

**GOVERNMENT OF INDIA
CENTRAL PUBLIC WORKS DEPARTMENT**

NIT No: - 07/SE cum PD/IIM Sirmaur/2026-27

BID DOCUMENT

(PART-A)

Name of work: Development of Permanent Campus of IIM Sirmaur at Dhaula Kuan, District Sirmaur, Himachal Pradesh. SH: C/o Student Hostel-Type A, B, C, Married Hostel, Connecting Corridor Hostels, Student Mess, Student Activity Center, Virtual Learning Centre, Director Residence,, internal sanitary, plumbing and electrical installations, development and external services work like water supply line, sewerage, firefighting, electrical line, road work etc. in all over phase-I.
(SH:- Balance work)

**SE cum PD, IIM Sirmaur
CENTRAL PUBLIC WORKS DEPARTMENT
Sirmaur (H.P.)**

GOVERNMENT OF INDIA
CENTRAL PUBLIC WORKS DEPARTMENT

Name of work: Development of Permanent Campus of IIM Sirmaur at Dhaula Kuan, District Sirmaur, Himachal Pradesh. SH: C/o Student Hostel-Type A, B, C, Married Hostel, Connecting Corridor Hostels, Student Mess, Student Activity Center, Virtual Learning Centre, Director Residence, internal sanitary, plumbing and electrical installations, development and external services work like water supply line, sewerage, firefighting, electrical line, road work etc. in all over phase-I.

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Certified that this NIT document contains Part A & B having Pages from 1 to 256 and is approved for Rs. 6,26,99,792/- (Rupees Six crore Twenty Six lakh Ninety Nine thousand Seven Hundred Ninety Two only).

Assistant Executive Engineer(E),
IIM Sirmaur Project Division,
CPWD, Dhaula Kuan, Sirmaur (H.P.)

Assistant Engineer(C),
IIM Sirmaur Project Division,
CPWD, Dhaula Kuan, Sirmaur (HP).

Executive Engineer & Senior Manager(E)
IIM Sirmaur Project Division,
CPWD, Dhaula Kuan, Sirmaur (HP).

Executive Engineer & Senior Manager(C),
IIM Sirmaur Project Division,
CPWD, Dhaula Kuan, Sirmaur (HP).

Assistant Engineer(P),
IIM Sirmaur Project, CPWD,
Dhaulta Kuan, Sirmaur (H.P.)

**Superintending Engineer & Project Director
IIM Sirmaur, Central Public Works
Department, Sirmaur (H.P.)**

NOTICE INVITING e-TENDER

Executive Engineer and Senior Manager (Civil) Sirmaur-1, IIM Sirmaur Project, CPWD, Dhaula Kuan, Sirmaur (HP) (Email: amrit.garg@gov.in, Mobile: 9871236540) on behalf of President of India invites online percentage rate bids from CPWD enlisted contractors of appropriate class in "Building & Road" category for the following work: -

NIT No: - 07/SE cum PD/IIM Sirmaur/2026-27

Name of work: Development of Permanent Campus of IIM Sirmaur at Dhaula Kuan, District Sirmaur, Himachal Pradesh. SH: C/o Student Hostel-Type A, B, C, Married Hostel, Connecting Corridor Hostels, Student Mess, Student Activity Center, Virtual Learning Centre, Director Residence,, internal sanitary, plumbing and electrical installations, development and external services work like water supply line, sewerage, firefighting, electrical line, road work etc. in all over phase-I.

(SH:- Balance work)

Composite Estimated cost	Rs. 6,26,99,792/- (Civil - Rs. 3,37,34,974/- & Electrical - Rs. 2,89,64,818/-
Earnest Money	Rs. 12,53,996/-
Period of Completion	3.0 Months
Last Time & date of submission of bids Up to	15:00 Hrs on : 07.11.2026
Opening of Technical bids	15:30 Hrs on : 07.11.2026

The bid forms and other details can be obtained from the website CPWD e-Tendering <https://etender.cpwd.gov.in>. All corrigendum/ addendum shall only be available on this website and shall not be published anywhere else.

**EE and SM (C)S-1,
IIM Sirmaur, CPWD,
Dhaulta Kuan, Sirmaur (H.P.)**

*** To be filled by EE & SM (C).

Section-I

General Information

CPWD-6 FOR e-TENDERING

	GOVERNMENT OF INDIA CENTRAL PUBLIC WORKS DEPARTMENT	
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1. Executive Engineer and Senior Manager (Civil)-1, IIM Sirmaur Project, CPWD, Dhaula Kuan, Sirmaur, Himachal Pradesh (Email: amrit.garg@gov.in, Mobile: 9871236540) on behalf of President of India invites online percentage rate bids from CPWD enlisted contractors of appropriate class in “Building & Road” category for the following work: -

Name of work: Development of Permanent Campus of IIM Sirmaur at Dhaula Kuan, District Sirmaur, Himachal Pradesh. SH: C/o Student Hostel-Type A, B, C, Married Hostel, Connecting Corridor Hostels, Student Mess, Student Activity Center, Virtual Learning Centre, Director Residence, internal sanitary, plumbing and electrical installations, development and external services work like water supply line, sewerage, firefighting, electrical line, road work etc. in all over phase-I.

(SH:- Balance work)

1.2.1 Criteria of eligibility for submission of bid documents.

The enlistment of the contractors should be valid on the last date of submission of bids.

In case the last date of submission of bid is extended, the enlistment of contractor should be valid on the original date of submission of bids.

The work is estimated to cost Rs. 6,26,99,792/- {Civil : Rs. 3,37,34,974/- + E&M: Rs.2,89,64818/-}

Intending bidder is eligible to submit the bid provided he has definite proof from the appropriate authority, which shall be to the satisfaction of the competent authority, of having satisfactorily completed similar works of magnitude specified below:

2. Agreement shall be drawn with the successful bidder on prescribed Form No. CPWD-7 amended up to date which is available as a Govt. of India Publication and sample also available on website www.cpwd.gov.in. Bidder 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 3.0 months from the date of start as defined in schedule ‘F’ or from the first date of handing over of the site, whichever is later, in accordance with the phasing, if any, indicated in the bid documents.
4. (i) The site for the work is available.

(ii) The Architectural and Structural drawings shall be made available as per requirement of the same as per approved program of completion submitted by the contractor after award of work.
5. The bid document consisting of plans, specifications, schedule of quantities of various types of items to be executed and set of terms & conditions of the contract to be complied with and other necessary documents except Standard General Conditions of Contract 2023 (Construction Works) Form **amended upto the last date of submission of bids** can be seen on website <https://etender.cpwd.gov.in> or www.cpwd.gov.in free of cost.
6. After submission of the bid, the contractor can re-submit revised bid any number of times or withdraw it before last date and time of submission of bid as notified. No post-tender modification is allowed by the tenderers except through negotiations, if required. In case, any tenderer does so, the tender will be rejected and the tenderer will be debarred for future tendering in CPWD for two years by the concerned enlisting authority (in case of

CPWD enlisted contractor).

7. While submitting the revised bid, contractor can revise the quoted percentage any number of times, but before last time and date of submission of bid, as notified.
8. Earnest Money in the form of Insurance Surety Bonds, Account Payee Demand Draft, Fixed Deposit Receipt, Banker's Cheque or Cheque Deposit Receipt, Treasury challan, Bank Guarantee including e-Bank guarantee (for balance amount as prescribed) from any of the Commercial Banks **(drawn in favour of :EE&SM(C)Sirmaur-1, CPWD, Dhaula Kuan, IIM Sirmaur (H.P.)** shall be scanned and uploaded to the e-Tendering website within the period of bid submission. The original EMD should be deposited either in the office of Executive Engineer inviting bids or division office of any Executive Engineer, CPWD within the period of bid submission. The EMD receiving officer (including NIT issuing EE) shall issue a receipt of deposition of earnest money deposit to the bidder in a prescribed format (Annexure-I) uploaded by tender inviting EE in the NIT.

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 lakhs, whichever is less, shall have to be deposited in shape prescribed above, and balance may be deposited in shape of Bank Guarantee including e-Bank guarantee of any Commercial bank having validity for 180 days or more from the last date of receipt of bids which is to be scanned and uploaded by the intending bidders.

The earnest money given by all the tenderers except the lowest tenderer shall be refunded immediately after the expiry of stipulated bid validity period or immediately after acceptance of the successful bidder, whichever is earlier.

Copy of Enlistment Order and other documents as specified in the notice inviting e-tender shall be scanned and uploaded on the e- Tendering website within the period of bid submission. Online bid documents submitted by intending bidders shall be opened only of those bidders, who has deposited EMD with any division of CPWD and other documents scanned and uploaded are found in order.

The bid submitted shall be opened at 15:30 Hrs. on 07.11.2026

9. The bid submitted shall become invalid and e-tender processing fee (if applicable) shall not be refunded if:
 - (i) The bidder is found ineligible.
 - (ii) The bidder does not upload scanned copies of all the documents stipulated in the bid document.
 - (iii) 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 bid opening authority.
 - (iv) If a tenderer quotes nil rates against each item in item rate tender or does not quote any percentage above / below on the total amount of the tender or any section / sub head in percentage rate tender, the tender shall be treated as invalid and will not be considered as lowest tenderer.
10. The contractor whose bid is accepted will be required to furnish performance guarantee at specified percentage and within the period as mentioned in the Schedule-F, in favour of **EE&SM(C)Sirmaur-1, CPWD, Dhaula Kuan, IIM Sirmaur (H.P.)**. This guarantee shall be in the form of Insurance Surety Bonds, Account payee Demand Draft, Fixed Deposit Receipt or Bank Guarantee from any of the Commercial Banks in accordance with the prescribed form. 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 bid shall be returned after receiving the aforesaid performance guarantee. The

contractor whose bid is accepted will also be required to furnish either copy of applicable licenses/registrations or proof of applying for obtaining labour licenses, registration with EPFO, ESIC and BOCW Welfare Board including Provident Fund Code No. if applicable and also ensure the compliance of aforesaid provisions by the sub-contractors, if any engaged by the contractor for the said work within the period specified in Schedule-F.

11. The description of the work is as follows:

Name of work: Development of Permanent Campus of IIM Sirmaur at Dhaula Kuan, District Sirmaur, Himachal Pradesh. SH: C/o Student Hostel-Type A, B, C, Married Hostel, Connecting Corridor Hostels, Student Mess, Student Activity Center, Virtual Learning Centre, Director Residence, internal sanitary, plumbing and electrical installations, development and external services work like water supply line, sewerage, firefighting, electrical line, road work etc. in all over phase-I.

(SH:- Balance work)

Intending Bidders are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their bids as to the nature of the ground and sub-soil (so far as is practicable), the form and nature of the site, the means of access to the site, the accommodation they may require and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their bid. **A bidder shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charge consequent on any misunderstanding or otherwise shall be allowed.** The 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 a bid by a bidder 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. will be issued to him by the Government and local conditions and other factors having a bearing on the execution of the work.

Intending Bidders are advised to get familiarized with the local body rules. Fire fighting, tree cutting authorities, environment clearances, orders passed by any court on the environment issues, any other issue related to obtaining commencement certificate & occupancy certificate and satisfy themselves before submitting their bids as to the status, nature of the rules and regulations and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their bid. Bidder shall be deemed to have full knowledge of such rules and regulations whether he has read it or not and no extra charge consequent on any misunderstanding or otherwise shall be allowed. In case of reduction of scope of work or no work is possible to carry out on account of such issues, no cost shall be payable to them. Submission of a bid by the bidder implies that he has read this notice and all other documents and has made himself aware of the Local Body Byelaws and other factors having a bearing on the execution of the work.

- 12.** The competent authority on behalf of the President of India does not bind itself to accept the lowest or any other bid and reserves to itself the authority to reject any or all the bids received without the assignment of any reason. All bids in which any of the prescribed condition is not fulfilled or any condition including that of conditional rebate is put forth by the bidders, shall be summarily rejected.
- 13.** Canvassing whether directly or indirectly, in connection with bidders is strictly prohibited and the bids submitted by the contractors who resort to canvassing will be liable to rejection.
- 14.** The competent authority on behalf of President of India reserves to himself the right of accepting the whole or any part of the bid and the bidders shall be bound to perform the same at the rate quoted.
- 15.** The contractor shall not be permitted to bid for works in the CPWD Zone (Division in case of contractors of Horticulture/Nursery category) responsible for award and execution of contracts, in

which his near relative is posted as Divisional Accountant or as an officer in any capacity between the grades of Chief Engineer and Junior Engineer (both inclusive). 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 gazetted officer in the Central Public Works Department or in the Ministry of Housing & Urban Affairs. Any breach of this condition by the contractor would render him liable to be removed from the approved list of contractors of this Department.

16. No Engineer of Gazetted rank or other Gazetted Officer employed in Engineering or Administrative duties in an Engineering Department of the Government of India is allowed to work as a contractor for a period of one year after his retirement from Government service, without the prior permission of the Government of India 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 Government of India, as aforesaid, before submission of the bid or engagement in the contractor's service.

17. The bids for the work shall remain open for acceptance for a period of **30 (Thirty) days** from the date of opening of technical bids. Further,

- (i) If any tenderer withdraws his tender within 7 days after last date and time (24 hours basis) of submission of bids, or makes any modification in the terms & conditions of the tender which is not acceptable to the department within 7 days after last date of submission of bids, then the Government shall without prejudice to any other right or remedy, be at liberty to forfeit 50% of earnest money absolutely irrespective of letter of acceptance for the work is issued or not.
- (ii) If any tenderer withdraws his tender after expiry of 7 days after last date and time (24 hours basis) or makes any modification in the terms & conditions of the tender which is not acceptable to the department after expiry of 7 days after last date of submission of bids, then the Government shall without prejudice to any other right or remedy, be at liberty to forfeit 100% of the earnest money absolutely irrespective of letter of acceptance for the work is issued or not.
- (iii) Withdrawal of the tender, by the tenderer, shall only be made through e-tender portal. Any other method i.e. through letter / e-mail etc. shall not be considered. If any tenderer withdraws his tender or makes any modifications in the terms and conditions of the tender which is not acceptable to the department after expiry of 7 days after the last date of submission of bids, then the Government shall without prejudice to any other right or remedy, be at liberty to forfeit 100% of the earnest money absolutely irrespective of letter of acceptance for the work is issued or not.
- (iv) In case of forfeiture of earnest money as prescribed in para (i) and (ii) above, the bidders shall not be allowed to participate in the rebidding process of the same work and also the Government shall, without prejudice to any other right or remedy, be at liberty to suspend the agency for one year and shall not be eligible to bid for CPWD tenders from date of issue of suspension order

18. This Notice Inviting bid shall form a part of the contract document. The successful bidder/contractor, on acceptance of his bid 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 bid, all the documents including additional conditions, specifications and drawings, if any, forming part of the bid as uploaded at the time of invitation of bid and rates quoted online at the time of submission of bid and acceptance thereof together with any correspondence leading thereto.
- (b) Standard CPWD Form-7 or other Standard CPWD Form as applicable.

19. For Composite Bids

19.1 The Executive Engineer in charge of the major component will call bids for the composite work. The cost of bid document and earnest money will be fixed with respect to the combined estimated cost put to tender for the composite bid.,

19.2 The bid document will include following four components: -

Part A: CPWD-6, CPWD-7 including schedule A to F for the major component of the work, Standard General Conditions of Contract (Construction Works)- 2023 of CPWD works as amended/modified up to last date of submission of bids.

General / special conditions, specifications and particular specifications of civil component(s) of the work.

Part B: Elect. Work: Schedule A to F for minor component of the work (competent authority under clause 2 and clause 5 shall be same authority as mentioned in schedule A to F for major components), General / special conditions, specifications of the work.

Part-C: Schedule of Quantity (Civil & Electrical) and proforma for quoting rates.

(i) The building & road category contractor shall have to associate other agency(s) for execution of each of the work(s), which fulfils the eligibility criteria as defined after taking prior approval. The Composite Contractor and the associated specialized agencies shall give required affidavit to confirm their association. Tender accepting authority may approve change of sub agency in case it is required during the currency of contract. However, the building & road category contractor shall also be eligible to carry out himself any or all of these works without associating any specialized agency provided: -

a) He fulfills the prescribed eligibility criteria respectively for these work(s).

OR

b) He directly procures the equipment of approved make from manufacturer and gets it installed from authorized agency/ service provider of the manufacturer or specialized agency as per criteria mentioned.

Sl. No.	Specialized work(s)/ item of work(s)	Criteria of associated agencies
i)	Electrical Works	a) Certificate of registration of CPWD in appropriate class of building & Road category. b) Electrical contractor license OR undertaking that they will either obtain valid electrical license at the time of execution of electrical work or associate contractor having valid electrical license of appropriate class.

19.3 The bidders must associate himself, with agencies as per NIT conditions.

19.4 The eligible bidders shall quote percentage rate for all items of major component as well as for minor components of work.

19.5 After acceptance of the bid by competent authority, the EE in charge of major component of the work shall issue letter of award on behalf of the President of India. After the work is awarded, the main contractor will have to enter into one agreement with EE in charge of major component and has also to sign two or more copies of agreement depending upon number of EE-in-charge of minor components. One such signed set of agreement shall be handed over to EE-in-charge of minor component(s).

EE of major component will operate **Part-A, Part-C (Civil Component)** of the agreement. EE in charge of minor component(s) shall operate **Part-B**, along with Part – A & Part-C (**Elect. Component**) of the agreement.

19.6 Entire work under the scope of composite bid including major and all minor components shall be executed under one agreement.

19.7 Security Deposit will be worked out separately for each component corresponding to the estimated cost of the respective component of works.

19.8 The main contractor has to associate agencies for specialized component(s) conforming to eligibility criteria as defined in the bid document and has to submit detail of such agency(s)

to Engineer-in-charge of relevant component(s) within prescribed time, Name of the agency(s) to be associated shall be approved by Engineer-in-charge of relevant component(s).

- 19.9 In case the main contractor intends to change any of the above agency/ agencies during the operation of the contract, he shall obtain prior approval of Engineer-in-charge of relevant specialized component(s).

The new agency/ agencies shall also have to satisfy the laid down eligibility criteria. In case, Engineer-in-charge is not satisfied with the performance of any agency, he can direct the contractor to change the agency executing such items of work and this shall be binding on the contractor.

- 19.10 The main contractor has to enter into MoU with agency(s) associated by him. Copy of such MoU shall be submitted to EE in charge of each relevant component as well as to EE-in- charge of major component. In case of change of associate contractor, the main contractor has to enter into MoU/agreement with the new contractor associated by him.
- 19.11 Running payment for the major component shall be made by EE of major discipline to the main contractor. Running payment for minor components shall be made by the Engineer-in-charge of the discipline of minor component(s) directly to the main contractor. The MB shall be maintained independently by Engineer-in-Charge of major and minor components.
- 19.12A The Composite work shall be treated as complete when all the components of the work are complete. The completion certificate of the composite work shall be recorded by Engineer-in- charge of major component after record of completion certificate of all other components.
- 19.12B Final bill of whole work shall be finalized and paid by the EE of major component.
- 19.12C Engineer(s) in charge of minor component(s) will prepare and pass the final bill for their component of work and pass on the same to the EE of major component for inclusion in the final bill for composite contract.

20. In case of reduction in scope of work, no claim on account of reduction in value of work, loss of expected profit, consequential overheads etc. shall be entertained.
21. 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 contractor, the bid shall become invalid and processing fee shall not be refunded.
22. The intending bidders are required to update their profile in CPWD e-tender portal and to upload their bids well in advance of last date of submission of tender. Any issue related to updating profile/ uploading tender can be resolved through the concerned Executive Engineer & Senior Manager (Civil)-1 (email id amrit.garg@gov.in) or ERP help line no. 18001803286 or e-mail id cpwd.support@techmahindra.com. The e-tendering bidders are also advised not to wait to raise any issue till the last date of submission of bid in their own interest.
23. **List of mandatory Documents to be scanned and uploaded within the period of bid submission:**

1. For CPWD enlisted contractors of appropriate class in “Building & Road” category

1.	Copy of receipt for deposition of original EMD to division office of any EE, CPWD. (Annexure-I)
2.	Copy of Insurance Surety Bonds / Account Payee Demand Draft / Fixed Deposit Receipt / Banker's cheque and Bank Guarantee of any Commercial Bank towards EMD in favour of EE&SM(C)Sirmaur-1, CPWD, Dhaula Kuan, IIM Sirmaur (H.P.)

3.	<p>GST registration Certificate if already obtained by the bidder. (Annexure-III)</p> <p>If the bidder has not obtained GST registration as applicable, then he shall scan and upload following undertaking along with bid documents.</p> <p>"If work is awarded to me, I/we shall obtain GST registration certificate, as applicable, within one month from the date of receipt of award letter or before release of any payment by CPWD, whichever is earlier, failing which I/we shall be responsible for any delay in payments which will be due towards me/us on account of the work executed and/or for any action taken by CPWD or GST department in this regard".</p>
4.	Copy of Enlistment Order for CPWD Contractors who are enlisted in appropriate Class of "Building & Road" Category
5.	<p>Uploading of valid electrical license of eligible class</p> <p>Or</p> <p>Uploading of undertaking for obtaining valid electrical license at the time of execution of electrical work or association of Contractor having valid electrical license of eligible class.</p>
6.	Declaration about Non-Blacklisting as per Form-A .
7.	Declaration about Site inspection as per Form-C .
8.	An undertaking from the OEMs for specialized E& M works in Form-B.
9.	Any other document as specified in the NIT.

