to the contractor as herein after provided the Contractor shall upon and subject to the said conditions execute and complete the works shown upon the said drawing and such further detailed drawings as may be furnished to him by the said Institute and described in the said specification, and the said priced Schedule of Quantities.
2. The Institute shall pay the contractor such sums as shall become payable hereunder at the time and in the manner specified in the said conditions.
3. Time is the essence of the agreement. In the event of the Contractor failing to comply with this condition, he shall be liable to pay compensation as per clause 2 of the condition of the contract as decided by the competent authority of the Institute in writing which shall be final and binding on the contractor.
4. The Drawings, specifications and priced Schedule of Quantities above mentioned shall form the basis of this contract and the decision of the Director or Arbitrator or Umpire as mentioned in the conditions of the Contract in reference to all matters of disputes as to material, workmanship or account and as to the intended interpretation of the clause of this agreement or any other document attached here to shall be final and binding on both parties and may be made a rule court.
5. The said contract comprises the work above mentioned and all the subsidiary work connected therewith the same site all may be ordered to be done from time to time by the institute even though such works may not be shown on the drawings or described in the said specifications or the priced Schedule of Quantities.
6. The institute reserves the right altering the drawings and nature of the work and of adding to or omitting any items of work or of having portions of the same carried

out departmentally or otherwise and such alterations or variations shall not vitiate this contract.

7. The said conditions and appendix there to shall be read and construed as forming part of this agreement and the parties here to will respectively abide by and submit themselves to the conditions and stipulations and perform the agreement on their parts respectively in such conditions contained.
8. All other disputes and differences except as excluded by clause 2 shall be referred to arbitration as per clause 25 of the said conditions of contract. The provision of the Arbitration & Conciliation Act 1996 (26 of 1996) or any statutory modifications or re enactment thereof and of the rules made there under for the time being in force shall apply to Arbitration proceedings under this clause.
9. All disputes arising out of or in any way connected with this agreement shall be deemed to have arisen in Bhopal and only courts in Bhopal shall have jurisdiction to determine the same.
10. The several parts of this contract have been read to us and fully understood by us. In witness whereof the parties hereto have set their respective hands the day and the year herein above written.

Executive Engineer-I
For and on behalf of the Director

In the presence of:

1.

2.

Contractor

Form of Earnest Money (Bank Guarantee Bond)

WHEREAS, contractor (Name of contractor) (hereinafter called “the contractor”) has submitted his tender dated (date) for the construction of (name of work) (hereinafter called “the Tender”).

KNOW ALL PEOPLE by these presents that we (name of bank) having our registered office at(hereinafter called “the Bank”) are bound unto (Name and division of Executive Engineer) (hereinafter called “the Engineer-in-Charge”) in the sum of Rs. (Rs. in words) for which payment well and truly to be made to the said Engineer-in-Charge the Bank binds itself, his successors and assigns by these presents.

SEALED with the Common Seal of the said Bank this day20.....

THE CONDITIONS of this obligation are:

1. If after tender opening the Contractor withdraws, his tender during the period of validity of tender “(including extended validity of tender) specified in the Form of Tender;
2. If the Contractor having been notified of the acceptance of his tender by the Engineer-in-Charge:
 - (a) fails or refuses to execute the Form of Agreement in accordance with the Instructions to contractor, if required; **OR**
 - (b) fails or refuses to furnish the Performance Guarantee, in accordance with the provisions of tender document and Instructions to contractor.

We undertake to pay to the Engineer-in-Charge either up to the above amount or part thereof upon receipt of his first written demand, without the Engineer-in-Charge having to substantiate his demand, provided that in his demand the Engineer-in-Charge will note that the amount claimed by him is due to him owing to the occurrence of one or any of the above conditions, specifying the occurred condition or conditions.

This Guarantee will remain in force up to and including the date* after the deadline for submission of tender as such deadline is stated in the instructions to contractor or as it may be extended by the Engineer-in-Charge, notice of which extension(s) to the Bank is hereby waived. Any demand in respect of this Guarantee should reach the Bank not later than the above date.