If any document not scanned and uploaded while submitting bid, the bid submitted shall become invalid and will not be considered in e-Tender process and the bidders shall be summarily rejected.

- 24.** Goods & Service Tax (GST), construction Worker's Welfare Cess, Education Cess, etc. shall be payable by the contractor and Government will not entertain any claim whatsoever in respect of the same.
- 25.** GST or any other tax applicable in respect of inputs procured by the contractor for this contract shall be payable by the Contractor and Government will not entertain any claim whatsoever in respect of the same. However, component of GST at time of supply of service (as provided in CGST Act 2017) provided by the contract shall be varied if different from that applicable on the last date of receipt of tender including extension, if any.
- 26.** The ESI and EPF contribution on the part of employer in respect of this contract shall be paid by the contractor. These contributions on the part of the employer paid by the contractor shall be reimbursed by the Engineer-in-Charge to the contractor on actual basis. The applicable and eligible amount of EPF & ESI shall be reimbursed preferably within 7 days but not later than 30 days of submission of documentary proof of payment provided same are in order.

Executive Engineer & Senior Manager(C)Sirmaur-1,
IIM Sirmaur Project, CPWD, Dhaula Kuan
(For & on behalf of President of India)

GLOSSARY

AAI	Airport Authority of India
AE / AEE	Assistant Engineer / Assistant Executive Engineer
BIM	Building Information Management
BIS	Bureau of Indian Standards
C & D Waste	Construction & Demolition Waste
COA	Council of Architecture
CPI	Consumer Price Index
CE cum ED	Chief Engineer cum Executive Director
CPWD	Central Public Works Department
DDH	Deputy Director Horticulture
DLP	Defects Liability Period
DSR	Delhi Schedule of Rates
ECPT	Estimated Cost Put to Tender
EE	Executive Engineer
EE & SM (C)	Executive Engineer & Senior Manager (Civil)
EE& SM (E)	Executive Engineer & Senior Manager (Electrical)
EM	Earnest Money
GCC	General Conditions of Contract
GHAR	Green Habitat Accomplished Rating
GRIHA	Green Rating for Integrated Habitat Assessment
HSE	Health Safety & Environment
IGBC	Indian Green Building Council
IPC	Interim Payment Certificate
IS	Indian Standard
MAS	Material at Site
MEP	Mechanical Electrical Plumbing
MT	Metric Tonne
MTC	Material Testing Certificate
NBC	National Building Code
NGT	National Green Tribunal
NIT	Notice Inviting Tender

OEM	Original Equipment Manufacturer
PPE	Personal Protection Equipment
SAP	Safety Action Plan
SOP	Schedule of Payment
SOQ	Schedule of Quantities
STP	Sewage Treatment Plant
TDS	Tax Deduction at Source
TPQAA	Third Party Quality Assurance Agency
WPI	Wholesale Price Index
WTP	Water Treatment Plant
SPCB	State Pollution Control Board
MoEF	Ministry of Environment and forest
EIFS	External Insulation Façade System
E & M	Electrical & Mechanical
CPCB	Central Pollution Control Board
LAN	Local Area Network
WAN	Wide Area Network
HVAC	Heat Ventilation and Air Conditioning
CAD	Computer Aided Design
TMT	Thermo Mechanically Treated
CRS	Corrosion Resistant Steel
OPC	Ordinary Portland cement
PPC	Pozzolana Portland Cement
ASG	Anti-Smog Gun

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

Executive Engineer and Senior Manager (Civil)Sirmaur-1, IIM Sirmaur Project, CPWD, Dhaula Kuan, Sirmaur, Himachal Pradesh on behalf of President of India invites online percentage rate bids from CPWD enlisted contractors of appropriate class in “Building & Road” category for the following work: -

Sr. No.	NIT No	Name of work & Location	Estimated Cost put to tender	Earnest Money	Period of Completion	Last date and time of submission of bid, and other documents as specified in the notice/bid document	Time & Date of opening of Technical Bid
1	2	3	4	5	6		8
1	07/SE cum PD/IIM Sirmaur/2026-27	Name of work: Development of Permanent Campus of IIM Sirmaur at Dhaula Kuan, District Sirmaur, Himachal Pradesh. SH: C/o Student Hostel-Type A, B, C, Married Hostel, Connecting Corridor Hostels, Student Mess, Student Activity Center, Virtual Learning Centre, Director Residence, internal sanitary, plumbing and electrical installations, development and external services work like water supply line, sewerage, firefighting, electrical line, road work etc. in all over phase-I. <u>(SH:- Balance work)</u>	Rs.6,26,99,792-	Rs.12,53,996/-	3.0 Months	*** UPTO 15:00 Hrs on 07.11.2026	*** UPTO 15:30 Hrs on 07.11.2026

1.0 General:

- The contractor submitting the tender should read the schedule of quantities, additional conditions, additional specifications, particular specifications, CPWD- 6 and other terms and conditions given in the NIT and drawings. The bidder should also read the General Conditions of Contract of 2023 Construction Work of CPWD Works with upto date correction slips, which is available as Government of India Publications; however, provisions included in the tender document shall prevail over the provisions contained in the standard form. The set of NIT shall be available in the office of **Executive Engineer and Senior Manager (Civil)-1, IIM Sirmaur Project Division, CPWD, Dhaula Kuan, Sirmaur, Himachal Pradesh**. The contractor should also visit the site of work and acquaint himself with the site conditions before tendering. He should only submit his tender if he considers himself eligible and he is in possession of all the required documents. The following conditions, which already form part of the tender conditions, are specially brought to his notice for compliance while submitting the tender online. They are requested to comply following instructions.

(A) Tenders with any condition including that of conditional rebates shall be rejected forthwith.

- (B) The successful bidder shall be required to submit :
- (a) **Performance Guarantee of 5% (Five Percent)** of the tendered amount or estimated cost put to tender (whichever is higher).
 - (b) Where the tendered amount is less than 80% of Estimated Cost put to tender (ECPT), the PG in addition to the requirement under (a) shall be increased by an amount equal to the difference between 80% of the ECPT and the tendered amount.
within **07 days** of issue of letter of intent. This period can be further extended by Engineer-in-Charge up to a maximum period of **03 day** on the written request of the contractor and with late fee as defined in Schedule F.
- (C) GST, Work Contract Tax, Labour Cess etc. as applicable shall be borne by the contractor himself. The contractor shall quote his rates considering all such taxes and hence their quoted rates should be inclusive of all the tax components.
- (D) It will be obligatory on part of the Contractor/ Bidder to tender for 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.
- 1.1 Over writing should be avoided. Corrections, if any, should be made by neatly crossing out, initialing, dating and rewriting. Pages of the eligibility criteria document are numbered. Additional Sheets, if any, added by the Bidder should also be numbered by him. They should be submitted as a package with signed letter of transmittal.
 - 1.2 The bidder may furnish any additional information, which he thinks is necessary to establish his capabilities to successfully complete envisaged work. He is, however advised not to furnish superfluous information.
 - 1.3 No information/documents shall be entertained after submission of bid unless it is required to clarify the query raised by Employer. No fresh/revised mandatory document is permitted at this stage.

2.0 Definitions:

- 2.1 In this document, the following words and expression have their meaning here by assigned to them.
- 2.2 EMPLOYER means the President of India, acting through **the Executive Engineer & Senior Manager(C)Sirmaur-1, IIM Sirmaur Project, CPWD, Dhaula Kuan, Sirmaur, HP.**
- 2.3 Bidder: Means the individual, proprietary firm, firm in partnership, limited company, private or public or corporation.
- 2.4 "YEAR" means "Financial year" unless stated otherwise.

3.0 Method of Application:

- 3.1 If the bidder is an individual, the application shall be signed by him above his/her full type written name and current address.
- 3.2 If the bidder is a proprietary firm, the application shall be signed by the proprietor above his/her full typewritten name and the full name of his firm with its current address.
- 3.3 If the bidder is a firm in partnership, the application shall be signed by all the partners of the firm above their full typewritten names and current addresses or alternatively, by a partner holding power of attorney for the firm. In the latter case, a certified copy

of the power of attorney should accompany the application. In both the cases, a certified copy of the partnership deed and current address of all the partners of the firm should accompany the application.

- 3.4 If the bidder is a limited company or a corporation, the bid shall be signed by a duly authorized person holding power of attorney for signing the application accompanied by the copy of the power of attorney. The bidder should also furnish a copy of memorandum of articles of association duly attested by a Public Notary.

4.0 Final Decision Making Authority:

The Employer reserves the right to accept or reject any bid and to annul the process and reject all bids at any time without assigning any reason or incurring any liability to the bidders.

5.0 Particulars of works:

The particulars of the work given in this document are provisional. They are liable to change and must be considered only as advance information to assist the bidder.

6.0 Site Visit:

The bidder is advised to visit the site of work, at his own cost, and examine it and its surroundings to himself collect all information that he considers necessary for proper assessment of the prospective assignment. The Bidder is also required to submit a declaration of site visit (Declaration to be scanned and uploaded within the period of bid submission:

- 7 The bid document consisting of plans, specifications, schedule of quantities of various types of items to be executed and the set of terms & conditions of the contract to be complied with and other necessary documents except Standard Conditions of Contract Form can be seen and downloaded from website <https://etender.cpwd.gov> in or www.cpwd.gov.in free of cost.
- 8 But the bid can only be submitted after deposition of original EMD either in the office of Executive Engineer inviting bids or Division office of any Executive Engineer, CPWD within the period of bid submission and uploading the mandatory scanned documents such as Insurance Surety Bonds, Account Payee Demand Draft or Fixed Deposit Receipt or Banker's cheque or Bank Guarantee including e- Bank Guarantee (for balance amount as prescribed) from any of the commercial banks towards EMD in favour of **Executive Engineer & Senior Manager (C)Sirmaur-1, CPWD, Dhaula Kuan, IIM Sirmaur (H.P.)**, receipt of original EMD to division office of any Executive Engineer (including NIT issuing EE), CPWD and other documents as specified.
- 9 Those contractors, who are not registered or have not updated their profile on the website mentioned above, are required to get registered / update their profile beforehand. The necessary training materials including the videos with step-to-step process are available on download section of the website <https://etender.cpwd.gov.in>.
- 10 The intending bidder must have valid class-III digital signature certificate with encryption key (combo type) to perform any operations / transactions on the e-tendering portal/website and the bidder should download and install the **emSigner** on their system as per instructions available on download section of <https://etender.cpwd.gov.in>. **Only e-bid shall be accepted.**

- 11 On opening date, the Bidder can login and see the bid opening process. After opening of bids, he will receive the competitor bid sheets.
- 12 Bidder can upload documents in the form of JPG format and PDF format.
- 13 After submission of the bid, the agency can re-submit revised bid any number of times but before last time and date of submission of bid as notified.
- 14 GST registration certificate, if already obtained by the bidder.

If the bidder has not obtained GST registration as applicable, then he shall scan and upload following undertaking along with bid documents.

"If work is awarded to me, I/we shall obtain GST registration certificate, as applicable, within one month from the date of receipt of award letter or before release of any payment by CPWD, whichever is earlier, failing which I/we shall be responsible for any delay in payments which will be due towards me/us on account of the work executed and/or for any action taken by CPWD or GST department in this regard".

- 15 The bid submitted shall become invalid and e-bidding processing fee shall not be refunded if:
 - (i) The bidder is found ineligible.
 - (ii) The bidder does not deposit EMD with division office of any Executive Engineer, CPWD.
 - (iii) 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 bidder in the office of bid opening authority.
- 16 The Agency shall submit within 30 days after award of work an undertaking from the OEMs for specialized E&M works of Substation, D G set, Lifts, Fire-fighting, Fire Alarm, Ventilation, EPABX, CCTV, STP etc. that;

"OEM shall unconditionally support the lowest bidder technically throughout the execution of contract as well as for Maintenance/Comprehensive Maintenance Contract for the useful life of the system, and they shall also provide all the spares required for the healthy functioning of the equipment for at least seven years from the date of supply of equipment". This undertaking is to be given in Form- HH.

**EE and SM (C)S-1,
IIM Sirmaur Project, CPWD,
Dhaura Kuan, Sirmaur (H.P.)
(For and on behalf of President of India)**

FORM 'A'

PROFORMA OF AFFIDAVIT FOR NON - BLACK LISTING

I/we undertake and confirm that our firm / partnership firm has not been blacklisted by any state /Central Departments /PSUs /Autonomous bodies during the last 7 years of its operations. Further that, if such information comes to the notice of the department, then I / we shall be debarred for bidding in CPWD in future forever. Also, if such information comes to the notice of department on any day before date of start of work, the Engineer-in-charge shall be free to cancel the agreement and to forfeit the entire amount of Earnest Money Deposit/ Performance Guarantee **(Scanned copy of this notarized affidavit to be uploaded at the time of submission of bid)**

NOTE: Affidavit to be furnished on a 'Non-Judicial' stamp paper worth Rs.100/-

Signature of Bidder(s) or an authorized
person of the firm with stamp

Signature of Notary with seal

UNDERTAKING FOR ASSOCIATION OF SPECIALISED AGENCY FOR E & M

Name of work: Development of Permanent Campus of IIM Sirmaur at Dhaula Kuan, District Sirmaur, Himachal Pradesh. SH: C/o Student Hostel-Type A, B, C, Married Hostel, Connecting Corridor Hostels, Student Mess, Student Activity Center, Virtual Learning Centre, Director Residence, internal sanitary, plumbing and electrical installations, development and external services work like water supply line, sewerage, firefighting, electrical line, road work etc. in all over phase-I.

(SH:- Balance work)

NIT No: - 07/SE cum PD/IIM Sirmaur/2026-27

We undertake that we shall submit within 15 days after award of work an undertaking from the OEMs for specialized E&M works of Lifts & DG Sets etc that "OEM shall unconditionally support the lowest bidder / tenderer technically throughout the execution of contract as well as for Maintenance / Comprehensive Maintenance Contract for the useful life of the system, and they shall also provide all the spares required for healthy functioning of the equipment for at least seven years from the date of supply of equipment".

Signature of bidder(s) with stamp

DECLARATION ABOUT SITE INSPECTION

Name of work: Development of Permanent Campus of IIM Sirmaur at Dhaula Kuan, District Sirmaur, Himachal Pradesh. SH: C/o Student Hostel-Type A, B, C, Married Hostel, Connecting Corridor Hostels, Student Mess, Student Activity Center, Virtual Learning Centre, Director Residence, internal sanitary, plumbing and electrical installations, development and external services work like water supply line, sewerage, firefighting, electrical line, road work etc. in all over phase-I.

(SH:- Balance work)

NIT No: - 07/SE cum PD/IIM Sirmaur/2026-27

I/We undertake and confirm that I/We have visited the whole site of proposed work and seen all the approaches to the site. We have studied the soil investigation report of the site and satisfied ourself about complete characteristics of the soil, topography of the site and other parameters. In case, any approach from the main road is required at site or existing approach to be improved and maintained for cartage of materials for execution of work, the same shall be provided, improved and maintained by us at our own cost and nothing shall be claimed on this account by us.

(Scanned copy to be uploaded at the time of submission of bid)

Signature of Bidder(s)
or an authorized person of the firm with stamp.

Annexure- I

Receipt of deposition of original EMD

(Receipt No...../ date.....) #

Name of work: Development of Permanent Campus of IIM Sirmaur at Dhaula Kuan, District Sirmaur, Himachal Pradesh. SH: C/o Student Hostel-Type A, B, C, Married Hostel, Connecting Corridor Hostels, Student Mess, Student Activity Center, Virtual Learning Centre, Director Residence, internal sanitary, plumbing and electrical installations, development and external services work like water supply line, sewerage, firefighting, electrical line, road work etc. in all over phase-I.

(SH:- Balance work)

NIT No: - 07/SE cum PD/IIM Sirmaur/2026-27

Estimated Cost **Rs. Rs. 6,26,99,792/-**

Earnest Money: **Rs. Rs. 12,53,996/-**

Period of completion: **3.0 months**

- 1) Name of contractor #
- 2) Form of EMD #
- 3) Amount of Earnest Money #
- 4) Date of submission of EMD #

Signature, Name and Designation of
EMDreceiving officer (EE/AE(P)/
AE/AAO) along with Office stamp
(# to be filled by EMD receiving EE)

ANNEXURE-II

Guarantee offered by Bank to CPWD in connection with the execution of contracts on
Minimum Rs. 100 /- Non judicial stamp paper)
**Form of Bank Guarantee for Earnest Money Deposit / Performance Guarantee /
Security Deposit / Mobilization Advance**

1. Whereas the Executive Engineer(name of division)....., CPWD on behalf of the President of India (hereinafter called ("The Government")) has invited bids under(NIT Number) dated for.....(name of work) The Government has further agreed to accept irrevocable Bank Guarantee for

Rs.....(Rupees.....only) valid

upto (date)* as Earnest Money Deposit from (name and address of contractor).....(here in after called "the contractor") for compliance of his obligations in accordance with the terms and conditions of the said NIT.

OR**

Whereas the Executive Engineer(name of division)....., CPWD on behalf of the President of India (here in after called ("The Government")) has entered into an agreement bearing number with (name and address of the contractor).....(herein after called "the contractor") for execution of work (name of work) The Government has further agreed to accept irrevocable Bank Guarantee for Rs.....(Rupeesonly) valid upto (date)* as Performance Guarantee / Security Deposit / Mobilization Advance from the said contractor for compliance of his obligations in accordance with the terms and conditions of the agreement.

1. We,(indicate the name of the bank)(herein after referred to as "the bank"), hereby undertake to pay to the Government an amount not exceeding Rs.(Rupees.....only) on demand by the Government within 10 days of the demand.
2. We,(indicate the name of the Bank), do here by undertake to pay the amount due and
3. payable under this guarantee without any demur, merely on demand from the Government stating that the amount claimed is required to meet the recoveries due or likely to be due from the said Contractor. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this Guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs.(Rupees.....only)
4. We,(indicate the name of the Bank), further undertake to pay the Government any money so demanded notwithstanding any dispute or disputes raised by the contractor in any suit or proceeding pending before any Court or Tribunal, our liability under this Bank Guarantee being absolute and unequivocal. The payment so made by us under this Bank Guarantee shall be a valid discharge of our liability for payment there under and the Contractor shall have no claim against us for making such payment.
5. We,(indicate the name of the Bank), further agree that the Government shall have the fullest liberty without our consent and without affecting in any manner our obligation here under to vary any of the terms and conditions of the said agreement or to extend time of performance by the said contractor from time to time or to postpone for any time or from time to time any of the powers exercisable by the Government against the said contractor and to forbear or enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such variation or extension being granted to the said Contractor or for any forbearance, act of omission on the part of the Government or any indulgence by the government to the said Contractor or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.
6. We,(indicate the name of the Bank), further agree that the Government at its option shall be entitled to enforce this guarantee against the Bank as a principal debtor at the first instance without proceeding against the

- Contractor and not with standing any security or other guarantee the government may have in relation to the Contractor's liabilities.
7. The guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor.
 8. We,(indicate the name of the Bank)....., undertake not to revoke this guarantee except with the consent of the Government in writing.
 9. This Bank Guarantee shall be valid up to unless extended on demand by the Government. Not with standing anything mentioned above, our liability against this guarantee is restricted to Rs(Rupees only) and unless a claim in writing is lodged with us within the date of expiry or extended date of expiry of of this guarantee, all our liabilities under this guarantee shall stand discharged.

Date :

Witness :

1. Signature

Name and address

Authorized Signatory

Name

Designation

Staff code No.

Bank Seal

2. Signature

Name and address

*Date to be worked out on the basis of validity period of 90 days where only financial bids are invited and 180 days for two/three bid system from the date of submission of tender.

** In paragraph 1, strike out the portion not applicable. Bank Guarantee will be made either for earnest money or for performance guarantee / security deposit / mobilization advance, as the case may be.

**UNDERTAKING REGARDING GST REGISTRATION IN THE STATE OF HIMACHAL
PRADESH**

To,

**EE and SM (C)S-1,
IIM Sirmaur Project, CPWD, Dhaula
Kuan IIM Sirmaur, (H.P.)**

Name of Work :- Development of Permanent Campus of IIM Sirmaur at Dhaula Kuan, District Sirmaur, Himachal Pradesh. SH: C/o Student Hostel-Type A, B, C, Married Hostel, Connecting Corridor Hostels, Student Mess, Student Activity Center, Virtual Learning Centre, Director Residence, internal sanitary, plumbing and electrical installations, development and external services work like water supply line, sewerage, firefighting, electrical line, road work etc. in all over phase-I.

(SH:- Balance work)

Sir,

Having examined the details given in press notice and bid document for the above work, I/We hereby submit the following.

“ If work is awarded to me, I/We shall obtain GST registration certificate as applicable, within one month from the date of receipt of award letter or before release of any payment by CPWD, whichever is earlier, failing which I/We shall be responsible for any delay in payments which will be due towards me/us on account of the work executed and /or for any action taken by CPWD or GST department in this regard”.

Seal of

bidder. Date

of submission

Signature(s) of bidder(s)

BRIEF PARTICULARS OF THE WORK

Salient details of the work for which bids invited are as under:

Sr. No.	Name of Work	Estimated Cost	Period of completion
1.	Name of work: Development of Permanent Campus of IIM Sirmaur at Dhaula Kuan, District Sirmaur, Himachal Pradesh. SH: C/o Student Hostel-Type A, B, C, Married Hostel, Connecting Corridor Hostels, Student Mess, Student Activity Center, Virtual Learning Centre, Director Residence, internal sanitary, plumbing and electrical installations, development and external services work like water supply line, sewerage, firefighting, electrical line, road work etc. in all over phase-I. <u>(SH:- Balance work)</u>	Rs. 6,26,99,792/-	3.0 months

1. The work is situated at **IIM Sirmaur, Dhaula Kuan, District Sirmaur, Himachal Pradesh.**
2. The site is located in forest area in partly hilly and rocky terrain. Agency needs to inspect the site in detail to understand the approach, resources availability etc. before quoting the rates. After award of work, excuses on this regard will not be acceptable.
3. Work shall be executed according to General Conditions of Contract 2023 for Construction Work of CPWD Form 7 for Central P.W.D. Works as amended/corrected up to the last date of submission of bids.

**GOVERNMENT OF INDIA
CENTRAL PUBLIC WORKS DEPARTMENT**

STATE: H.P.
BRANCH: B&R

REGION: ADG-Chandigarh
DIVISION: IIM Sirmaur Project

COMPOSITE PERCENTAGE RATE TENDER & CONTRACT FOR WORKS

Tender for the work of: Development of Permanent Campus of IIM Sirmaur at Dhaula Kuan, District Sirmaur, Himachal Pradesh. SH: C/o Student Hostel-Type A, B, C, Married Hostel, Connecting Corridor Hostels, Student Mess, Student Activity Center, Virtual Learning Centre, Director Residence, internal sanitary, plumbing and electrical installations, development and external services work like water supply line, sewerage, firefighting, electrical line, road work etc. in all over phase-I.

(SH:- Balance work)

- (i) To be uploaded by the Executive Engineer and Senior Manager (Civil)S-1, CPWD, Dhaula Kuan, Sirmaur, Himachal Pradesh **upto 15:00 Hrs. on 07.11.2026**
- (ii) To be opened in presence of tenderers who may be present at **15.30 Hrs. on 07.11.2026** in the office of Executive Engineer and Senior Manager (Civil)S-1, CPWD, Dhaula Kuan, Sirmaur, Himachal Pradesh.

T E N D E R

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 tender document for the work.

I/We hereby tender for the execution of the work specified for the President of India within the time specified in Schedule 'F' viz., schedule of quantities and in accordance in all respect with the specifications, designs, drawing 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 respect of accordance with, such conditions so far as applicable.

I/We agree to keep the tender open for **30 (Thirty) Days** from the date of opening of technical bid and not to make any modification in its terms and conditions.

I/We have deposited EMD for the prescribed amount in the office of concerned Executive Engineer as per the bid document.

In respect of portion of EMD prescribed in the shape of BG, the scanned copy of original Bank Guarantee including e-Bank Guarantee (as applicable) of any commercial bank having validity for a period of 90 days for single bid and 180 days for two bid systems or more from the last date of receipt of bids (strike out as the case may be), is to be uploaded. If I/We, fail to furnish the prescribed performance guarantee within prescribed period, I/We agree that the said President of India 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 President of India or the 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 and 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.

I/We undertake and confirm that eligible similar work(s) has/have not been got executed through another contractor on back to back basis. Further that, if such a violation comes to the notice of Department, then I/We shall be debarred for tendering in CPWD in future forever. Also, if such a violation comes to the notice of Department before date of start of work, the Engineer-in-Charge shall be free to forfeit the entire amount of Earnest Money Deposit/Performance Guarantee.

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 & integrity of the State.

Dated

Signature of Contractor

Witness:

Postal Address

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 President of India for a sum of

Rs.....

(Rupee.....)

.....)

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

a)

b)

c)

(For & on behalf of the President of India)

Signatures

Dated:

Designation

SCHEDULES (A to F) FOR CIVIL WORK

SCHEDULE 'A'

Schedule of quantities- As per Page-129-138

SCHEDULE 'B'

Schedule of materials to be issued to the contractor

S.No.	Description of item.	Quantity.	Rate in figures & words at which the material will	Place of issue be charged to the contractor
(1)	(2)	(3)	(4)	(5)

NIL

SCHEDULE 'C'

Tools and plants to be hired to the contractor

S.NO.	DESCRIPTION.	HIRE CHARGES PER DAY	PLACE OF ISSUE
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NIL

SCHEDULE 'D'

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

1. Special conditions
2. Special Condition for Structural Steel work
3. Particular Specifications.
4. Form of performance security (Bank Guarantee Bond), Earnest Money deposit declaration form, guaranteebond for water proofing/sanitary installations/water supply/for removal of defects in Stone/tile work etc.

SCHEDULE 'E'

Reference to General Conditions of Contract: General Conditions of Contract of 2023 Construction Work of CPWD works as amended up to last date of submission of bids.

Name of work: Development of Permanent Campus of IIM Sirmaur at Dhaula Kuan, District Sirmaur, Himachal Pradesh. SH: C/o Student Hostel-Type A, B, C, Married Hostel, Connecting Corridor Hostels, Student Mess, Student Activity Center, Virtual Learning Centre, Director Residence, internal sanitary, plumbing and electrical installations, development and external services work like water supply line, sewerage, firefighting, electrical line, road work etc. in all over phase-I.

(SH:- Balance work)

Estimated Cost of work: - **Rs. 6,26,99,792/-**

For Civil component **Rs. 3,37,34,974/-**

For Electrical component **Rs.2,89,64,818/-**

Earnest Money : **Rs.12,53,996/-**

Performance Guarantee (a) 5.00% of tendered value or Estimated cost put to Tender (ECPT) (**whichever is higher**)

(b) Where the tendered amount is less than eighty percent (80%) of the Estimated Cost put to Tender (ECPT), the Performance Guarantee, in addition to the requirement under (a) above shall be increased by an amount equal to the difference between eighty percent (80%) of the ECPT and

the tendered amount.

(PG should be initially valid up to the stipulated date of completion plus minimum 6 months beyond that)

Security Deposit

2.50% of accepted tendered value (Composite)

EE(Civil) will deduct @2.5% of accepted tendered value for civil part and EE(E) will deduct@2.5% of Elect. accepted tendered value in each running bill.

However total @2.5% of accepted tendered value (composite) will be deducted in final bill by EE(Civil).

SCHEDULE 'F':

General Rules & Directions: -

1. Officer Inviting Tender

Executive Engineer and Senior Manager (Civil)S-1,
IIM Sirmaur Project division, CPWD, Dhaula Kuan,
Sirmaur, HP or his Successor thereof.

Maximum percentage for
quantity of items of work to be
executed beyond which rates
are to be determined in
accordance with Clauses 12

See below under Clause-12

Definitions: -

2(i) Engineer-In-Charge

Executive Engineer and Senior Manager (Civil)
Sirmaur-1, IIM Sirmaur Project Division, CPWD,
Dhaulta Kuan, Sirmaur, HP or his Successor
thereof.

2(ii) Accepting Authority

SE cum PD, IIM Sirmaur Project
or his successor thereof.

2(iii) Percentage on cost of materials and labour to
cover all overheads and profits

15%

2(iv) Standard Schedule of Rates

DSR 2023 for Civil component and DSR 2025 for Electrical
component with upto date correction slips issued upto
last date of submission of bid.

2(v) Department

Central Public Works Department

2(vi) Standard CPWD Contract Form

General Conditions of Contract of 2023 for
Construction works, CPWD Form 7 as amended/
modified upto the last date of submission of bids.

Clause-1 :

(i) Time allowed for submission of
performance guarantee, programme chart
(Time and Progress) and applicable
labour licenses, registration with EPFO,
ESIC and BOCW Welfare Board,
Provident Fund Nos. or proof of applying
thereof from the date of issue of letter of
acceptance.

07 days

(ii) Maximum allowable extension with
late fee @0.1% per day of the
performance guarantee amount beyond
the period provided in (i) above.

03 days

Clause 1A

Applicable

The defect liability period shall be 01 (One) year after the date of completion of work for this contract agreement. Security deposit shall be released as detailed below.

a) 1.00 % after 12 months of issue of the completion certificate

Clause-2 :

Authority for fixing compensation
Under clause 2

SE cum PD,
IIM Sirmaur Project
or his Successor thereof.

Clause-5:

Number of days from the date of
issue of letter of acceptance for
reckoning date of start

10 days

Clause 5.1

The contractor as soon as possible but within
7 days of issue of letter of award
of work shall submit time and progress chart
To the engineer-in-charge.

Time and progress chart
to be submitted within 7 days
of issue of LOA

Schedule of rate of recovery for delay
in submission of Time and Progress
Chart

Rs.10,000 per week

Clause 5.2 Delays due to reasons beyond control of both
the parties

Applicable

Clause 5.3 Delays attributable to the department

Applicable

Clause 5.4

Schedule of rate of recovery for delay in
submission of the modified program in
terms of per day of delay in days

Rs.1,000 per day

Mile Stone

Refer Para (A) Table of Milestones

Time allowed for execution of work

3.0 months

Authority to decide

i. Extension of time

SE cum PD, IIM Sirmaur Project or
his successor thereof.

ii. Authority to convey the
decision of shifting of milestone
and extension of time

Exe. Engineer and Senior Manager (C)S-1
IIM Sirmaur Project, CPWD,
Dhaura Kuan, Sirmaur, HP or his Successor thereof.

iii Re-scheduling of Mile stones

SE cum PD, IIM Sirmaur Project,
or his Successor thereof.

iv Shifting of date of start in case of
delay in handing over of site

SE cum PD, IIM Sirmaur Project,
or his Successor thereof.

Schedule of handing over of site: -

Part	Portion of site	Description	Time period for handing over reckoned from date of issue of letter of intent
Part A	Portion without any hindrance	100% site is available.	Immediately after / within 10 days of award of work.
Part B	Portions with encumbrances	Nil	***
Part C	Portions dependent on work of other agencies	Nil	***

*** To be filled by Executive Engineer

Clause-6

(i) Mode of measurement **CMB**

I. 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

I. Civil Rs. 100.00 Lakhs
II. Electrical Rs.100.00 Lakhs

However to expedite the progress of work, Engineer-in-charge on the request of contractor, may make interim payment(s) even before the net payment limit specified in schedule 'F' is achieved. In such case(s) no interest/compensation shall be recoverable from contractor.

Such payment by Engineer-in-Charge shall not be construed as waiver of limit specified in schedule 'F' for subsequent interim payment(s).

Clause-7A:-

Regarding applicability of labour laws: Yes,
Applicable Related to Labour license, registration of contractor with EPFO, ESIC and BOCW welfareboard i/c Provident Fund

(Note: - No running account bill shall be paid in the work till the applicable labour license, registration with EPFO, ESIC, BOCW welfare board including Provident Fund Code No., if applicable, whatever applicable are submitted by the contractor to the Engineer-in-charge.)

Clause 8:-

Competent Authority to inspect and issue part/Final completion Certificate.

Executive Engineer and Senior Manager (Civil)Sirmaur-1, IIM Sirmaur Project, CPWD, Dhaula Kuan, Sirmaur, HP or his Successor thereof.

&
SE cum PD, IIM Sirmaur Project or his

successor thereof

Clause 8A:-

Authority to decide compensation on account
if contractor fails to submit completion plans

Engineer-in-charge
(Penalty @ 0.1% of Tendered
Amount shall be levied for
non-compliance).

Clause-10A:- All necessary equipment for conducting all necessary tests shall be provided at the site in the wellfurnished site laboratory of minimum area of 100 sqm. by the contractor at his own cost. (List of testing equipment to be provided by the contractor at site lab.)	(i)	Electronic/digital weighing balance (a) 7 kg to 10 kg capacity, semi-self indicating type-Accuracy 10 gm. (b) 500 gm capacity, semi-self indicating type-Accuracy 1gm.	1 No.
	(ii)	Cube Testing Machine	2 No.
	(iii)	Sieves set as per IS 460-1962 & sieve shaker	1 No.
	(iv)	Slump Cone	4 Nos.
	(v)	Oven	2 No.
	(vi)	Graduated Measuring Cylinder	2 Nos.
	(vii)	Enamel trays (for efflorescence test for bricks)	2 Set
	(viii)	Ultrasonic Pulse Velocity Test Equipment For concrete (1 No.) as and when required.	1 No.
	(ix)	Digital Rebound hammer	1 No.
	(x)	Measuring Steel Tape 3m (2 Nos.) & 15m (2 Nos.) and Laser Distance Meter of 200 metre range with Bluetooth connectivity	1 No.
	(xi)	Water testing kit	1 No. as & when required.
	(xii)	Digital PH meter least count 0.01 mm	1 No.
	(xiii)	Coating thickness testing gauge.	1 No.
	(xiv)	Digital paint thickness meter for steel 500 micron range.	1 No.
	(xv)	Other instruments: Vernier calipers, screw gauge, plumb bob, spirit level minimum 30 cm long with 3 bubbles, wire gauge (Circular type) disc, steel foot rule, long nylon thread, magnifying glass, moisture meter.	1 no. each
	(xvi)	ISI marked cube moulds 15x15x15cm	100 nos.
	(xvii)	Any other equipment for site tests as outlined in BIS codes.	As directed by the Engineer-in-charge
Note: The above list is only indicative and not exhaustive. The equipment of testing of materials as per actual site requirement to be provided as directed by Engineer-in-Charge.			

Clause-10-B (ii)

Whether clause 10-B (ii) shall be applicable

Applicable

Clause 10C: -

Applicable

Clause 10CC:

Not Applicable

Clause 10D

Applicable

Clause 11: Specifications to be followed for execution of work:

For Civil Items of work	<ol style="list-style-type: none">1. CPWD Specifications 2019, Volume- I and II as amended up to last date of submission of bid.2. CPWD Green Rating Manual 2021 as amended up to last date of submission of bid.3. CPWD Handbook on Safety, Health and Environment as amended up to last date of submission of bid.4. CPWD Manual on Accessible Built Environment 2019 as amended up to last date of submission of bid.5. Building information model (BIM) is applicable and certified BIM professional with appropriate experience to be deployed by contractor.
For Electrical items of work	<ol style="list-style-type: none">1. CPWD General Specification for Electrical Works Part I - Internal – 2023 with upto date correction slips.2. CPWD General Specification for Electrical Works Part II- External – 2023 with upto date correction slips.3. CPWD General Specification for Electrical Works Part III-Lift & Escalators – 2003 with upto date corrections slips.4. CPWD General Specification for Electrical Works Part IV - Substation – 2013 with upto date corrections slips.5. CPWD General Specification for Electrical Works Part V- Wet riser & sprinkler system – 2020 with upto date correction slips.6. CPWD General Specification for Electrical Works Part VI- Fire Detection and Alarm System – 2018 with upto date correction slips.7. CPWD General Specification for Electrical Works Part VII DG Sets – 2013 with upto date correction slips.8. CPWD General Specification for Electrical Works Part VIII - Gas Based Fire Extinguishing System - 2013.9. General Specification for Heating Ventilation & Air-Conditioning-2017 with upto date correction slips.10. GREEN AND GHAR RATING and Barrier Free and Accessibility norms. <p>All above specifications shall be applicable with corrections slips up to the last date of submission/uploading of bid.</p>
Order of Preference	<p>The order of preference in case of any discrepancy shall be as given below:</p> <ol style="list-style-type: none">a. Description of Schedule of Quantities

	b. Particular Specifications, Special Conditions, Additional Conditions in this document. c. Approved Drawings. d. CPWD Specifications as applicable with up-to-date corrections up to the last date of submission of bids. e. NBC 2016 with up-to-date corrections up to the last date of submission of bids. f. ECBC 2017. g. Indian Standard Specifications of BIS including upto date modifications / amendments. h. Manufacturer's specifications & as directed by the Engineer-in-Charge i. Sound engineering practices available for execution
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Clause-12: -Type of Work:

Original Work (Construction Work).

12.2(c)	Deviation limit beyond which clauses 12.2(c) shall apply for building work.	100%
12.4	(i) Deviation limit beyond which clause 12.2(c) shall apply for foundation work (except items mentioned in Earth work sub head in DSR and related items)	100%
	(ii) Deviation limit for items mentioned in earth work Sub-head of DSR and related items	100%

Clause-16:- Competent Authority for deciding reduced rates.

- i) Upto 5% of contract value by SE
- ii) Beyond 5% of contract value by ADG

Clause 17 Defect liability period.

01 (One) year

Clause 18

1. All the equipment, T&P and machinery shall be kept in good working conditions.

Clause-25:

	For all claims in dispute
Conciliator	ADG, Chandigarh, CPWD,
Arbitrator Appointing Authority	ADG, Chandigarh, CPWD
Place of Arbitration	Chandigarh

Clause-32: Requirement of Technical Representative(s) and Recovery Rates**(a) For Civil Works:**

Sl. No.	Minimum Qualification of Technical staff	Number	Designation of Technical Staff	Minimum Experience (Years)	Rate at which recovery shall be made from contractor in the event of non- deployment.	
					Figures	Words
1.	Graduate Engineer or Diploma Engineer	1	Project / Site Engineer	5 or 10 respectively	Rs.25000/- per month per person	Rs. Twenty-Five Thousand only per month per person
2	Graduate Engineer	1	Project Planning/ billing Engineer	6	Rs 20000/- per month per person	Rs. Twenty Thousand only per month per person

Assistant Engineers retired from Government Services that are holding Diploma will be treated at par with Graduate Engineers.

Diploma holder with minimum 10 years relevant experience with a reputed construction co. can be treated at par with Graduate Engineers for the purpose of such deployment subject to the condition that such diploma holders should not exceed 50% of requirement of degree engineers. The contractor shall submit a certificate of such employment of the technical representative(s) (in the form of copy of Form-16 or CPF deduction issued to the Engineers employed by him) along with every account bill/final bill and shall produce evidence if at any times so required by the Engineer-in-charge.

Clause-38:-

i) Schedule / Statement for determining theoretical quantity of cement & bitumen

As per Delhi Schedule of Rates 2023 with amendments upto the last date of submission of bids

ii) Variations permissible on theoretical quantities.

- a) Cement for works with estimated cost 2% plus/ minus.
- b) Bitumen for all work. 2.5% Plus side only and NIL on minus side.
- c) Steel Reinforcement and structural steel sections for each diameter, section and category. 2% plus
- d) All other materials. Nil.

RECOVERY RATES FOR QUANTITIES BEYOND PERMISSIBLE VARIATION

S. No.	Description of item	Rates in figures and words at which recovery shall be made from the contractor	
		Excess beyond Permissible Variation	Less use from the permissible variation
1.	Cement	NIL	Not allowed
2.	Steel a) Primary producers	NIL	
3.	Structural Steel (Primary producers only) RSJ / Channel sections MS Angles / Flats / steel plates.	NIL	

TABLE -A OF MILE STONES (CIVIL)

Name of work: Development of Permanent Campus of IIM Sirmaur at Dhaula Kuan, District Sirmaur, Himachal Pradesh. SH: C/o Student Hostel-Type A, B, C, Married Hostel, Connecting Corridor Hostels, Student Mess, Student Activity Center, Virtual Learning Centre, Director Residence, internal sanitary, plumbing and electrical installations, development and external services work like water supply line, sewerage, firefighting, electrical line, road work etc. in all over phase-I.

(SH:- Balance work)

Time allowed for execution of work **3.0 Months**

Sl. No.	Description of mile stone (Financial)	Period for completion from date of start in days	Withheld amount for non achievement of mile stone.
1	Work done amount upto 1/4 th of the tendered amount	30 days of Scheduled time	1.25% of the accepted tendered value
2	Work done amount upto 1/2 nd of the tendered amount	50 days of Scheduled time	1.25% of the accepted tendered value
3	Work done amount upto 3/4 th of the tendered amount	70 days of Scheduled time	1.25% of the accepted tendered value
4	Full Work Completed in all respect i/c clearing of site.	90 days (03 months)	1.25% of the accepted tendered value

However, activity wise Bar Chart shall be submitted by the contractor for monitoring the progress of work after award of work.

The withheld amount due to non-achievement of mile stone may be released if the subsequent milestone is achieved in the specified time.

Note: Intending tenderer may submit physical activities/mile stones on the basis of their resources and methodology at the time of tendering corresponding to physical mile stones /stages as indicated in the above table. These shall be formed part of agreement after approval of the accepting authority, otherwise it would be assumed that agency agree with the above mentioned mile stones.

Section-IV

General Conditions for Planning and Safety

1.0 Before commencement of any item of work, the Agency 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 dimensions 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 Agency 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.

1.1 The execution of work shall be carried out in accordance with specifications, drawings, schedule of finishes and General conditions / additional conditions detailed herein in this bid document to be read along with relevant CPWD specifications 2023 Vol-I and Vol-II (amended upto the last date of submission of bids) and manufacturer's specifications wherever necessary. For the items which are not covered under CPWD Specifications, the Particular Specifications / B.I.S. Specifications shall have to be followed. The decision of Engineer-in-Charge shall be final in this regard.

1.2 Wherever any reference is made to any Indian Standard, it shall be taken as reference to the latest edition with all amendments / revision issued thereto upto the last date of submission of bids.

1.3 The Agency is required to deploy resources as per availability of site. However, no claim will be entertained for idle labour, idle machinery, idle eligible / non-eligible staff, idle T&P etc.

1.4 (i) The terms machine batched, machine mixed and machine vibrated concrete used elsewhere in Agreement shall mean the concrete produced in concrete batching and mixing plant and if necessary, transported by transit concrete mixers, placed in position by the concrete pumps, tower crane and vibrated by surface vibrator / needle vibrator / plate vibrator, as the case may be to achieve the required strength and durability.