DATE

SIGNATURE OF THE BANK

WITNESS

SEAL

(SIGNATURE, NAME AND ADDRESS)

* Date to be worked out on the basis of validity period of 6 months from last date of receipt of tender.

FINANCIAL INFORMATION

- I. **Financial Analysis** – Details to be furnished duly supported by figures in Balance Sheet / Profit & Loss Account for 5 (five) years duly certified by the Chartered Accountant, as submitted by the applicant to the Income-Tax Department (Copies to be attached).

Financial Years

Sl. No	Details	(1)	(2)	(3)	(4)	(5)
		2016-17	2015-16	2014-15	2013-14	2012-13
i)	Gross annual turnover of civil work.					
ii)	Profit / Loss					

- II. Financial arrangements for carrying out the proposed works.
Note: Attach additional sheets, if necessary

Signature of Chartered Accountant with seal

Signature (s) of Bidder(s)

FORM 'C'**Details of all works of similar nature completed during the last seven years
(Ending up to previous day of last date of submission of online tender)**

<i>Sl. No.</i>	<i>Name of work / Project and location</i>	<i>Owner or Sponsoring organisation</i>	<i>Cost of work (in crores)</i>	<i>Upto date Cost of the work enhanced @ 7% per annum</i>	<i>Date of commencement as per contract</i>	<i>Stipulated date of completion</i>	<i>Actual date of completion</i>	<i>Litigation Arbitration pending / in progress with details *</i>	<i>Name and Address Telephone number of officer to whom reference may be made.</i>	<i>Remarks</i>
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.

*Indicate gross amount claimed and amount awarded by the arbitrator.

Signature(s) of Bidder(s)

Performance report of works referred in Form 'C' – M/s

(Furnish this information for each individual work from the employer for whom the work was executed)

1. Name of work / Project & Location.
2. Agreement No.
3. Estimated Cost
4. Tendered Cost
5. Actual work done
6. Date of start
7. Date of completion
 - a) Stipulated date of completion
 - b) Actual date of completion
8. (a) Whether case of levy of compensation for delay has been decided or not **Yes/No**
(b) If decided, amount of compensation levied for delayed completion, if any
9. Performance report
 - i) Quality of work Outstanding/ Very good /Good/ Poor
 - ii) Finance Soundness Outstanding/ Very good /Good/ Poor
 - iii) Technical Proficiency Outstanding/ Very good /Good/ Poor
 - iv) Resourcefulness Outstanding/ Very good /Good/ Poor
 - v) General behavior Outstanding/ Very good /Good/ Poor

Executive Engineer or Equivalent
(Seal of the organisation)

Date:

Structure & Organisation

1.	Name and address of Bidder	
2.	Telephone No. / Fax No. / email address	
3.	Legal status of the bidder (Attach copies of original document defining the legal status). The applicant is : a) An individual b) A proprietary firm c) A Firm in partnership d) A limited company or corporation	
4.	Particulars of registration with various Govt. bodies (Attach attested photocopies) a) Registration Number b) Organisation / Place of registration c) Date of validity	
5.	Name and title of Directors and officers with designation to be concerned with this work.	
6.	Designation of individuals authorized to act for the organization.	
7.	Has the bidder or any constituent partner in case of partnership firm Limited Company/Joint Venture, ever been convicted by the court of law? If so, give details.	
8.	In which field of Civil Engineering construction the bidder has specialisation and interest?	
9.	Any other information considered necessary but not included necessary but not included above.	

Signature of Bidder(s)

FORM 'F'

(प्रासकर्ता द्वारा भरा जावे To be filled by payee)

**State Bank of India, IISERB
Branch Bhauri, Bhopal**

**Indian Institute of Science Education and Research
Bhopal**

Application Form for Fund Transfer through RTGS / NEFT

Date:

Application for RTGS Remittance

SBI IISERB Branch, Bhauri, Bhopal

Branch Code: 011765

Remitter Name : **IISER Bhopal**

Please Remit the sum of Rs.....