(ii) The work shall be carried out in accordance with the Architectural drawings and Structural drawings approved by the Engineer-in-Charge.

(iii) The work of services will be executed simultaneously. The agency shall minimize the scope of making recesses, holes, opening etc. as the same shall be planned and necessary grooves / niches shall be provided.

1.5 The agency shall conduct his work, so as not to interfere with or hinder the progress or completion of the work being performed by other agency(s) or by the Engineer-in-Charge and shall as far as possible arrange his work and shall place and dispose of the materials being used or removed, so as not to interfere with the operations of other agency simultaneously working 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.

1.6 (i) If the work is carried out in more than one shift or during night, no claim on this account shall be entertained. The agency must take permission from the police authorities etc., if required for work during night hours and no claim / hindrance on this account shall be considered if work is not allowed during nighttime.

(ii) The agency shall be responsible for the safety, watch & ward, fittings and fixtures provided by him of all buildings against pilferage and breakage during the period of installations and thereafter till the building is physically handed over to the client department or the period of comprehensive maintenance is over whichever is later. No extra payment shall be made on this account.

(iii) Samples of building materials, fittings and other articles required for execution of work shall be got approved from the Engineer-in-Charge before use in the work well in advance. The quality of samples brought by the agency shall be judged by standards laid down in the relevant CPWD or BIS specifications as applicable. All materials and articles brought by the Agency to the site for use shall conform to the samples approved by the Engineer-in-Charge which shall be preserved till the completion of the work.

(iv) BIS marked materials except otherwise specified shall be subjected to quality tests at the discretion of the Engineer-in-Charge besides testing of other materials as per the specifications described for the item/material. Wherever BIS marked materials are brought to the site of work, the agency shall, if required, by the Engineer-in-Charge, furnish manufacturer's test certificate or test certificate from approved testing laboratory to establish that the material procured by the agency for incorporation in the work satisfies the provisions of specifications / BIS codes relevant to the material and / or the work done.

(v) Regarding testing of civil & electrical materials, the testing of materials shall be conducted in Govt. Laboratory / Govt. Engineering Colleges / IITs /NITs or from the laboratory approved by Engineer-in-Charge. The charges of testing of all materials as per the required frequency in approved laboratory shall be borne by the agency and nothing shall be payable to the Agency.

1.7 **Quality Assurance and Record Keeping.**

(i) The agency shall procure the required materials well in advance so that there is sufficient time for testing of the materials and clearance of the same before use in the work. The agency 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.

(ii) Agency shall submit minimum **"Quality Assurance Plan"** within 45 days after award of work for the approval of Engineer-in Charge which shall be consisting of: -

(a) Number of required tests and frequency of testing. While deciding these criteria, CPWD specifications 2023 vol I and II with updated correction slips & provisions of BIS code and standard practices may be referred. Volume of work, practical difficulties and site conditions etc. may also be kept in view. The lot size, number of tests and frequencies of testing can be altered or

modified by the Engineer-in-Charge from the prescribed limits.

- (b) It should clearly indicate the machinery and other tools & plants required to be deployed at site by the agency. Entire machinery and T&P may not be required at the start of work; therefore, a proper time schedule by which each machinery & T&P is to be brought at site should also be indicated.
- (c) Method **Statement** for each important activity. The '**Method statement**' is a statement by which the construction procedures for any activity of construction are formulated and stated in chronological order. The 'Method statement' should have a description of the item with elaborate procedures in steps to implement the same, the specifications of the materials involved, their testing and acceptance criteria, equipment to be used, precautions to be taken, steps of measurement etc.

1.8 Receipt of Material, testing of the same & Maintenance of Register of Tests.

(i) All the registers for the tests carried out at construction site or outside laboratories shall be maintained by the agency, which shall be inspected by Engineer-in-Charge or his/her authorized representative at any point of time. These test registers shall be issued by the Engineer-in-Charge to the Agency.

(ii) The Agency shall allow access to Third Party Quality Assurance Agency (TPQAA) engaged by Engineer-in-Charge to have a control on quality and methodology of execution. At least 25% of samples of materials including Cement Concrete Cubes shall be taken jointly by Agency and TPQA / Engineer-in-Charge or his authorized representative.

(iii) All expenditure to be incurred for testing of all the samples e.g. packaging, sealing, transportation, loading, unloading etc. including testing charges shall be borne by the contractor at his own cost and nothing extra shall be payable on this account.

(iv) All the tests in field lab setup at construction site shall be carried out by the quality control team to be engaged by the Agency which can be witnessed by Engineer-in-Charge or his/her authorized representative at any time. A daily report of Tests to be conducted on a day shall be submitted to Engineer-in-Charge or his/her authorized representative.

(v) All the entries in the registers will be made by the designated Engineering Staff of the Agency.

(vi) Agency shall be responsible for safe custody of all the test registers.

Submission of copy of all test registers and Material at Site Register along with each alternate running account bill and final bill shall be mandatory.

(vii) All materials received at site shall be entered in MAS (material at site) Register and copy of Supply order, MTC (Manufacturer's test certificate) & Bill-invoices of the material received shall be maintained in order for the inspection of Engineer-in-Charge or his authorized representatives as and when required. The MAS Registers

including Cement and Steel Registers shall be maintained by a qualified staff of Agency which may be inspected by Engineer-in-Charge or his/her authorized representative at any time. All the test registers, Material at Site Registers, Cement Register, Paint Register and any other register maintaining the daily usage of material at site shall be issued to the Agency by the Engineer-in-Charge. The daily report of receipt of material shall be sent to Engineer-in-Charge or his/her authorized representative.

(viii) As and when any important item is taken up for execution, the Agency shall submit the specifications and develop the checklist and Pour card. This sample checklist should be got approved from the Engineer-in-Charge well in advance and should be used at site. This check list should be shown to the Engineer-in-Charge or his/her authorized representative during inspection. This procedure is to be followed for all hidden items, CC (cement concrete) /RCC work, Steel-reinforcement, shuttering, cast-in-situ flooring, doors & windows, plumbing, including water supply pipelines, roof treatment, earth filling etc.

1.9 The agency shall render all help and assistance in documenting the total sequence of this project by way of photography, slides, audio-video recording etc. nothing extra shall be payable to the agency on this account

1.10 The work shall be carried out, all in accordance with true intent and meaning of the specifications and the drawings taken together, regardless of whether the same may or may not be particularly shown on the drawings and / or described in the specifications, provided that the same can be reasonably inferred. There may be several incidental works, which are not mentioned in the scope of work but will be necessary to complete the item in all respect. All these incidental works / costs which are not mentioned in specifications / drawings / tender document but are necessary to complete the item shall be deemed to have been included in the rates quoted by the contractor. No adjustment of rates shall be made for any variation in quantum of incidental works due to variation / change in actual working drawings. Also, no adjustment of rates shall be made due to any change in incidental works or any other deviation in such element of work (which is incidental to the items of work and are necessary to complete such items in all respects) on account of the directions of Engineer-in-Charge. Nothing shall be payable on the account of incidental works.

1.11 If any further details / elaboration or any miscellaneous clarifications etc. to the attached drawings required to the contractor for execution of work, the same may be asked by the contractor at least one month prior to its requirement so that consultant of the work may provide within a month to him. No hindrance shall be given on this account. Requirement of more Elaboration / detailing / Miscellaneous Drawings as required by contractor and provided by the consultant / department shall not mean change of Scope of Work etc. and the price of this shall be deemed to have been covered in the tendered amount.

1.12 In the event of any variation / discrepancy in the drawings, specifications and tender documents etc. the decision of the Engineer-in-Charge shall be final, binding

and conclusive on the contractor and in the case the contractor have any doubt and the same should be got clarified immediately from the Engineer-in-Charge and no claim of the contractor shall be entertained thereafter. Moreover, the agency is not allowed to take benefit out of any clerical / grammatical mistake in the standard clauses / Specifications etc. being used in the agreement.

1.13 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, in case any damages to such existing services take place the same shall be rectified by the contractor at his own expense to the satisfaction of the 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.

1.14 The rates quoted by the contractor are deemed to be inclusive of site clearance, setting out work, profile, establishment of reference benchmark(s), taking spot levels, construction of all safety and protection devices, barriers, preparatory works, working during monsoon, working at all depths, height, lead, lift and location and any other incidental works required to complete this work.

1.15 For works below ground level, the contractor shall keep that area free from water. If dewatering or bailing out of water is required, the same shall be responsibility of contractor. The price of this shall be deemed to have been covered in the tendered amount.

1.16 Any legal or financial implications resulting out of disposal of earth shall be carried out by the contractor at his own cost. The price of this shall be deemed to have been covered in the tendered amount.

1.17 The contractor shall keep himself fully informed of all acts and laws of the Central & State Governments, all orders, decrees of statutory bodies, tribunals having any jurisdiction or authority, which in any manner may affect those engaged or employed and anything related to carrying out the work. All the rules & regulations and bye-laws laid down by local body and any other statutory bodies shall be adhered by the contractor, during the execution of work. The contractor shall also adhere to all traffic restrictions notified by the local authorities.

The cost of water for construction and labour (for municipal water connection as well as tanker water) shall be borne by the contractor. Also, if the contractor obtains water connection for the drinking purposes from the municipal authorities or any other statutory body, the consequent charges shall be borne by the contractor.

1.18 The contractor shall assume all liability, financial or otherwise in connection with this contract and shall protect and indemnify the department from any and all damages and claims that may arise on any account. The contractor shall indemnify the department against all claims in respect of patent rights, royalties, design, trademarks of name or other protected rights, damages to adjacent buildings, roads or members of public, in course of execution of work or any other reasons whatsoever, and shall himself defend all actions arising from such claims and shall

indemnify the department in all respect from such actions, costs and expenses. The price of this shall be deemed to have been covered in the tendered amount.

1.19 The contractor shall take all necessary precautions to prevent any nuisance or inconvenience to the owners, tenants or occupants of the adjacent properties and to the public in general. The contractor shall take all care, as not to damage any other adjacent property or other services running adjacent to the plot. If any damage is done, the same shall be made good by the contractor at his own cost and to the entire satisfaction of the Engineer-in-Charge. The contractor shall use such methodology and equipment for execution of the work, so as to cause minimum environmental pollution of any kind during construction, to have minimum construction time and minimum inconvenience to road users and to the occupants of the buildings on the adjacent plot and public in general, etc.

1.20 He shall make good at his own cost and to the entire satisfaction of the Engineer-in-Charge any damage to roads, paths, cross drainage works or public or private property whatsoever caused, due to the execution of the work or by traffic brought thereon, by the contractor, further, the contractor shall take all precautions to prevent any pollution of streams and waterways. All waste or superfluous materials shall be carted away by the contractor, entirely to the satisfaction of the Engineer-in-charge. Utmost care shall be taken to keep the noise level to the barest minimum so that no disturbance as far as possible is caused to the occupants / users of adjoining buildings. No claim what so ever on account of site constraints mentioned above or any other site constraints not specifically stated here, shall be entertained from the contractor. Therefore, the contractor is advised to visit site and get first-hand information of site constraints. They should quote their rates accordingly.

1.21 The quoted rates shall also be inclusive of all ancillary and incidental works required for execution of work like labour camp, stores, fabrication yard, offices, watch and ward, temporary structure for plants and machineries, water storage tanks, arrangement for temporary connection for electricity, telephone, water etc. including their consumption charges, protection works, barricading, providing testing facilities / laboratory at site of work for various field and laboratory tests or any other activity which is necessary for execution of work and as directed by Engineer-in-Charge. Before start of the work, the contractor shall obtain approval of the Engineer-in-Charge, before locating various temporary structures / site office, positioning of machinery, material yard, cement and other storage, steel fabrication yard, site laboratory, water tank, etc.

The contractor shall display all permission, licenses, registration certificates, bar charts, other statements etc. under various labour laws and other regulations applicable, at his site office.

1.22 Prevention of Nuisance and Pollution

1.22.1) The site shall be kept clean of all debris, rubbish and dirt & all surplus waste material all the time. It also includes maintenance, cleaning & de-silting the pipelines laid by the agency for all internal services etc. executed by the agency to the entire

satisfaction of the Engineer-in-Charge during the maintenance periods. Cleaning and de-silting will also be done by the agency before handing over the completed structures to CPWD. All machines, equipment and labour for this purpose will be arranged by Agency and nothing extra shall be payable on this account.

1.22.2) If at any stage, the construction activity is stopped due to the enforcement of the statutory orders by the Government due to change in Government policies or due to change in the local body norms, then the agency shall be granted extension of time after considering the various factors involved but nothing extra shall be paid to the agency for the duration during which the work was stopped due to these reasons.

1.23 Security of the Site

1.23.1) The Agency shall be wholly responsible for security of site and works. The Agency shall be responsible for keeping unauthorized persons off the Site; and Authorized persons shall be limited to the Employees of the Agency, Sub Agency or persons as authorized by the Engineer-in-Charge.

1.23.2) Lighting: The agency shall provide sufficient lighting at project site considering the safety and security of project. The Agency shall provide suitable numbers and suitable type of fittings to have sufficient illumination level with glare-free lighting for safety of workmen while performing their assigned job. Wiring for such installation shall be adequately protected to avoid any risk of electric shock. The agency shall ensure that luminaries should always be so placed that no person is required to work in their own shadow and that the local light for one person is not a source of glare for the others. Strongly made clamps should be available for attaching luminaries to poles and other convenient supports.

Luminaries shall be robust, resistant to corrosion and rain proof especially at the point of the cable entry. Lamp holders not fitted with a lamp should be capped off and no open end shall be left. The agency shall take every effort to illuminate the work site as per the direction of Engineer-in-charge.

1.24 Security of the Work.

The Agency shall bear full risk and take full responsibility for the care of the works and materials, goods and equipment for incorporation therein from the commencement date until the completion certificate is issued including the maintenance period.

1.24.1) The agency shall take full responsibility for the Adequacy, Stability, Safety, Quality and Security of the Works, Plant, Goods, Agency's Equipment, Temporary Works, operations on Site and methods of manufacture, installation, construction and transportation.

1.24.2) Provide and maintain all lights, guards, fences and warning signs and watchmen when and where necessary or required by the Engineer-in-Charge or by laws for the protection of the Works and for the safety and convenience of the public and all persons on or in the vicinity of the site.

1.24.3) Agency is required to take note of all the necessary provisions in Employer's Safety, Health and Environment Manual (SHE Manual) and the Agency's price shall be inclusive of all the necessary costs to meet the prescribed safety standards. In the case, the Agency fails in the above; the Employer may provide the necessary arrangements and recover the costs from the Agency.

1.25 Safety

1.28.1 Following guidelines to be followed where height of casting of concrete is higher than 3.5 m or where higher loading are coming during casting of concrete or large span structure more than 5 meter long or some special structure like domes, vaults, steel structure etc.

- (i) Centering/scaffolding/staging for casting of these structures should be properly designed by a qualified and experienced person/agency having past experience in design of false work (centering) for concrete structures and should be proof checked by similar experienced person/agency and it should be approved by Engineer-in-Charge. The provisions of clause 7 of IS: 14687 may be referred for design of false work(centering).
- (ii) A method statement for erection and dismantling of the centering/scaffolding/staging and process of concreting & process of anchor of steel structure shall be prepared by contractor and submitted to Engineer-in- Charge for approval and the work shall be commenced only after approval of method statement by Engineer-in-Charge. The provisions of clause 9 of IS: 14687 may be referred for erection of false work (centering), safety precautions and other site operations, pertaining to false work(centering).
- (iii) A detailed programme of field safety inspection of centering/scaffolding/form work of such structures during different stages should be checked out and strictly followed.
- (iv) Inspection approval of Engineer in charge, the prime responsibility of safety of false work shall with contractor for concrete and steel work.
- (v) Provision of safety net, fall arresting system including other safety gears, for workers, working over these structures shall be made in contract and should be followed strictly.

1.28.2 Appropriate no. of Safety Officer/ Manager is required to be at site at all times.

1.28.3 Qualifications of Safety Coordinator/ Manager should not be less than those prescribed in local regulation in building and other construction workers (regulation of employment & conditions of service) Central Rules,1998.

1.28.3.1 Agency shall ensure participation of his site in-charge and the safety coordinator in the safety meetings arranged at intervals decided by the Engineer-in-Charge.

1.28.4 Personal Protective Equipment's (PPEs)

The Agency shall provide required PPEs to workmen to protect against safety and/or health hazards. Primarily PPEs are required for the following protection:

- 1.28.4.1 Head Protection (Safety helmets)
- 1.28.4.2 Foot Protection (Safety footwear, Gumboot, etc.
- 1.28.4.3 Personal fall protection (Full body harness, Rope-grap fall arrester, etc.)
- 1.28.4.4 Eye protection (Goggles, Welders glasses, etc)
- 1.28.4.5 Hand protection (Gloves, finger coats, etc.)

1.28.4.6 Respiratory Protection (Nose mask, SCBAs, etc.)

1.28.4.7 Hearing protection (Ear plugs, Ear muffs, etc)

1.28.5) The PPEs and safety appliances provided by the Agency shall be of the standard as prescribed by Bureau of Indian Standards (BIS). If materials conforming to BIS standards are not available, the Agency shall procure PPE and safety appliances, as approved by the Engineer-in-Charge.

Safety Helmet Colour Code	Person to use
White	CPWD staff
Grey	All designers, Architect, Consultants etc.
Violet	Main Agencies (Engineers/Supervisors)
Blue	All Sub-Agencies (Engineers/Supervisors)
Red	Electricians (both Agency and sub-Agency)
Green	Safety Professionals (Both Agency and Sub Agencies)
Orange	Security Guards/Traffic Marshals
Yellow	All workmen
White (with “Visitor” sticker)	Visitors
*(Every Helmet should have the LOGO affixed/painted).	

- 1.28.6) All construction workers should be provided with high visibility jackets with reflective tapes confirming to the requirement specified under BS EN 471: 1994. The conspicuous of workmen at all times shall be increased so as to protect them from speeding vehicular traffic.
- 1.28.7) In addition to the above, any other PPE required for any specific jobs like, welding and cutting, working at height, tunnelling etc. shall also be provided to all workmen and also ensure that all workmen use the PPEs properly while on the job. The Agency shall not pay any cash amount in lieu to PPE to the workers/sub-Agencies and expect them to buy and use during work.
- 1.28.8) The Agency shall at all-time maintain a minimum of 10% spare PPEs and safety appliances and properly record and show to the Engineer-in-Charge during the inspections. It is always the duty of the Agency to provide required PPEs for all visitors & CPWD staff as and when required. Towards this, the required quantity of PPEs shall be kept always at the security post.
- 1.28.9) Notwithstanding the above, the Agency shall at their expense arrange for the safety provisions as per all relevant Indian Standard Safety Codes & local byelaws. The Agency shall provide all facilities in connection therewith and shall also issue the identity card to his labourer.

1.29 Work at Heights:

- 1.29.1) During construction of buildings/towers safety net (horizontal and vertical) shall be used by Agency to check/control falling of any object. The Agency/vendor shall also take the other safety measures used during construction, for e.g. Personal Protective Equipment's (PPEs), safety during working at heights etc.
- 1.29.2) The Agency shall provide proper scaffolding and working platforms with handrails to work at higher elevations and Tools and loose material should not be left on the scaffolding from where they are likely to fall. Persons should use safety belts while working near open edge where it is not possible to provide handrails.
- 1.29.3) Things should not be thrown from heights and should be brought down or taken up with the help of ropes. While work is being carried on at higher elevations, warning notices should be posted below or barricade the area so as to draw the attention of persons and prevent them from coming under the falling objects.
- 1.29.4) Defective scaffoldings, damaged ladders, insufficient working platforms etc. shall not be permitted. Wherever necessary, light weight mobile tower scaffolds or hydraulic platforms should be used.
- 1.29.5) Proper access should be available to the work spot. Nobody should jump over open area between equipment, pipes and rails etc. from where they may slip. Walking over beams, narrow pipes etc. should be prohibited.
- 1.29.6) The area from where the materials are pulled up with ropes etc. should have hand railings and the person should keep firm footing. They should not lean over the handrails and should use safety belts to protect themselves from fall due to body imbalance.

1.30 Sanitation and hygiene measures

In order to provide adequate sanitary conditions for all personnel at site, the following provisions as a part of the temporary facilities to be provided by the Agency:

- 1.30.1) Provision for an adequate supply of potable water.
- 1.30.2) Provision for toilets and hand wash basins
- 1.30.3) Garbage disposal and regular collection
- 1.30.4) Proper drainage and sewer disposal
- 1.30.5) Other special hygienic operations viz. Fumigation, pest controls etc.
- 1.30.6) Worker's Rest Space:
- 1.30.7) Sunshade and/or site canteen

1.31 Unforeseeable Difficulties

Except as otherwise specifically stated elsewhere in the Contract:

- 1.31.1) The Agency shall be deemed to have obtained all necessary information as to risks, contingencies and other circumstances which may influence or affect the Works;
- 1.31.2) By signing the Contract, the Agency accepts total responsibility for having foreseen all difficulties and costs of successfully completing the Works; and
- 1.31.3) The Contract Price shall not be adjusted to take account of any unforeseen difficulties or costs.
- 1.31.4) CPWD shall not provide any material either on chargeable or on free issue basis to the Agency for execution of the project.

1.34 Make in India Policy

The main Agency as well as associate contractor or sub-agencies of each discipline shall comply with Government of India Public Procurement (Preference to Make in India), Order-2017 amended up to last date of submission of bid.

SECTION-V
SPECIAL CONDITIONS (CIVIL)

1. General

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 2019 Vol. I & II” with upto date correction slips, additional / Particular Specifications, Architectural / structural drawings and as per instructions of Engineer-in-Charge.
2. The several documents forming the tender are to be taken as mutually complementary to one another. Detailed drawings shall be followed in preference to small scale drawings and figured dimensions in preference to scaled dimensions.
3. Should there be any difference or discrepancy between the description of items as given in the schedule of quantities, particular specifications for individual items of work (including special conditions) and I.S. Codes etc., the following order of preference shall be observed:
 - (i) Description of Schedule of Quantities
 - (ii) Particular Specifications, Special Conditions & Additional conditions as per NIT, if any.
 - (iii) Drawings
 - (iv) CPWD Specifications.
 - (v) Indian Standard Specifications of B.I.S.
 - (vi) Manufacturers’ specifications & as decided by Engineer-in-charge.
 - (vii) Best Engineering Practice available for execution.

“In the event of any variation/ discrepancy in the drawings, specifications and tender documents etc. the decision of the Engineer-in-charge shall be final binding and conclusive on the contractor and in the case the contractor have any doubt and the same should be got clarified immediately from the Engineer-in- charge and no claim of the contractor shall be entertained thereafter. Moreover, the agency is not allowed to take benefit out of any clerical/ grammatical mistake in the standard clauses/Schedule of Quantities/Specifications etc. being used in the agreement”.

4. The works to be governed by this contract shall cover delivery and transportation upto destination, safe custody at site, insurance, erection, testing and commissioning of the entire works.
5. The works to be undertaken by the contractor shall inter alia include the following:
 - i. Preparation of detailed SHOP drawings and AS BUILT drawings wherever applicable.
 - ii. Pre-commissioning tests as per relevant standard specifications, code of practice, Acts and Rules wherever required.
 - iii. Warranty obligation for the equipment's and/or fittings/fixtures supplied by the contractor.
6. Contractor shall provide all the shop drawings or layout drawings for all the coordinated services before starting any work or placing any order for any of the services etc. These shop drawings/layout drawings shall be got approved from Engineer-in-charge before implementation and this shall be binding on the contractor. The contractor shall submit material submittals along with material sample for approval of Engineer-in-charge prior to delivery of material at site.
7. Any reference made to any Indian Standard Specifications, shall imply to the latest version of that standard, including such revisions/ amendments as issued by the Bureau of Indian Standards upto last date of receipt of tenders. The Contractor shall keep at his own cost all such publications including relevant Indian Standard Codes applicable to the work at site.

8. All the hidden items such as water supply lines, drainage pipes, conduits, sewers etc. are to be properly tested before covering.
9. Samples including brand / quality of materials and fittings to be used in the work 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.
10. Equipment like concrete pumps, excavators/ Transit mixers etc. shall be allowed to be moved away from the site when, in written opinion of Engineer-in-Charge, the same are no longer required at site of work.
11. The contractor, his authorized representative, workmen etc. shall strictly observe orders pertaining to fire precautions prevailing in the area.
12. Contractor(s) shall study the Soil Investigation Report (Indicative) for general view of nature of strata/ soil of campus area, attached with this tender document and also available in the office of the Engineer-in-Charge and satisfy himself about complete characteristics of soil and other parameters at site. However, no claim on the alleged inadequacy or incorrectness of the soil data supplied by the department shall be entertained later on.
13. *The tenderer shall see the approaches to the site. In case any approach from main road is required at site or existing approach is to be improved and maintained for cartage of materials by the contractor, the same shall be provided, improved and maintained by the contractor at his own cost.*
14. Contractor shall take all precautionary measures to avoid any damage to adjoining property. All necessary arrangement shall be made at his own cost.
15. The contractor shall take all precautions to avoid accidents by exhibiting necessary caution boards day and night, speed limit boards, red flags, red lights and providing barriers. He shall be responsible for all damages and accidents caused to work due to negligence on his part. No hindrances shall be caused to traffic, during the execution of the work.
16. The contractor 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, compound wall, services etc. are to be constructed.
17. The contractor shall provide at his own cost suitable weighing, surveying and leveling and measuring arrangements as may be necessary at site for checking. All such equipment shall be got calibrated in advance from laboratory, approved by the Engineer-in-Charge. Nothing extra shall be payable on this account.
18. Contractor shall provide permanent benchmarks, flag tops and other reference points for the proper execution of work and these shall be preserved till the end of work. All such reference points shall be in relation to the levels and locations, given in the Architectural and plumbing drawings.
19. Water tanks, taps, sanitary, water supply and drainage pipes, fittings and accessories should conform to approved manufacturers specifications where CPWD Specifications are not applicable. The contractor should get the materials (fixtures/fittings) tested from approved labs wherever required at his own cost.
20. 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 issued for the work, nomenclature of items, specifications etc. and satisfy himself that the information available there from is complete and unambiguous. The figures & the written dimensions of the drawing shall supersede the measurement by scale. The discrepancy, if any,

shall be brought to the notice of the Engineer-in-Charge for immediate decision 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.

21. Other agencies may also simultaneously execute and install the works and the contractor shall afford necessary facilities for the same. The contractor shall leave such recesses, holes, openings, trenches etc. as may be required for such related works (for which inserts, sleeves, brackets, conduits, base plates, clamps etc. shall be available as specified elsewhere in the contract) and the contractor shall fix the same at the time of casting of concrete, stone work and brick work, if required, and nothing extra shall be payable on this account.

22. All material shall only be brought at site as per program finalized with the Engineer-in-Charge. Any pre- delivery of the material not required for immediate consumption shall not be accepted and thus not paid for.

23. The contractor shall procure the required materials in advance so that there is sufficient time for testing of the materials and approval of the same before use in the work.

24. 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. 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. In case temporary supporting of such services is required to facilitate the work, the same shall be done by the contractor at no extra cost.

25. In case the existing services are to be shifted permanently, then before dismantling the existing services, alternate/ diversion of service lines has to be laid by the contractor so that there is no interruption in use of existing services. The contractor has to plan the alternate suitable route for diversion/shifting of service lines and get the same approved from the Engineer-in-Charge before starting shifting of services. Nothing extra shall be paid except the payment of dismantling and laying of new service lines as per conditions of contract.

26. The contractor shall be responsible for the watch and ward / guard of the buildings, safety of all fittings and fixtures including sanitary and water supply fittings and fixtures provided by him against pilferage and breakage during the period of installations and thereafter till the building is physically handed over to the client department. No extra payment shall be made on this account.

27. 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 key system.

28. For construction works which are likely to generate malba / rubbish, contractor shall dispose of malba, rubbish & other unserviceable materials and wastes at his own cost to the notified specified dumping ground and under no circumstances these shall be stacked / dumped even temporarily, outside the construction premises.

29. The rates quoted by the Contractor are deemed to be inclusive of site clearance, setting out work, profile, establishment of reference bench mark(s), taking spot levels, construction of all safety and protection devices, barriers, preparatory works, working during monsoon, working at all depths, height, lead, lift and location etc. until / unless specified otherwise and any other incidental works required to complete this work. Nothing extra shall be payable on this account.

30. For works below ground level the contractor shall keep that area free from water. If dewatering or bailing out of water is require the contractor shall do it and nothing extra shall be paid except otherwise provided in the items of schedule of quantities.

31. Results of sub-surface investigations conducted at site are indicated in extracts of the report attached. This information about the soil and sub-soil water conditions is being made available to the Contractor, in good faith, for guidance only and the Contractor is advised to obtain details directly as may be considered necessary by him before quoting rates in the tender. No claim whatsoever on account of any discrepancy between the sub-surface strata conditions that may be actually encountered at the time of execution of the work and those given in these tender documents, in-accuracy or interpretation thereof shall be entertained from the Contractor under any circumstances. The ground water table is a variable condition and the information given in the report is only indicative and it may vary from time to time.

32. Any legal or financial implications resulting out of disposal of earth shall be sole responsibility of the contractor. Nothing extra over the schedule shall be paid on this account.

33. The Contractor shall keep himself fully informed of all acts and laws of the Central & State Governments, all orders, decrees of statutory bodies, tribunals having any jurisdiction or authority, which in any manner may affect those engaged or employed and anything related to carrying out the work. All the rules & regulations and bye-laws laid down by Collector / MC etc. and any other statutory bodies shall be adhered to, by the contractor, during the execution of work. The Contractor shall also adhere to all traffic restrictions notified by the local authorities. It is clarified that the extra sewerage charges (one time charges for commencement of work) required to be paid to the Municipal Corporation / other statutory bodies shall be paid by the department and need not be considered by the contractor. The water charges (for municipal water connection as well as tanker water) shall be borne by the contractor. Also, if the contractor obtains water connection for the drinking purposes from the municipal authorities or any other statutory body, the consequent sewerage charges shall be borne by the contractor. All statutory taxes, levies, charges (including water and sewerage charges, charges for temporary service connections and/ or any other charges) payable to such authorities for carrying out the work, shall be borne by the Contractor. The Contractor shall arrange to give all notices as required by any statutory / regulatory authority and shall pay to such authority all the fees that is required to be paid for the execution of work. He shall protect and indemnify the Department and its officials & employees against any claim and /or liability arising out of violations of any such laws, ordinances, orders, decrees, by himself or by his employees or his authorized representatives. Nothing extra shall be payable on these accounts. The fee payable to statutory authorities for obtaining the various permanent service connections and Occupancy Certificate for the building shall be borne by the Department.

34. Royalty at the prevalent rates shall be paid by the Contractor as per the terms of supply between them on all materials such as boulders, metals, sand and bajri etc. collected by him for the execution of the work, directly to the revenue authority of the state government concerned. Nothing extra shall be payable on this account.

35. No foreign exchange shall be made available by the Department for importing (purchase) of equipment, plants, machinery, materials of any kind or any other items required to be carried out during execution of the work. No delay and no claim of any kind shall be entertained from the Contractor, on account of variation in the foreign exchange rate.

36. The Contractor shall conduct his work so as not to interfere with or hinder the progress of the work being performed by other Contractors or by the Engineer-in-Charge. As far as possible, he shall arrange his work and place, so as not to interfere with the operations of other Contractors or shall arrange his work with that of the others, in an acceptable and coordinated manner and shall perform it in proper sequence.

37. The Contractor shall assume all liability, financial or otherwise in connection with this contract and shall protect and indemnify the Department from any and all damages and claims that may arise on any account. The Contractor shall indemnify the Department against all claims in respect of patent rights, royalties, design, trademarks of name or other protected rights,

damages to adjacent buildings, roads or members of public, in course of execution of work or any other reasons whatsoever, and shall himself defend all actions arising from such claims and shall indemnify the Department in all respect from such actions, costs and expenses. Nothing extra shall be payable on this account.

38. The Contractor shall make all necessary arrangements for protecting from rains, the work already executed and for carrying out the further work, during monsoon including providing and fixing temporary shelters, protections etc. Nothing extra shall be payable on this account. Also, no claims for hindrance shall be entertained on this account.

39. In case of flooding of site on account of rain or any other cause and any consequent damage, whatsoever, no claim financially or otherwise shall be entertained notwithstanding any other provisions elsewhere in the contract agreement. Also, the Contractor shall make good, at his own cost, the damages caused, if any.

40. The Contractor shall take all necessary precautions to prevent any nuisance or inconvenience to the owners, tenants or occupants of the adjacent properties and to the public in general. The Contractor shall take all care, as not to damage any other adjacent property or other services running adjacent to the plot. If any damage is done, the same shall be made good by the Contractor at his own cost and to the entire satisfaction of the Engineer-in-Charge. The Contractor shall use such methodology and equipment's for execution of the work, so as to cause minimum environmental pollution of any kind during construction, to have minimum construction time and minimum inconvenience to road users and to the occupants of the buildings on the adjacent plot and public in general, etc. He shall make good at his own cost and to the entire satisfaction of the Engineer in Charge any damage to roads, paths, cross drainage works or public or private property whatsoever caused, due to the execution of the work or by traffic brought thereon, by the Contractor. Further, the Contractor shall take all precautions to prevent any pollution of streams and waterways. All waste or superfluous materials shall be carted away by the Contractor, entirely to the satisfaction of the Engineer-in-Charge. Utmost care shall be taken to keep the noise level to the barest minimum so that no disturbance as far as possible is caused to the occupants / users of adjoining buildings. No claim what so ever on account of site constraints mentioned above or any other site constraints not specifically stated here, shall be entertained from the Contractor. Therefore, the Contractors are advised to visit site and get firsthand information of site constraints. Accordingly, they should quote their tenders. Nothing extra shall be payable on this account.

41. All ancillary and incidental facilities required for execution of work like labour camp, stores, fabrication yard, offices for Contractor, watch and ward, temporary ramp required to be made for working at the basement level, temporary structure for plants and machineries, water storage tanks, installation and consumption charges of temporary electricity, telephone, water etc. required for execution of the work, liaison and pursuing for obtaining various No Objection Certificates, completion certificates from local bodies etc., protection works, barricading, testing facilities / laboratory at site of work, facilities for all field tests and for taking samples etc. during execution or any other activity which is necessary (for execution of work and as directed by Engineer-in-Charge), shall be deemed to be included in rates quoted by the Contractor, for various items in the schedule of quantities. Nothing extra shall be payable on these accounts. Before start of the work, the Contractor shall submit to the Engineer-in-Charge, a site / construction yard layout, specifying areas for construction, site office, positioning of machinery, material yard, cement and other storage, steel fabrication yard, site laboratory, water tank, etc.

42. The Contractor shall display all permissions, licenses, registration certificates, bar charts, other statements etc. under various labour laws and other regulations applicable to the works, at his site office.

43. No tools and plants including any special T&P etc. shall be supplied by the Department and the Contractor shall have to make his own arrangements at his own cost. No claim of hindrance (or any other claim) shall be entertained on this account.

44. The Contractor shall be allowed to use the facilities available at site & arranged by the associate-Contractors and other agencies working at site for smooth execution of the work. The Contractor shall be

- (i) Allow to use of scaffolding already erected, toilets, sheds etc.
- (ii) Properly co-ordinate their work with the work of other Contractors.
- (iii) Provide control lines and benchmarks to his associate Contractors and the other Contractors.
- (iv) Provide electricity and water at mutually agreed rates.
- (v) Provide hoist and crane facilities for lifting material at mutually agreed rates.
- (vi) Co-ordinate with other Contractors for leaving inserts, making chases, alignment of services etc. at site.
- (vii) Adjust work schedule and site activities in consultation with the Engineer-in-Charge and other Contractors to suit the overall schedule completion.
- (viii) Resolve the disputes with other Contractor amicably and the Engineer-in-Charge shall not be made intermediary or arbitrator. The contractor shall indemnify the Department against any claim(s) arising out of such disputes.

45. On completion of work, the contractor shall submit at his own cost four prints of "as built" drawings of the completed work to the Engineer-in-Charge. These drawings shall have the following information.

- a) Length & dia. of soil, waste pipes and vertical stacks.
- b) Ground and invert level of all drainage pipes together with locations of all manholes and connections, up-to out fall.
- c) Length & dia. of all water supply lines with diameters, location of control valves, access panel etc.

46. In case the contractor fails to supply "as built drawing" aforesaid within 30 days of the date of completion, then the recovery @ Rs. 20,000/- for each such set of drawings shall be made from the contractor's final bill.

47. Unless otherwise specified in the schedule of quantities or CPWD specifications, the rates for respective items shall be all inclusive and apply to the following: -

- (i) All lifts & all heights, floors including terrace, leads and depths.
- (ii) All labour, material, tools and plants and other inputs involved in the execution of the item.
- (iii) Any of the conditions and specifications mentioned in the tender documents.
- (iv) Providing sunk flooring in bath-rooms, kitchen, etc.
- (v) Any legal or financial implications resulting out of disposal of earth, if any.
- (vi) Payment of Royalty at the prevailing rates, if any, on the boulders, metal, shingle, sand and bajri etc. or any other material collected by him for the work direct to revenue authorities.
- (vii) Performance test of the entire installation(s) before the work is finally accepted.
- (viii) Any cement slurry added over base surface (or) for continuation of concreting for better bond is deemed to have been built in the items.
- (ix) All incidental charges for cartage, storage and safe custody of materials brought to site.

2. QUALITY ASSURANCE / TESTING OF MATERIALS GENERAL : -

All incidental expenditure on security, construction of cement godown, access roads, arrangement of water, electricity etc. to be incurred by the agency for arranging, installing and operation of Batch Mix Plant shall be deemed to have been included in his quoted rates and no claim whatsoever will be tenable on this account. With each Running Bill, the details of test carried out shall be submitted by the contractor as per

Performa refer at particular specification.

Samples of all materials required for testing shall be provided free of charge by the contractor. All expenditure to be incurred for testing of samples for e.g. packaging, sealing, transportation, loading , unloading etc. including testing charges shall be borne by the contractor.

- a) 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 & 50% of tests shall be witnessed by AE-in-charge. At least 10% of the tests are to be witnessed by the EE/ SE.
- b) All the entries in the registers will be made by the designated Engineering staff of the contractor and same should be regularly reviewed by JE/AE/EE/CE.
- c) Contractor shall be responsible for safe custody of all the test registers.
- d) Submission of copy of all Test Registers, Material at Site Register along with each alternate Running Account Bill and Final Bill shall be mandatory. These registers should be duly checked by AE(P) in Division Office & receipts of registers should also be acknowledged by Accounts Officer by signing the copies and register to confirm receipt in division office
- e) Extensive testing of the materials used for construction is a pre-requisite for attaining high quality of the work. This shall also require specialized tests, physical, chemical, ultrasonic, x- ray and various other types of tests which cannot possibly be carried out in a site laboratory.
These tests also require specialized personnel who regularly deal in such testing. Therefore, the need arises for carrying out the tests in outside laboratories. These laboratories may be in the Govt. sector, Semi Govt. or Private sector. The outside private laboratories shall be short listed before- hand by EE and approval obtained from ADG. In case of laboratories in the private sector, the past record and reputation of the laboratory must invariably be given due consideration. The infrastructure in these laboratories can also be inspected before they are short listed.
- f) **The testing of material shall be got done preferably from Government Lab. / Govt. Institute. Testing from Private Lab shall only be done in urgent / unavoidable situation with prior approval Engineer-in-Charge.**
- g) For ultrasonic pulse velocity/load testing or special testing to be done for concrete whose strength is doubtful, the cost of the same shall be borne by the contractor.
- h) 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.
- i) Special attention shall be paid towards line and level of internal and external plastering, exposed smooth surface of RCC members by providing fresh shuttering plates, sealing shuttering joints, accurate joinery work in wooden doors and windows, thinnest joints in stone/ tiling / cladding work, non-hollowness in floor and dado tiles work, protection of scratches over flooring by impounding layer of plaster of Paris, water tight pipe linings, absence of hollow vertical joints in brick masonry, proper compaction of filled up earth etc. to achieve an Institution of International standards and up keeping of quality assurance shall be of paramount importance, as such.

3. FIELD LABORATORY

- a) The contractor has to establish field laboratory at site including all necessary equipment's and skilled manpower for the **Field Tests as refer (As per General Index)** at his own cost to have proper quality control.
- b) For performing the above tests, the **Field Tests as refer (As per General Index)** are to be arranged and maintained by the contractor.
- c) The contractor shall ensure quality construction in a planned and time bound manner. Any sub-standard material / work beyond set-out tolerance limit shall be summarily rejected by the Engineer-in-Charge & contractor shall be bound to replace / remove such sub-standard / defective work immediately.
- d) The list of Laboratory/ Field equipment referred above are to be arranged and maintained by the contractor at the site of work. In case the equipment required for any test is not available at site, the department shall get the test conducted from the third party. However, in that event, besides providing free materials of sample, the cost of taking of sample, packing, transportation, testing charges etc. shall be borne by the contractor irrespective of the results.
- e) The contractor shall establish field laboratory including additional room (of minimum area of 20 sqm. each) for preserving samples of material till the completion of whole work. Nothing extra

shall be paid for establishing field laboratory.

4. SAMPLE OF MATERIALS:

- a) All materials and fittings brought by the contractor to the site for use shall conform to the samples approved by the Engineer-in-Charge which shall be preserved till the completion of the work. If a particular brand of material is specified in the item of work in Schedule of Quantity, the same shall be used after getting the same approved from Engineer-in-Charge. Wherever brand / quality of material is not specified in the item of work, the contractor shall submit the samples as per **List of Preferred Makes as (As per General Index)** for approval of Engineer-in-Charge. For all other items, ISI Marked materials and fittings shall be used with the approval of Engineer-in-Charge. Wherever ISI Marked material / fittings are not available, the contractor shall submit samples of materials / fittings manufactured by firms of repute conforming to relevant Specifications or IS codes for the approval of Engineer-in-Charge.
- b) To avoid delay, contractor should submit samples as stated above well in advance so as to give timely orders for procurement. If any material, even though approved by Engineer-in-Charge is found defective or not conforming to specifications shall be replaced / removed by the contractor at his own risk & cost.
- c) BIS marked materials except otherwise specified shall also be subjected to quality test besides testing of other materials as per the specifications described for the item/material. Wherever BIS marked materials are brought to the site of work, the contractor shall, furnish manufacturer's test certificate or test certificate from approved testing laboratory to establish that the material procured by the contractor for incorporation in the work satisfies the provisions of specifications relevant to the material and / or the work done.
- d) BIS marked items (except cement & steel for which separate provisions have been made in para 4.0) required on the work shall be got tested, for only important tests, which govern the quality of the product, as decided by the Engineer-in-Charge. The frequency of such tests (except the mandatory test) shall be 5% of the frequency as specified in BIS. For mandatory test, frequency shall be as specified in the CPWD Specifications.
- e) For certain items, if frequency of tests is neither mentioned in the CPWD Specifications & BIS, then tests shall be carried out as per decision of Engineer-in-Charge.