(Rs.)

As per details below by debiting our Account No 30454321887 for the total amount including charges applicable (if any)

Name of the beneficiary	
Bank's name	
Branch	
IFSC Code	
Account No.	
MICR Code	
Type of Account	
Amount Rs	
Amount in Words Rs	
Bank Charges Rs (if any)	
Total Rs.	
Cheque No.	
Date	
Amount	

(Authorized Signatory - 1) (Authorized Signatory - 2)

Address : Finance & Accounts, IISER Bhopal
Tel No. : 0755-6692343

Prepared and Checked by payee (प्रासकर्ता)		Forwarded By (Concerned Department / Section) Firm / Agency's authorized signatory details verified	
Signature of authorized signatory		Signature	
Name		Name	
Designation		Designation	
Firm / Agency Name :		Department	

*Please affix a rubber stamp

Date of Transfer	
Amount Rs	
Transaction / UTR No.	



Indian Institute of Science Education and Research Bhopal



SCHEDULE OF QUANTITIES

NIT No. : IWD/SE/NIT/2017-18/40 dated 05.02.2018)

Name of work : Construction of boundary wall near nallah at IISER Bhopal.

Name of Participating Bidder/Firm						
Sl. No.	Description of item	Qty.	Unit	Rate (Rs.)		Amount
				(In Fig.)	(In words)	
1	EARTH WORK					
1.1	Earth work in excavation by mechanical means (Hydraulic excavator)/manual means over areas (exceeding 30 cm in depth, 1.5 m in width as well as 10 sqm on plan) including getting out and disposal of excavated earth lead upto 50 m and lift upto 1.5 m, as directed by Engineer-in-charge.					
1.1.1	All kinds of soil	500	cum			0
1.2	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m.	350	cum			0
2	CONCRETE WORK					
2.1	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level :					
2.1.1	1:5:10 (1 cement : 5 coarse sand (zone-III): 10 graded stone aggregate 40 mm nominal size).	11	cum			0
3	REINFORCED CEMENT CONCRETE					
3.1	Centering and shuttering including strutting, propping etc. and removal of form for:					
3.1.1	Foundations, footings, bases of columns, etc. for mass concrete	80	sqm			0
3.1.2	Walls (any thickness) including attached pilasters, buttresses, plinth and string courses etc.	600	sqm			0

Name of Participating Bidder/Firm						
Sl. No.	Description of item	Qty.	Unit	Rate (Rs.)		Amount
				(In Fig.)	(In words)	
3.2	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete upto plinth level.					
3.2.1	Thermo-Mechanically Treated bars of grade Fe-500D or more.	14000	Kg			0
3.3	Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centering, shuttering, finishing and reinforcement, including 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 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).					
3.3.1	All works upto plinth level	100	cum			0
3.3.2	All works above plinth level upto floor V level.	40	cum			0
4	STEEL WORK					
4.1	Steel work welded in built up sections/ framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer using structural steel etc. as required.					
4.1.1	In gratings, frames, guard bar, ladder, railings, brackets, gates and similar works	1800	kg			0
5	FINISHING					
5.1	6 mm cement plaster of mix :					
5.1.1	1:3 (1 cement : 3 fine sand)	330	sqm			0
5.2	Finishing walls with Premium Acrylic Smooth exterior paint with Silicone additives of required shade:					
5.2.1	New work (Two or more coats applied @ 1.43 ltr/10 sqm over and including priming coat of exterior primer applied @ 2.20 kg/10 sqm)	330	sqm			0

Name of Participating Bidder/Firm						
Sl. No.	Description of item	Qty.	Unit	Rate (Rs.)		Amount
				(In Fig.)	(In words)	
5.3	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade :					
5.3.1	Two or more coats on new work	60	sqm			0
					Total	0

Executive Engineer-I

Superintending Engineer