5. CEMENT & STEEL REINFORCEMENT (IF NOT STIPULATED TO BE SUPPLIED BY THE CONTRACTOR).

Contractor has to produce manufacturers test certificate and challan for each lot of Cement & Steel Reinforcement procured at site.

(A) CEMENT:-

- a) The contractor shall procure 43 grade ordinary Portland Cement conforming to IS: 8112 / Portland Pozzolona Cement conforming to IS: 1489 (Part-1) as required in the work, from reputed manufacturers of cement such as ACC, Ultratech, Vikram, Shree Cement, Ambuja, Jaypee Cement, Century Cement & J.K. cement or from any other reputed cement Manufacturer having a production capacity not less than one million tonnes per annum as approved by **CE cum ED, Project Zone Chandigarh**.
- b) Samples of cement arranged by the contractor shall be taken by the Engineer-in-Charge and got tested in accordance with provisions of relevant BIS Codes. The cement for such testing purpose shall be supplied by the contractor free of charge. In case test results indicate that the cement arranged by the contractor does not conform to the relevant BIS Codes, the same shall stand rejected and 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. The cost of tests shall be borne by the contractor.
- c) Cement shall be brought at site in bulk supply of approximately 100 tonnes or as decided by the Engineer-in-Charge.
- d) OPC & PPC bags shall be stored in separate godowns. Separate godowns for tested cement and fresh cement (under testing) to be constructed by the contractor at his own cost as per sketches given in C.P.W.D Specifications having weather-proof roofs and walls. The size of the cement godown is indicated in the sketches for guidance. The actual size of godown shall be as per site requirements and nothing extra shall be paid for the same. Each godown shall be provided with a single door with two locks. The keys of one lock shall remain with Engineer-in-Charge or his

authorized representative 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 godown according to the daily requirement with the knowledge of both parties. The account of daily receipt and issue of cement shall be maintained in a register in the prescribed proforma and signed daily by the contractor or his authorized agent and Engineer-in- Charge or his authorized representative in token of its correctness. The day to day receipt and issue accounts of different grade/brand of cement shall be maintained separately in the standard proforma by the contractor or his authorized representative which shall be duly signed by the authorized representative of the Engineer-in-Charge before issue to the work on day to day basis.

- e) Four separate cement godowns each having capacity of 50 MT or more as decided by the Engineer- in-Charge shall be constructed by the contractor at site of work for which no extra payment shall be made. The contractor shall be responsible for the watch and ward and safety of the cement go-downs. The contractor shall facilitate the inspection of the cement go-downs by the Engineer-in-Charge at any time.
- f) The actual issue and consumption of cement on work shall be regulated and proper accounts maintained as provided in the contract. The theoretical consumption of cement shall be worked out as per procedure prescribed in Clause-38 of the contract and shall be governed by the conditions laid therein.
- g) If the quantity of cement actually used in the work is found to be more than the theoretical quantity of cement including authorized variation, nothing extra shall be payable to the contractor on this account. In the event of it being discovered that after the completion of the work, the quantity of cement used is less than the quantity ascertained as herein before provided (allowing variation on the minus side as stipulated in Clause - 38), the cost of quantity of cement not so used shall be recovered from the contractor as specified in schedule. Decision of the Engineer- in-Charge in regard to theoretical quantity of cement which should have been actually used as per the schedule and recovered at the rate specified, shall be final and binding on the contractor. For non-scheduled items, the decision of the **CE cum ED, Project Zone Chandigarh, CPWD, Chandigarh** regarding theoretical quantity of the cement, which should have been actually used, shall be final and binding on the contractor.
- h) Cement brought to site and cement remaining unused after completion of work shall not be removed from site without written permission of the Engineer-in-Charge.
- i) In case the contractor brings surplus quantity of cement the same shall be removed from the site after completion of work by the contractor at his own cost after approval of the Engineer-in- Charge.
- j) Cement, which is not used within 90 days from its date of manufacture, shall be retested at approved laboratory. Until the results of such tests are found satisfactory, it shall not be used on the work.
- k) The cement shall be brought at site in bulk supply of approximately 50 tonnes or as decided by the Engineer- In- Charge. The cement godown of the capacity to store a minimum of 2000 bags of cement or as decided by NIT approving authority in case less than 100MT cement is required for the work, shall be constructed by the contractor at site of work for which no extra payment shall be made. For small maintenance works, NIT approving authority shall decide the requirement of the storage/godown.
- l) The contractor shall be responsible for the watch and ward and safety of the cement godown. The contractor shall facilitate the inspection of the cement godown by the Engineer-in-Charge at any time.
- m) The cement shall be got tested by the Engineer-In-Charge and shall be used on the work only after satisfactory test results have been received. The contractor shall supply free of charge the cement required for testing including its transportation cost to testing laboratories. The cost of tests shall be borne by the contractor.
- n) 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 38 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 after ensuring structural soundness and stability on the basis of testing. In case of excess consumption, no adjustment need to

made.

- o) 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.
- p) 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.
- q) Chief Engineers/ADGs may change the brand of Cement depending upon availability in local market but conforming to grade mentioned in the NIT and only with ISI mark, if warranted. The name of manufacturers should be finalized after taking into consideration the availability and cost factor. Conditions for cement proposed to be procured in silos may be approved by the NIT approving authority along with mode of storage, measurement, testing and grade requirements.

(B) STEEL REINFORCEMENT: -

Only ISI marked TMT Bars of various grades shall be procured from steel manufacturer.

1. TMT reinforcement bars shall be procured from SAIL, TATA STEEL LTD., RINL, JINDAL STEEL & POWER LTD. AND JSW STEEL LTD. or the manufacturer approved by the Additional Director General (Chandigarh) subject to the guidelines for eligibility criteria and other technical parameters given below.

Credentials for eligibility criteria & other technical parameters for steel manufacturers:

The manufacturer should meet the following eligibility criteria :

- a) The steel manufacturer should have following documentary evidence:
 - i) Certificate of incorporation.
 - ii) Memorandum of articles of Association.
 - iii) Credit rating of the company from CARE/CRISIL/ICRA(the grading should not be C/D grade for minimum last 3 years).
 - b) The Steel manufacturer must have following licenses and certificates:
 - i) ISI Certificate for billets (IS 2830 : 2012)
 - ii) ISI Certificate for TMT Bars (IS 1786 : 2008 (Amendment -1 November 2012))
 - c) The Steel manufacturer should also preferably have the following licenses :
 - i) ISO 9001 : 2015
 - ii) ISO 14001 : 2015
 - iii) OHSAS 18001 :2007
 - d) The steel manufacturer should be using iron ore as the basic raw material. The entire gamut of iron and steel production is owned by the same company or its subsidiary company(ies) and the iron making capacity is sufficiently matching the steel making capacity, adopting any of the refining technologies for manufacturing steel & TMT Bars as given under are eligible:
 - i) BF-BOF route
 - ii) COREX- BOF Route
 - iii) DRI-EAF Route (Each Electric Arc Furnace should be 100 MT or more)
 - e) Billets produced must be ISI marked (IS 2830:2012)
 - f) The TMT bars produced must be ISI marked (IS 1786:2008)
 - g) The steel manufacturer should have the following in house testing facilities (NABL Accredited):
 - i) Computerized Universal Testing Machine
 - ii) Spectrometer
 - iii) Bend Re-bend facility as per IS :1786:2008 (Amendmnt-1 November 2012).
 - iv) Raw material laboratory: Arrangement for testing carbon, Sulphur & Phosphorous etc.
 - v) Other testing facilities as specified in IS :1786:2008 & IS : 2830:2012.
2. ADG (Chandigarh) is also authorized to approve particular steel manufacturer on suo motto in case he is satisfied with the eligibility criteria and other technical parameters of that manufacturer.
 - a) 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.

- b) Samples shall also be taken and got tested by the Engineer-in-Charge 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 the specifications 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 on written orders from the Engineer-in-Charge to do so.
- c) The steel reinforcement bars shall be brought to the site in bulk supply of 10 tonnes or more, or as decided by the Engineer-in-charge. 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.
- d) For checking nominal mass, tensile strength, bend test, re-bend test one sample for each, 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	consignment upto or below 100 tonnes	consignment above 100 tonnes
Under 10 mm dia. bars	sample for each 25 tonnes or part thereof	sample for each 40 tonnes or part thereof
10 mm to 16 mm dia. bars	sample for each 35 tonnes or part thereof	sample for each 45 tonnes or part thereof
Over 16 mm dia. bars	sample for each 45 tonnes or part thereof	sample for each 50 tonnes or part thereof

- e) The contractor shall supply free of charge the steel required for testing including its transportation to testing laboratories. The cost of tests shall be borne by the contractor.
- f) 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 38 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.
- g) The steel brought to site and the steel remaining unused shall not be removed from site without the written permission of the Engineer-in-charge.

Annexure-I

	Item	Check point	Remarks
.	Steel Producer having manufacturing facilities at Plant.	Factory address and Registration no.	
		Certificate of manufacturing process.	
		Refining process of steel Producer.	
		c.1 BF-BOF route	
		c.2 Corex- BOF route	
		c.3 DRI - EAF route	
		With documentary evidence either for BOF or EAF	
		d. Steel plant having infrastructure for producing sponge iron, billete and TMT Rebars	
		e. Production and Quality Flow Chart	
		f. Plant Evaluation and Process Verification	
		g. List of Plant & Machinery	
	Established	Document verification for: a. Govt. / PSU Approvals 2. Established b. Supply orders of TMT Re-bars in Govt. Projects (Minimum-S years) c. Verification of direct supply orders to any State/Central Govt. Department I d. User Certificate issued by any Govt. Department directly	

	Indigenous	Documentary evidence like;	
		Certificate of Incorporation Memorandum of Articles of Association Credit rating of the company from CARE/CRISIL/ICRA should not be C/D grade(minimum last 3 year) Test Results from Govt./NABL accredited laboratories In-house testing facility for physical/Chemical tests(NABL accredited)	
	Reliable	d. Calibration Certificates e. List of Lab Equipment: Spectrometer Computerized UTM	
	Use of Iron-Ore/Processes Iron are as basic raw materials	Verification of Iron-Ore/ Process iron ore invoices	
	In-house rolling facility	Plant verification to identify in-house rolling facilities, production of liquid steel & crude steel	
	Licenses & Certificates	ISO 9001:2008 Certification ISO 14001:2004 Certification OHSAS18001:2007 Certification IS 1786:2008 (TMT Re-bars) IS 2830:1992 (Billets)	
	Product Range	TMT Re-bars FE 415/415D/500/500D/550/550D CRS (Corrosion Resistant) & EQR(Earthquake Resistant) TMT Re-bars Size 8 to 36 mm dia.	

Note:-DRI - EAF-> Direct Reduce Iron - Electric ARC Furnace BF- BOF-> Blast Furnace - Basic Oxygen Furnace COREX-BOF->COREX Furnace - Basic Oxygen Furnace

- h) The contractor shall submit original vouchers from the manufacturer for the total quantity of steel supplied under each consignment to be incorporated in the work. All consignment received at the work site shall be inspected by the Site staff along with the relevant documents before acceptance. The contractor shall obtain Original Vouchers and Test Certificates and furnish the same to the Engineer-in-Charge in respect of all the lots of steel brought by him from approved supplier to the site of work. The original vouchers and test certificates shall be defaced by the Site staff and kept on record in the site office.
- i) Reinforcement including authorized spacer bars and lapages shall be measured in length of different diameters as actually (not more than as specified in the drawings) used in the work nearest to a centimeter. Wastage and unauthorized overlaps shall not be measured.
- j) The standard sectional weights referred to as in Table 5.4 in para 5.3.4 in CPWD Specifications will be considered for conversion of length of various sizes of M.S. Bars, Steel Bars and T.M.T. bars into Standard Weight.
- k) Records of actual Sectional weights shall also be kept dia-wise and lot-wise. The average sectional weight for each diameter shall be arrived at from samples from each lot of steel received at site. The decision of the Engineer- in-Charge shall be final for the procedure to be followed for determining the average sectional weight of each lot. Quantity of each diameter of steel received at site of work each day will constitute one single lot for the purpose. The weight of steel by conversion of length of various sizes of bars based on the actual weighted average sectional weight shall be termed as Derived Actual Weight. However, for the stipulated issue of steel reinforcement up to and including 10mm diameter bars, the actual weight of steel issued shall be modified to take into account the variation between the actual and the standard coefficients and the contractors' accounts will be debited by the

cost of modified quantity.

- l) (a) If the Derived Weight as in sub-para (4.3.13) above is less than the Standard Weight as in Sub-para (4.3.12) above then the Derived Actual Weight shall be taken for payment provided, it is within the following tolerances specified in IS1786-2008, otherwise whole lot will be rejected.

Tolerances on Nominal Mass

Nominal Size in mm	Batch	Tolerance on Nominal mass Individual sample*	Individual sample for coil**
a) Upto and including 10	± 7	-8	± 8
b) Over 10 upto and Including 16	± 5	-6	± 6
c) Over 16	+3	-4	± 4

* For individual sample plus tolerance is not specified.

**For coils batch tolerance is not specified.

- (b) If the Derived Actual Weight is found more than the Standard Weight, the Standard Weight as per in sub-para (4.3.13) above shall be taken for payment. In such case nothing extra shall be paid for the difference between the Derived Actual Weight and the Standard Weight.

6. SECRECY

- a) The contractor shall take all steps necessary that all persons employed on any work in connection with the contract have notice that the Indian Official Secrets Act 1923 applies to them & will continue so to apply even after the execution of such works under the contract.
- b) The contract is confidential and must be strictly confined to the contractor's own use (except so far as confidential disclosure to sub-contractors or suppliers as necessary) and to the purpose of the contract.
- c) All documents, copies thereof & extracts there from furnished to the contractor shall be returned to the Engineer-in-Charge on the completion of the work / works or the earlier determination of the contract.

7. LABOUR AND SECURITY

- a) Contractor should provide his plan for labour huts as per his requirement and get it approved from the Engineer-in-Charge. The contractor will be provided space for labour huts etc. inside the campus but the space requirement and location, as assessed by Engineer-in-Charge shall be final and binding.
- b) Contractor has to follow the security requirement of the campus and obtain necessary entry passes for the labour and vehicles and follow security checks at entry / exit gates, restriction on movement of vehicle, restricted timings of working etc. The Department however shall assist the contractor in obtaining such passes for movement of vehicles and labour. No claim whatsoever shall be entertained on account of delay in entry of vehicles and labour including restrictions in working hours, if there is any.
- c) The contractor shall employ only Indian Nationals after verifying their antecedents and loyalty. The contractor shall, on demand submit list of his agents, employees and work people concerned & shall satisfy as to the bonafides of such people.
- d) The contractor & his work people shall observe all relevant rules regarding security promulgated in which work is to be carried out by the Controlling Administrative Authority of the campus/area (hereinafter referred to as "Administrator").
- e) The contractor, his representative, workman shall be allowed to enter through specified gates &

timing as laid down by the controlling authority. They shall be issued an identity card or an individual pass in accordance with the standing rules & regulations & they should possess the same while working. The contractor shall be responsible for the conduct & actions of his workmen, agents / representatives.

- f) Normally contractor shall be allowed to carry out work between 8 AM to 5 PM. However, he may also be allowed to carry out the work beyond 5 PM & upto 8 AM if the site conditions / circumstances so demand with prior written permission from the "Administrator". However, if the work is carried out in more than one shift or at night, no claim on this account shall be entertained.
- g) Normally contractor's material / vehicles etc. shall be allowed to move in / go-out between 7 AM to 7 PM only & no movement of material / vehicles out of site of work shall be allowed during night hours unless specific permission is obtained from the "Administrator".
- h) In case if a separate entry has been allowed, the contractor has to make all arrangement for making a separate entry gate and barricading of the working area to segregate/separate the same from other areas. All these have to be done by the contractor at his own cost including safeguarding any untoward incident in the restricted area due to separate entry gate and barricading arranged by the contractor. No extra amount on this account shall be payable by the department.

10.0 DOCUMENTATION

- a) The Contractor shall render all help and assistance in documenting the total sequences of this project by way of photography, slides, audio / video recording & other records etc. Nothing extra shall be payable to Contractor on this account. However, cost of photographs, slides, audio / video graph etc. shall be borne by the Department. The original films shall be the property of the Department. No copy shall be prepared without the prior approval of the Engineer-in - Charge.

b) PROGRAM CHART:

The Contractor shall submit a Programme Chart (Time and Progress) for each milestone and get it approved from the department. If the contractor failed to submit program / bar chart in the 15 days from the date of start of work, recovery @ Rs.20000/- per week will be made in each running account bill. The chart shall be prepared in direct relation to the time stated in the contract documents for completion of the items of the work. It shall indicate the forecast of the dates of commencement and completion of various trades of sections of the work and may be amended as necessary by agreement between the Engineer-in-charge and the contractor within the limitations of time imposed in the contract documents, and further to ensure good progress during the execution of the work. The contractor shall in all cases in which time allowed for any work exceeds one month (save for special jobs for which a separate program has been agreed upon) complete the work as per milestones given in Schedule 'F'.

- c) The work has to be completed in stages as indicated in the **Table of Milestones under Schedule 'F' (As per General Index)** and the program should be prepared in such a manner to achieve these Milestones as indicated therein or earlier.

- d) The program chart should include the following:

Descriptive note explaining sequence of various activities.

- (i) Network (PERT/ CPM/ BAR CHART) prepared on MS project which will indicate resources in financial terms, manpower and specialized equipments for every important stage.
 - (ii) Program for procurement of materials by the contractor.
 - (iii) Program of procurement of machinery / equipments having adequate capacity, commensurate with the quantum of work to be done within the stipulated period, by the contractor.
- e) If at any time, it appears to the Engineer-in-Charge that the actual progress of work does not conform to the approved program referred above, the contractor shall produce a revised program showing the modifications to the approved program by additional inputs to ensure completion of the work within the stipulated time.
 - f) The submission of revised program or approval by the Engineer-in-Charge of such program or

the furnishing of such particulars shall not relieve the contractor of any of his 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.

- g) Notwithstanding the fact that the contractor will have to pay to the labourers and other staff engaged directly or indirectly on the work according to the provisions of the labour regulations and the agreement entered upon and/or extra amounts for any other reason

h) PROGRESS AND MONITORING OF WORK:

Apart from the above integrated program chart, the contractor shall be required to submit monthly progress report of the work in a computerized form. The progress report shall contain the following, apart from whatever else may be required as specified:

- (i) Construction schedule of the various components of the work through a bar chart for the next three quarters (or as may be specified), showing the milestones, targeted tasks and up to date progress.
 - (ii) Progress chart of the various components of the work that are planned and achieved, for the month as well as cumulative up to the month, with reason for deviations, if any in a tabular format.
 - (iii) Plant and machinery statement, indicating those deployed in the work.
 - (iv) Man-power statement, indicating individually the names of all the staff deployed on the work, along with their designations.
 - (v) Financial statement, indicating the broad details of all the running account payment received up to date, such as gross value of work done, advances taken, recoveries effected, amount withheld, net payments details of cheque payment received etc.
- i) For completing the work in time, the Contractor might be required to work in two or more shifts (including night shifts). No claim whatsoever shall be entertained on this account, notwithstanding the fact that the Contractor may have to pay extra amounts for any reason, to the labour and other staff engaged directly or indirectly on the work according to the provisions of the labour and other statutory bodies regulations and the agreement entered upon by the Contractor with them.
- j) The work should be planned in a systematic manner so that chase cuttings in the walls, ceilings and floors is minimized. Wherever absolutely essential, the chase shall be cut using chase cutting machines. Chases will not be allowed to be cut using hammer / chisel. The electrical boxes should be fixed in walls simultaneously while raising the brick work. The contractor shall ensure proper co- ordination of various disciplines viz. building works, sanitary & water supply & electrical installations etc.
- k) 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 of 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 Engineer-in-charge.
- l) The Contractor shall do proper sequencing of the various activities by suitably staggering the activities within various pockets in the plot so as to achieve early completion. The agency may deploy adequate equipment, machinery and labour as required for the completion of the entire work within the stipulated period specified. Also ancillary facilities shall be provided commensurate with requirement to complete the entire work within the stipulated period. Nothing extra shall be payable on this account. Adequate number/sets of equipment in working condition, along with adequate stand-by arrangements, shall be deployed during entire construction period. It shall be ensured by the Contractor that all the equipment, Tools & Plants, machineries etc. provided by him are maintained in proper working conditions at all times during the progress of the work and till the completion of the work. Further, all the constructional tools, plants, equipment and machineries provided by the Contractor, on site of work or his work shop for this work, shall be exclusively intended for use in the construction of this work and they shall not be shifted / removed from site without the permission of the Engineer-in-Charge.
- m) All material shall only be brought at site as per program finalized with the Engineer-in- Charge. Any pre- delivery of the material not required for immediate consumption shall not be accepted

and thus not paid for.

- n) The progress report must reach to Division office upto 5th of each month failing which recovery @ **Rs.5000/- per day** shall be deducted from the running/final bill of the agency.

11. ENGAGING SPECIALISED AGENCIES FOR SPECIALIZED WORKS: -

- a) The Contractor shall engage specialized agencies having adequate technical capability and experience of having executed at least one work of similar nature of 80% or more magnitude or two works of similar nature of value minimum 60% individually or 3 works of similar nature of value minimum 40% individually, for executing the following items of the work and/or any other items of work where specialized firm is required to be engaged as per contract conditions. For determining the required magnitude, the value of the work executed may be suitably enhanced with the prevailing approved cost index. The bidder should either himself meet the eligibility conditions as mentioned in the table below OR otherwise he will have to associate with an agency meeting the eligibility requirements for specialize work. The successful bidder shall submit details of such agency(s) as given below to the Engineer-in- Charge of concerned component within 30 days of award of work for the approval of the Engineer-in- Charge of that component, whose decision shall be final and binding:

i) Name of Firm.

ii) List of works as given in table below.

iii) Performance Certificate from the Client.

iv) Availability of Manpower and Machineries.

Names of the Agency(s) to be associated shall be approved by the Engineer-in-Charge of concerned component.

- b) If the tenderer, having valid electrical license if applicable for E.I. works, himself fulfills the eligibility criteria laid down below for associated specialized agencies, then the tenderer shall not require to associate with himself the associated specialized agency.
- c) It shall be the responsibility of main contractor to sort out any dispute / litigation with the Specialized Agencies without any time & cost overrun to the Department. The main contractor shall be solely responsible for settling any dispute / litigation arising out of his agreement with the Specialized Agencies. The contractor shall ensure that the work shall not suffer on account of litigation/ dispute between him and the specialized agencies / sub-contractor(s). No claim of hindrance in the work shall be entertained from the Contractor on this account. No extension of time shall be granted and no claim what so ever, of any kind, shall be entertained from the Contractor on account of delay attributable to the selection/rejection of the Specialized Agencies.
- i) **Water proofing treatment work of all types.**
 - ii) **Sewage Treatment Plant 40 KLD, 20 KLD, 10**
 - iii) **Heating System for the Aquarium**
 - iv) **Structural Glazing**
 - v) **Entry Markets (FRP Sculptures, SS 3D Zoo name, Water cascade etc.)**
 - vi) **Flower Garden (WPC purlins for trellis work, Ferro crete works for water features)**

- d) The Contractor shall also engage approved specialized agency having adequate technical capability & experience to the satisfaction of Engineer-in-Charge, of having executed the similar work of Ferrocete work and Tensile Fabric structure as per items mentioned in the BOQ.
- e) The Specialized agency for the work shall be got approved from the Engineer-in-Charge well before actual commencement of the item of work. The contractor shall submit the list of specialized agencies proposed to be engaged by him along with necessary performance certificates, within 30 days from the date of issue of acceptance letter to substantiate technical capability and experience of the agency for prior approval of the Engineer-in-Charge.
- f) For Internal Electrical Installation work as contained in the Electrical component work under Section VII, the Electrical Agency to be engaged as an associate electrical contractor for the Internal E.I./External E.I work should be enlisted contractor of CPW D in appropriate class as per the value of the work. The firm will be required to submit the credentials of the associate

electrical contractor including their registration documents, electrical contractor license, sales tax documents apart from submission of the MOU. However, contractor shall submit MOU to Executive Engineer (Elect.) in- charge, signed with eligible Electrical Contractor/Agency along with consent letter of Electrical Agency **at least 7 days before the last date of submission of Performance Guarantee**. It will be obligatory on the part of main contractor to sign the tender documents for all the components.

- g) If the main contractor fails to associate agency/agencies for execution of minor components of work within prescribed time or furnishes incomplete details or furnishes details of ineligible agencies even after the tenderer is given due opportunity, the entire scope of such component of works shall be withdrawn from the tender and the same shall be got executed by the Engineer-in-Charge at the risk and cost of the main contractor.
- h) Same milestones shall be applicable for all components of work.
- i) For the specialized item of door & window fittings, water supply and sanitary installations; the contractor shall engage such vendors/installers as approved by the manufacturers.

12. DEFECT LIABILITY:

The contractor's liability during the defect liability period from the final date of completion as per clause 17 shall be limited to rectification of defects including replacement as follows which in the opinion of Engineer-in-Charge are not manmade.

Nos.	Description	Defect Liability
(i)	Concrete/ RCC	<ul style="list-style-type: none"> (a) Rectification of structural / superficial / non-structural cracks. (b) Rectification of dampness / seepage in roof slab / junctions & sunken portion. (c) Rectification of cracks in beam, shade, column.

(ii)	Brick work/ Concrete Block Masonry	(a) Rectification of cracks in panel wall / portion. (b) Cracks / settlement of dwarf walls. (c) Rectification of efflorescence/ leaching.
(iii)	Joinery	(a) Replacement of warped joinery. (b) Cracks in panels, rails / styles etc.
(iv)	Builders Hardware	(a) Repairs / Replacement of loosened / pre-mature failure of fittings. (b) Tightening / Replacement of sag in mosquito proofing.
(v)	Steel & Ironwork	(a) Rectification / Replacement of defective part of rolling shutter. (b) Redoing of defective portion in fabrication / welding including painting. (c) Steel windows, grills, gates etc. - defects to be rectified.
(vi)	Roof treatment	(a) Rectification of leakage / seepage of roof slab including covering at junction till guarantee period.
(vii)	Plastering	(a) Rectification of structural / superficial cracks if any. (b) Rectification of protruding / peeling off plaster if any. (c) Rectification of efflorescence
(viii)	Flooring	(a) Rectification of sinking portion of plinth protection including saucer drain.
(ix)	Plumbing / Sanitary fittings	(a) Making good of leakage through soil / waste pipe joints. (b) Replacement of looking mirror if found wavy. (c) Rectification of leakage of overhead tanks. (d) Leakage / seepage of sunken floor, blockage of taps / pipes, non-functioning of cistern.
(x)	Finishes	(a) Making good of defective / dissimilar patches of painting to match with remaining surfaces, peeling of paint.
(xi)	Internal Water Supply	(a) Repairs / Replacement of defective taps / fittings. (b) Repair to leakage of GI water pipe lines including joints. (c) Removal of blockage of GI pipe lines.
(xii)	Roads	Repair of sinked portion of road & potholes, if any
xiii)	Sewage	(a) Rectification of slope / system if found defective during use. (b) Rectification of major blockage in Sewer lines. (c) Cracks & settlement of sewage lines.
xiv)	Drains	(a) Repair to Drains. (b) Settlement of Drains
(xv)	External Water Supply	(a) Repairs to installations & fittings.
	General	(a) All manufacturing defects of structures / fixtures / fittings / equipment's other than listed above including any defects of shrinkage or other faults that appear in the work within 24 months after a certificate of its completion is given by the Engineer- in-Charge shall be rectified by the contractor.

13. SAFETY MEASURES

Contractor shall take all precautionary measures to avoid any damage to adjoining property. All necessary arrangement shall be made at his own cost.

a) Warning / Caution Boards

All temporary warning / caution boards / glow signage display such as "Construction Work in Progress", "Keep Away", "No Parking", Diversions & protective Barricades etc. shall be provided and displayed during day time by the Contractor, wherever required and as directed by the Engineer-in-Charge. These glow signage and red lights shall be suitably illuminated during night also. The Contractor shall be solely responsible for damage and accident caused, if any, due to negligence on his part. Also, he shall ensure that no hindrance, as far as possible, is caused to general traffic during execution of the work. This signage shall be dismantled & taken away by the Contractor after the completion of work, only after approval of the Engineer – in – Charge. Nothing extra shall be payable on this account.

b) Sign Boards

The Contractor shall provide and erect a display board of size and shape as required and paint over it, in a legible and workman like manner, the details about the salient features of the project, as required by the Engineer-in-Charge. The Contractor shall fabricate and put up a sign board in an approved location and to an approved design indicating name of the project, client / owner, architects, structural consultants, Department etc. besides providing space for names of other Contractors, Associate contractors and specialized agencies. Nothing extra shall be payable on this account.

Necessary protective and safety equipments shall be provided to the Site Engineer, Supervisory staff, labour and technical staff of the contractor by the Contractor at his own cost and used at site.

No inflammable materials including P.O.L shall be allowed to be stored in huge quantity at site. Only limited quantity of P.O.L may be allowed to be stored at site subject to the compliance of all rules / instructions issued by the relevant authorities and as per the direction of Engineer -in- Charge in this regard. Also all precautions and safety measures shall be taken by the Contractor for safe handling of the P.O.L products stored at site. All consequences on account of unsafe handling of P.O.L shall be borne by the Contractor.

14. Special condition for Hardware and Sanitary Wares:

- a) Engineer-in-Charge will take a decision regarding model numbers of equivalent Door/window hardware, sanitary ware & Water Supply accessories at the time of execution, in case the material, from the manufacturer whose model number is mentioned, is not available. However, in case, the equivalent model so approved, is cheaper than the model already mentioned in item/approved makes list, the price adjustment will be made based on the difference in market rate. In case, the rate of subsequently approved model is more, no extra payment will be made on this account.

15. Ultrasonic Pulse Velocity Method of Test for RCC

- a) The underlying principle of assessing the quality of concrete is that comparatively higher velocities are obtained when the quality of concrete in terms of density, homogeneity and uniformly is good. The consistency of the concrete as regards its general quality gets established. In case of poorer quality lower velocities are obtained. If there are cracks, voids or flaws inside the concrete which come in the way of transmission of pulse, lower velocities are obtained.
- b) The quality of concrete in terms of uniformity, incidence or absence of internal flaws, cracks and segregation etc. indicative of the level of workmanship employed, can thus be assessed using the guidance given in table below, which have been evolved for characterizing the quality concrete in structure in term of the ultrasonic pulse velocity.

Velocity criterion for Concrete Quality Grading.

I. No.	Pulse velocity by Cross Probing	Concrete Quality Grading
1.	Above 4.40	Excellent
2.	3.75 to 4.40	Good
3.	3.00 to 3.75	Doubtful
4.	Below 3.0	poor

Note: In Case of “doubtful” quality it may be necessary to carry further tests.

- c) Pulse velocity method of test of concrete is to be conducted for CPWD works as a routine test. The acceptance criteria as per the above table will be applicable which is as per IS 516 (part-5/sec1): 2018. From the above “Good” and “Excellent” grading is acceptable and below these grading the concrete will not be acceptable.
- d) 5% of the total number of RCC members in each category i.e. beam, column, slab and footing may be tested by UPV test method for establishing quality of concrete. It is suggested that test be conducted on RCC beam near joint with column, on RCC column near joint with beam, on RCC footings and rafts. On RCC rafts a suitable grid can be worked out for determining number of tests. In addition, doubtful areas such as honeycombed locations, locations, where continuous seepage is observed, construction joints and visible loose pockets will also be tested.
- e) The test results are to be examined in view of the above acceptance criteria “Good” and “Excellent” and wherever concrete is found with less than required quality as per acceptance criteria, repairs to concrete will be made.
- f) Honeycombed areas and loose pockets will be repaired by grouting using Portland Cement Mortar/Polymer Modified Cement Mortar /Epoxy Mortar, etc. after chipping loose concrete in appropriate manner. In areas where concrete is found below acceptance criteria and defects are not apparently visible on surface, injecting approved grout in appropriate proportion using epoxy grout /acrylic Polymer modified cements slurry made with shrinkage compensating cement / plain cement slurry etc will be resorted to for repairs.(refer relevant chapters from CPWD Hand Book on Repairs and Rehabilitation of RCC Buildings).Repair to concrete will be done till satisfactory results are obtained as per the acceptance criteria by retesting of the repaired area. If satisfactory results are not obtained dismantling and relaying of concrete will

Section-VI

Special Conditions for Structural Steel Work

1. The contractor shall specify the name of workshop where he intends to get the fabrication work carried out. The fabrication workshop should have facility for at least Automatic continuous submerged arc H beam welding machine, Automatic paint conveyer system, Max Seam roofing system, shearing machine, CNC plasma machine, pug mill, edge beveling machine, flame cutting machine, grinders, sand blasting equipments, facilities for lifting and handling of large span and heavy structural members etc and workshop shall be approved by the committee constituted by the NIT approving authority
2. Arch. drawings and structural drawings shall be issued by the Deptt.. Any other relevant information required for the preparation of fabrication drawings and erection details, shall be provided to contractor by Engineer-in-charge.
3. Structural steel work shall cover all composite structural works consisting of structural steel and RCC in combination. It shall also cover steel trusses and misc structural steel frameworks.
4. Preparation and submission of complete detailed shop fabrication drawings based on the architectural and structural design and drawings including revision in same as per directions of Engineer-in-charge.
5. Submission of revised structural design, with calculations and detailed fabrication drawings, in case any substitution is required in the designed sections with prior approval of Engineer in charge.
6. Submission of detailed erection plan/methodology for all structural members of structural steel structure, compatible with the details of fabrication. Also, complete drawings & phase wise instructions for all the activities required to erect steel structure in final position, shall be submitted.
7. Submission of shuttering, staging and scaffolding details for casting of deck slab over the erected "Steel Girders / structural members as per drawings".
8. Submission of details of specialized agency for steel fabrication in workshop and erection at site of structural steel work, which the contractor proposes to associate for structural steel work. The agency for fabrication of steel members in workshop and agency for erection of these steel members at site should preferably be same. The specialized agency should have min. 10 years experience of similar work of fabrication and Erection. Details should include experience of specialized agency in similar structural steel works, financial capabilities, location of workshop, fabrication facilities available in fabrication workshop etc.
9. Procurement and testing of all raw structural steel materials in lots for fabrication taking into account wastage margin etc., including storage and upkeep of the materials.
10. Providing all materials, labour, tools & plant and equipments and all types of consumables required for fabrication using Gas Metal Arc welding (MIG welding) or Submerged arc welding as per approved structural drawings including all necessary bolts, nuts, washers with wastage margins.
11. Fabrication of the steel works in accordance with the approved fabrication drawings, including all shop assembling, matching and marking. Design, manufacture/fabrication and provision of all jigs, fixings, manipulators etc. required for the fabrication.
12. Suitably marking, bundling and packing for transport of all fabricated materials.
13. Preparing and furnishing detailed bill of materials, drawing Office dispatch lists.
14. Lists and any other lists of bought out items required in connection with the fabrication of

the structural steel work.

15. Loading and transporting all fabricated steelwork and field connection materials including site unloading and erection of structure in final position with all bolts, nuts, insert plate etc.
16. The contractor shall provide general assistance during complete erection for solving any problem related to fabrication or site assembling of the structural steelwork. The contractor shall ensure the presence of the qualified and experienced Erection Engineer during complete erection work at site.
17. All major/ minor modifications of the fabricated steel structures, as directed by the Engineer-in-charge, including but not limited to the following:
 - g) Removal of bends, kinks, twists etc. for parts damaged during transportation and handling.
 - h) Cutting, chipping, filling, grinding etc. if required or preparation and finishing of site connections. c) Reaming of holes for use of higher size bolt if required.
 - i) Re-fabrication of parts damaged beyond repair during transport and handling or prefabrication of parts which are incorrectly fabricated.
 - j) Fabrication of parts omitted during fabrications by error, or subsequently found necessary.
 - k) Drilling of hole, with prior approval of Engineer-in-charge, which are either not drilled at all or are drilled in incorrect location during fabrication. Drilling of holes for connections of all structural members shall otherwise be done in fabrication workshop only.
18. Carry out tests in accordance with the related Specification which will be inspected by Engineer-in-charge.
19. Details of erection equipment machinery including capacity & specifications, tools, tackles etc. to be used for erection purpose.
20. Necessary formwork & staging required for erection of structural members including design of formwork for all the anticipated loads.
21. All procedures and tests on welds as per specifications and welded parts to ensure the strength requirements of joints.
22. **Submittals:** On commencement of the work pertaining to steel structural, the Contractor shall submit the following in two sets:
 - a) Detailed baseline program, material procurement schedule, shop/working drawings, submission of samples, process / methodology of fabrication & delivery to site storage yard and erection at site for the approval of the Engineer-in-charge.
 - b) Complete fabrication drawings, schedule of quantity, cutting lists, bolt lists, welding schedules
 - c) Results of any tests, as and when conducted and as required by the Engineer-in-charge.
 - d) Manufacturer's mill test reports/certificates in respect of steel materials, bolts, nuts and electrodes etc. as may be applicable.
 - e) A detailed list of all Plant & Equipment such as cranes, derricks, winches, welding sets, all consumables, grinding and hole drilling machine etc. their make, model, present condition and

location, available to the contactor and the ones he will employ on the job to maintain the progress of work in accordance with the contract.

- f) The total number of experienced personnel of each category like fitters, welders, riggers etc., which he intends to deploy on the project.
- 23.** The Engineer-in - Charge reserves the right to make changes in the design drawings even after release - for preparation of shop drawings to reflect addition, omission & modifications in data/details and requirements. Contractor shall consider such changes as part of these Specifications and the contract and no extra claims shall be entertained on this account.
- 24.** In case of variations in design drawings and specifications, the decision of the Engineer-in-charge shall be final. Should the contractor, find any discrepancy in the information furnished to him, same shall be immediately brought to the notice of Engineer-in-charge for resolution. The contractor shall obtain clarifications on discrepancies from Engineer-in-charge before proceeding with the work.
- 25.** No detailed shop drawings will be accepted for examination by the Engineer-in-charge unless these have first been completely checked by the contractor's qualified structural engineer. The contractor shall check and ensure that detailing of connections is carefully planned to obtain ease in erection of structures, including field bolting or field connection of temporary structure to permanent structure. Any temporary structure which is used for erection or launching purpose and required to be welded to permanent structural works shall be accounted for in fabrication drawings. Permission shall be obtained before welding or holing is done in permanent structures other than as shown in design drawings or approved fabrication drawings. In case of field bolted connection between temporary structure and permanent structural works, all necessary holes provision shall be left during fabrication in shop.
- 26.** No fabrication work shall be started by the contactor without approval of Engineer-in-Charge on the relevant drawings. Approval by the Engineer-in-charge of any of the drawings shall not relieve the contractor of his responsibility of workmanship, fit of parts, details, materials and errors or omissions of any work.
- 27.** The contractor shall furnish three sets of prints of shop drawings as advance drawing (for approval) and four set of prints of all approved final shop drawings along with soft copy in CD/pendrive for field use and record purpose.
- 28.** The drawings prepared by the Contractor and all subsequent revisions thereof shall be at the cost of the Contractor and no separate payments shall be made for the same. Revisions shall incorporate all modifications, field changes, substitutions etc. effected.
- 29.** The Contractor shall give due consideration to the need of trial assemblage at shop, weight and size limitation of elements for transportation from shop to site storage yard/ Erection site, temperature variation of 25 degree centigrade between the fabrication shop and site, site measurements of as-built dimensions and position of pockets etc. for bolts and avoidance of site welding except for fixtures.
- 30.** All the drawings shall be prepared in metric units. The drawings should preferably be of A-2 or A- I standard size, and the details shown therein shall be clear and legible. These drawings shall include but shall not be limited to the following:
- a) Assembly drawings, giving exact sizes of the sections to be used and identification marks of the various section members.
 - b) Dimensional drawings of base plans, anchorage detail of bearing bolts location etc

Section: VII

Particular specifications (Civil)

1. EARTH WORK:

Earth work shall be executed as per CPWD specifications 2019, Vol-I& II with upto date correction slips. In addition to that following specifications shall also be followed:

a) EARTH WORK FOR MAJOR WORKS

Excavation shall be undertaken to the width of the Basement/Retaining wall footing including necessary margins for construction operation as per drawing or directed otherwise. Where the nature of soil or the depth of the trench and season of the year, do not permit vertical sides, the contractor at his own expense shall put up the necessary shoring, strutting and planking or cut slopes with or without steps, to a safer angle or both with due regard to the safety of personnel and works and to the satisfaction of the Engineer. Measurement of plan area of excavation for payment shall be permitted only.

- b) All the major excavation shall be carried out by mechanical excavator. No extra payment shall be made for that.
- c) The contractor shall make at his own cost all necessary arrangements for maintaining water level, in the area where works are under execution low enough so as not to cause any harm to the work shall be considered as inclusive of pumping out or bailing out water, if required, for which no extra payment shall be made. This will include water coming from any source, such as rains, accumulated rain water, floods, leakages from sewer and water mains subsoil water table being high or due to any other cause whatsoever. The contractor shall make necessary provision of pumping, dredging bailing out water coming from all above sources and excavation and other works shall be kept free of water by providing suitable system approved by the Engineer-in-charge. In order to avoid possibility of basement floor of main building being getting uplifted/damaged due to water pressure, the contractor shall lower the ground water table below the proposed foundation level by boring tube wells all around the proposed building using well point sinking method or any suitable method as approved by Engineer-in-charge. Sub soil water table shall be maintained at least 50 cm. below the P.C.C. level during laying of P.C.C. water proofing treatment, laying of basement raft and beams including filling of earth/sand under the basement floor. The water table shall not be allowed to rise above base of raft level until completion of outer retaining walls including water proofing of vertical surface of walls and back filling along the walls upto ground level and until the structure attains such height to counter balance the uplift pressure. However, the contractor should inspect the site and make his own assessment about sub-soil water level likely to be encountered at the time of execution and quote his rates accordingly. Rate of all items are inclusive of pumping out or bailing out water, if required. Nothing extra on this account whatsoever shall be paid to him. The sequence of construction shall be got approved by the Engineer-in-charge.
- d) The contractor shall take all necessary measures for the safety of traffic during construction and provide, erect and maintain such barricades including signs, markings, flags, lights and flagman, as necessary at either end of the excavation/embankment and at such intermediate points as directed by the Engineer-in-charge for the proper identification of construction area. He shall be responsible for all damages and accidents caused due to negligence on his part.

The contractor shall provide suitable barricading with suitably painted single row of G.I. Sheets about 3'- 0" wide (90 cms) nailed or bolted with wooden poles spaced 2 to 3 metre apart and each pole 1.6 m to 2 m long 8 cm. to 10 cm. dia. The poles will be embedded in mobile iron pedestal rings suitably framed for giving stable support as per direction of the Engineer-in- charge. All management (including watch and ward) of barricades shall be the full responsibility of the contractor. The barricades shall be removed only after completion of the work or part of the work. The contractor's rate shall include all above items of work and nothing extra shall be paid to the contractor over and above his quoted rates.

2. R.C.C. WORK: -The contractor shall use Batch Mix concrete (BMC).

i) DESIGN MIX CONCRETE.

The RCC work shall be done with Design Mix Concrete. Wherever letter M has been indicated, the same shall imply for the Design Mix Concrete. The Design Mix Concrete will be designated based on the principles given in IS: 456, 10262 & SP 23. The Conditions & Specifications stated herein shall have precedence over all conditions & specifications stated in relevant I.S. Codes/C.P.W.D. Specifications. The concrete mix shall be designed for the specified target mean compressive strength in order to ensure that work test result do not fall below the acceptance criteria specified for the concrete mix. The Contractor shall design mixes for each class of concrete indicating that the concrete ingredients and proportions will result in concrete mix meeting the requirements specified.

- (a) The contractor has to submit design mix without use of admixtures.
- (b) Admixture may be added (by maintaining the minimum cement content as given under para- 2.1.3) in case of specific technical requirement so as to meet the workability / slump requirement or for any other reason but nothing extra is to be paid to contractor on account of adding admixtures.
- ii) The sources of coarse aggregate, fine aggregate, water, admixture & cement to be used in concrete work shall be identified by the contractor & he will satisfy himself regarding their conforming to the relevant specifications & their availability before getting the same approved from the Engineer-In-Charge.

- (a) **Coarse Aggregate:-** As per CPWD Specifications
- (b) **Fine Aggregate:-** As per CPWD Specifications
- (c) **Water:-** It shall conform to requirements laid down in IS:456-2000/Para 3.1.1 of CPWD Specifications. If on testing, water from the source is not found fit for construction, the necessary arrangement for treatment of water shall have to be made by the contractor at the site and nothing extra shall be payable for the same.

- (d) **Cement:-** Portland Pozzolona Cement (Fly ash based), required in the work from reputed manufacturers of cement as per the approved make in 50 kg bags bearing manufacturer's name and ISI marking, along with manufacturers test certificate for each lot. Portland Pozzolona Cement is to be used for RCC works only subject to fulfillment of conditions of circular No. CDO/SE(RR)/Fly ash (MAN) 02 dated 09.04.09 shall be used for Design Mix Concrete and shall conform to IS: 1489- Part-I. However, if the contractor uses higher grade of cement, nothing extra shall be paid.

- (e) **Admixture/ Plasticizer:-** The admixture shall conform to IS: 9103. Whenever required, the admixture of approved quality & approved make only shall be used to attain the required workability. Nothing extra on account of use of Admixture / Plasticizer shall be payable

iii) Water Cement Ratio and Slump: -

In proportioning a particular mix, the manufacturer/producer/contractor shall give due consideration to the moisture content in the aggregates, and the mix shall be so designed as to restrict the maximum free water cement ratio to less than 0.5.

Due consideration shall be given to the workability of the concrete thus produced. Slump shall be controlled on the basis of placement in different situations. For normal methods of placing concrete, maximum slump shall be restricted to 100mm when measured in accordance with IS:1199.

The minimum cement content, maximum free water-cement ratio and minimum grade of concrete are individually related to exposure as per Table 5 of IS: 456, 2000 and as per CPWD Specifications 2019 Vol-I & Vol-II with upto date correction slips.

iv) Grade of Concrete: - The compressive strength of various grades of concrete with various parameters shall be as follows: -

GRADE DESIGNATION	COMPRESSIVE STRENGTH ON 15 Cm. CUBES min. 7 DAYS (N/mm ²)	SPECIFIED CHARACTERISTIC COMPRESSIVE STRENGTH AT 28 DAYS (N/mm ²)	MINIMUM CEMENT CONTENT (Kg. Per Cub. Mtr.)	MAXIMUM WATER CEMENT RATIO	SLUMP (mm)
(i) M-10	As per Design	10	220	0.50	25-75
(ii) M-25	As per Design	25	330	0.50	25-75
(iii) M-30	As per Design	30	350	0.45	25-75

NOTE:-

- In the designation of a Concrete mix letter M refers to the mix and the number of the specified characteristic compressive strength of 15 cm - Cube at 28 days expressed in N/mm².
- It is specifically highlighted that in addition to the above requirements, the maximum cement content for any grade shall be limited to 530 kg. / cubic metre.

Characteristic Compressive Strength Compliance Requirement

Specified Grade	Mean of the Group of 4 Non-overlapping consecutive test results in N/mm ² (Min)	Individual Test Results in N/mm ² (Min)
(1)	(2)	(3)
M15 Or Above	$\geq F_{ck} + 0.825 \times \text{established standard deviation}$ (rounded off to nearest 0.5 N/mm ²) Or $F_{ck} + 3\text{N/mm}^2$, whichever is greater where f_{ck} is characteristic compressive strength of CC cube at 28 days.	$\geq F_{ck} - 3 \text{ N/mm}^2$

Note : (i) In the absence of established value of standard deviation, the values given in Table as mentioned below may be assumed, and attempt should be made to obtain results of 30 samples as early as possible to establish the value of standard deviation.
(ii) For concrete of quantity up to 30 m³ (where the number of samples to be taken is less than four as per frequency of sampling given in para 2.4, the mean of test results of all such samples shall be $f_{ck} + 4 \text{ N/mm}^2$, minimum and requirement of minimum individual test result shall be $f_{ck} - 2 \text{ N/mm}^2$, minimum. However, when the number of samples is only on as per para 2.4, the requirement shall be $f_{ck} + 4 \text{ N/mm}^2$, minimum

v) The Contractor shall engage one of the following approved laboratories / test house for designing the concrete mix in accordance with relevant IS Code and to conduct laboratory tests to ensure the target strength & workability criteria for a given grade of concrete: -

- i) IIT Delhi
- ii) IIT Roorkee
- iii) Punjab Engineering College, Chandigarh
- iv) National Institute of Technical Teacher Training & Research (NITTTR), Sector-26, Chandigarh
- v) Chandigarh Engineering College, Sector 26, Chandigarh.
- vi) NIT, Hamirpur

vi) 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.

vii) In the event if all the **above** 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 ADG (Chandigarh).

viii) The contractor shall submit the report on design mix from any of above approved laboratories for approval of Engineer in Charge within 40 days from the date of issue of letter of acceptance of the tender. No concreting shall be done until the design mix is approved. In case of White Portland Cement and the likely use of admixtures 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.

ix) In case of change of source or characteristic properties of the ingredients used in the concrete mix during the work, the contractor as per the directions of the Engineer-in-charge shall submit a revised laboratory mix design report conducted at laboratory established at site. All cost of mix designing and testing, connected therewith, including charges payable to the laboratory shall

be borne by the Contractor including redesigning of the concrete mix whenever required & as directed by Engineer-In-Charge

x) The mix design for a specified grade of concrete shall be done for a target mean compressive strength $T_{ck} = F_{ck} + 1.65s$

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

The assumed values of standard deviation for different grades of concrete shall be as follows: -

GRADE OF CONCRETE	STANDARD DEVIATION
M-10	4.0
M-25	4.0
M-30	5.0
M-35	5.0

Note: The above values correspond to the site control having proper storage of cement; weight batching of all materials; controlled addition of water; regular checking of all materials,

aggregate gradings and moisture content; and periodical checking of workability and strength. Where there is deviation from the above the values given in the above table shall be increased by 1 N/mm².

TRIAL BATCHES

- (a) The designed mix proportions shall be checked for target mean compressive strength by means of trial batches.
- (b) Minimum three sets of separate preliminary tests shall be carried out for each trial batch of concrete mix. Each test shall comprise of six specimens and only one test-set of six specimens shall be made on any particular day.
- (c) The quantities of materials for each trial mix shall be sufficient for at least six specimens (cubes) and the concrete required for carrying out workability tests.
- (d) The workability of trial mix No.1 shall be measured and mix shall be carefully observed for freedom from segregation, bleeding and its finishing characteristics. The water content, if required, shall be adjusted corresponding to the required changes in the workability.
- (e) With the modified Water Content, the mix proportions shall be recalculated by keeping with water cement ratio unchanged. The mix proportion, as modified, shall form the Trial Mix No.2 and tested for the specified strength and workability.
- (f) In addition, trial mix No.3 and 4 shall be designed by keeping water contents same as that determined for trial mix 2 but varying the water cement ratio by ± 10 percent of the specified value and tested for their design characteristics.
- (g) Out 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, while the design mix shall be approved only on the basis of test strength at 28 days.

APPROVAL OF DESIGN MIX

The design mix shall be considered satisfactory and approved if at least three preliminary test-sets individually satisfy the following strength and workability criteria:

- (a) The average strength of each test-set is not less than the specified target mean compressive strength (T_{ck}).
- (b) The strength of any specimen cube is not less than 0.85 T_{ck} .
- (c) The concrete mix is of required degree of workability and acceptable concrete finish.

General Requirement of Batch Mix Concrete:-

- (a) The contractor shall have to use BATCH MIX CONCRETE. The contractor shall ensure that transit mixtures shall transport the concrete to site. All the precautions shall be taken during the transportation and handling of concrete to achieve the desired strength, durability, etc. as envisaged in the Mix Design.
- (b) All measuring equipment shall be maintained in a clean and serviceable condition and their accuracy shall be checked at least once a month.
- (c) Only single sized good quality stone aggregate shall be brought to site of work from the approved source. The grading of the stone aggregate shall be controlled by blending the aggregate of different sizes in the required proportions at site of work.
The aggregate of different sizes shall be stock-piled separately, preferably a day before use. The grading of coarse and fine aggregates shall be checked as frequently as possible and as directed by the Engineer-In-Charge to ensure that the specified grading and quality of aggregate is maintained.
- (d) It is important to maintain the Water Cement Ratio constant at its specified or approved value by making adjustment for the moisture contents of both fine and coarse aggregates.

The moisture contents in the aggregate shall be determined as frequently as possible in keeping with the weather conditions and as per the provisions of IS: 2386 (Part-III).

OTHER OPERATIONS:

All other operations in concreting work like mixing, slump, laying, placing of concrete, compaction, curing etc. not mentioned in these particular specifications for Ready Mix of Concrete shall be as per CPWD Specifications.

SAMPLING:

General :

Samples from fresh concrete shall be taken as per IS 1199 and cubes shall be made, cured and tested at 28 days in accordance with IS 516. 15.1.1. In order to get a relatively quicker idea of the quality of concrete, optional tests on beams for modulus of rupture at 72 + 2 h or at 7 days, or compressive strength tests at 7 days may be carried out in addition to 28 days compressive strength test. For this purpose, the values should be arrived at based on actual testing. In all cases, the 28 days compressive strength specified in Table 2 of code of practice, IS:456 2000 shall alone be the criterion for acceptance or rejection of the concrete.

(a) FREQUENCY OF SAMPLING: -

- (i) A random sampling procedure shall be adopted to ensure that the sampling is spread over the entire period of concreting and cover all mixing units. The concrete work shall be notionally divided into lots as under for the purpose of sampling conditions.
 - Footings, rafts etc.
 - Columns and walls at all levels.
 - Beams at all levels.
 - Slabs at all levels.
- (ii) At least one test sample shall be taken for each lot of concrete work.
- (iii) Each grade of concrete shall form different lot for testing.
- (iv) The minimum frequency of sampling of concrete of each grade shall be in accordance with CPWD specification 2019, Vol-I & II with upto date correction slips.
- (v) The concrete work shall be assessed on day to day basis & samples shall be taken as specified.
- (vi) Work strength test shall be conducted in accordance with IS: 516 on random sampling.

However, the minimum frequency of sampling of concrete of each grade shall be in accordance with the following:

Quantity of Concrete in the work m3	Number of Samples
1 - 5	1
6 - 15	2
16 - 30	3
31 - 50	4
51 and above	4 plus one additional sample for each Additional 50 cum or part thereof.

NOTE- At least one sample shall be taken from each Shift. Where concrete is produced at continuous production unit, frequency of sampling may be decided by Engineer-in-charge in such a manner so as to ensure that each concrete batch shall have a reasonable chance of being tested.

Test Specimen: -

Three test specimens shall be made for each sample for testing at 28 days. Additional samples may be required for various purposes such as to determine the strength of concrete at 7 days or at the time of striking the formwork, or to determine the duration of curing, or to check the testing error. Additional samples may also be required for testing samples cured by accelerated methods as described in IS 9103. The specimen shall be tested as described in IS 516.

TEST RESULTS OF SAMPLES: -

The test results of the sample shall be the average of the strength of three specimens. The individual variation shall not be more than $\pm 15\%$ percent of the average. If variation is more, the test results shall be treated as invalid. 90% of the total tests shall be done at the laboratory established at site by the contractor and remaining 10% in any other laboratory as directed by the Engineer-in-Charge.

ACCEPTANCE CRITERIA**Compressive Strength**

The concrete shall be deemed to comply with the strength requirements when both the following conditions are met:

- a) The mean strength determined from any group of four consecutive test results complies with the appropriate limits in col 2 of Table given under para 2.1.4 above.
- b) Any individual test result complies with the appropriate limits in col 3 of Table given under para 2.1.4 above.

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.

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.

Concrete of each grade shall be assessed separately.

Concrete is liable to be rejected if it is porous or honey-combed, its placing has been interrupted without providing a proper construction joint, the reinforcement has been displaced beyond the tolerances specified, or construction tolerances have not been met. However, the hardened concrete may be accepted after carrying out suitable remedial measures to the satisfaction of the Engineer-in-Charge.

MEASUREMENT –

- (i) As per CPWD Specifications 2019*, Vol-I & II with upto date correction slips
- (ii) In respect of all projected slabs at all levels including cantilever, canopy, the payment for the RCC work shall be made under the item RCC slabs. The payment for shuttering at the edges shall be made under item of centering and shuttering for RCC slabs. Nothing extra shall be paid for the side shuttering at the edge of these projected balconies / projected verandah slabs.

TOLERANCES - As per CPWD Specifications.

RATES: -

- (i) The rate includes the cost of materials, labour and T&P, including mixing, placing, transportation involved in all the operations described above except for the cost of centering, shuttering & reinforcement which will be paid for separately. It includes finishing i.e. making the top surface of smooth/in required level with trowel etc.
- (ii) In case of rejection of concrete on account of unacceptable compressive strength, governed by para "Standard of Acceptance" as above, the work for which samples have failed shall be redone at the cost of contractor. However, the Engineer-in-charge may order for additional tests (like cutting cores, ultrasonic pulse velocity test, load test on structure or 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 CPWD Specifications.

3. RCC WORK (ORDINARY)

The work shall be done in accordance with CPWD Specifications 2019 Vol-I & II with upto date correction slips.

Water Cement ratio for Ordinary RCC work shall not be more than 0.5. Contractor shall use concrete mixture of proper design having arrangement for measuring water for mixing of concrete.

4. FORM WORK

The work shall be done in general as per CPWD Specifications.

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, marine-ply shuttering in exceptional cases as per site requirement may be used on specific request from contractor to be approved by the Engineer-in-Charge. But nothing extra shall be paid on this a/c.

Nothing extra shall be paid for the centering and shuttering, circular in shape whenever the formwork is having a mean radius exceeding 6m in plan.

Nothing extra shall be paid for grid beams and the corresponding slabs having clear span more than 1.20 meters.

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 R.C.C. shall be accordingly adjusted at the time of its centering, shuttering and casting for which nothing extra shall be paid to the contractor except the places where different type of flooring is provided in the same room.

As per general engineering practice, level of floors in toilet / bath, balconies, shall be kept 12 to 20mm or as required, lower than general floors shuttering should be adjusted accordingly. Nothing extra is payable on this account.

Steel shuttering as approved by the Engineer-in-Charge shall be used by the contractor. Minimum size of shuttering plates shall be 600mm x 900mm except for the case when closing pieces are required to complete the shuttering panels.

Dented, broken, cracked, twisted or rusted shuttering plates shall not be allowed to be used on the work. The shuttering plates shall be cleaned properly with electrically driven sanders to remove any cement slurry or cement mortar or rust. Proper shuttering oil or de-bonding compound shall be applied on the surface of the shuttering plates in the requisite quantity before assembly of steel reinforcement.

5 REINFORCEMENT:-

The reinforcement shall be done as per CPWD Specifications.

The rate of item of reinforcement of RCC work includes all operations including straightening, cutting, bending, welding, binding with annealed steel wire or welding and placing in position at all the floors with all leads and lift complete as per CPWD Specifications.

The contractor shall provide approved type of support for maintaining the bars in position and ensuring required spacing and correct cover of concrete to reinforcement as called for in the drawings, spacer blocks of required shape and size. Chairs and spacer bars shall be used in order to ensure accurate positioning of reinforcement. **Spacer blocks shall be casted well in advance with approved proprietary pre-packed free flowing mortars (Conbextra as manufactured by M/s Fosroc Chemicals India Ltd. or of approved equivalent)** of high early strength and same colour as of surrounding concrete. However, Cover Guard Bars shall also be used to maintain proper cover of RCC Columns in addition to spacer blocks as mentioned above. Pre-cast cement mortar/concrete blocks/blocks of polymer shall not be used as spacer blocks unless specially approved by the Engineer-in-charge, rate of RCC items is inclusive of cost of such cover blocks & Cover Guard Bars.

6. PRE-CAST RCC WORK

The work shall be done in accordance with CPWD Specifications.

Pre-cast reinforced concrete units shall be of grade or mix as specified. Provision shall be made in the mould to accommodate fixing devices such as hooks etc. and forming of notches and holes. Each unit shall be cast in one operation. A sample of the unit shall be got approved from Engineer-in-charge before taking up the work.

Pre-cast units shall be clearly marked to indicate the top of member and its location.

Pre-cast units shall be stored, transported and placed in position in such a manner that these are not damaged.

The compaction of the concrete shall be done by vibrating, table or external vibrator, as approved by Engineer-in-charge. The rate quoted for the item shall include the element for framework and mechanical vibration.

Rate for item includes cost of all materials, labour, and all operations involved. Cost of M.S. frames, lugs including their welding, lifting hooks is also included.

In the item of providing and fixing precast reinforced cement concrete in shelves the cost of cutting chases and making good the same shall be inclusive in the item and nothing extra shall be paid on this account.

7. BRICK WORK: -

The brick work shall be carried out with good quality well burnt FPS bricks of class designation 75 / Fly ash brick of class designation 10 as per CPWD Specifications. Exposed brick work for ground level to plinth level shall be executed with selected FPS bricks of class designation 75.

The rate shall also include for leaving chases / notches for dowels / cramps for all kinds of cladding to come over brick work.

Brick work provided around shaft or lift walls or around slab cutouts shall be measured in the brick for corresponding floor level. Nothing extra shall be paid on this account.

M.S. Strip/ Bar provided at every third course of half brick masonry shall be in single piece. If required, welding joint can be used without overlaps. Nothing extra shall be paid for welding and overlaps.

8. STONE / MARBLE WORK

General: - The execution of stones work shall be in general as per CPWD Specifications 2019 Vol-I & II, with up-to-date correction slips.

9. GRANITE/ MARBLE WORKS

- a) The granite/ marble stonework shall, in general, be carried out as per the CPWD Specifications. The specifications for dressing, laying, curing, finishing, measurements, rate etc. for the granite/ marble stone flooring shall be same as that of works for the Marble flooring, skirting and risers of steps under Flooring Sub Head of the CPWD Specifications. The wall lining / veneer work with granite/ marble stone shall be as per the CPWD Specifications for Marble work Sub Head.
- b) The decision of the Engineer-in-Charge as regards the approval of the samples for the various types of the granite/ marble stones shall be final and binding on the Contractor. No claim of any kind whatsoever shall be entertained from the Contractor on this account. The Contractor shall then procure and get the mock up prepared at site of work for approval of quality of workmanship and the granite/ marble stone as specified. The mock up shall be prepared in lift lobby, toilet etc. on one of the floors. The size of the stones shall be as per the architectural drawings. If the quality of the workmanship and the material is as per the required standards, the mock up shall be allowed as part of the work and measured for payment and shall not be dismantled. Otherwise, it shall be dismantled by the contractor as directed by the Engineer-in-Charge and taken away from the site of the work at his own cost. Nothing extra shall be payable on this account. That the curvilinear profile of the entrance steps for the building shall be negotiated in

segmental manner (using trapezoidal shaped granite stone pieces with straight edges for treads and rectangular stone pieces for the risers) and not in curved profiles as specified earlier. However the granite/ marble stone slabs shall be cut to required sizes and shapes, as per the architectural drawings, to negotiate the curved steps in segmented manner. The risers shall also be cut to required sizes and shapes and the edges chamfered at the joints, all as per the architectural drawings. However, the Contractor shall prepare the detailed shop drawings for the same and commence work only after the approval by the Engineer-in-Charge. The rate shall also include any consequent wastage, incidental charges involved in this work. Nothing extra shall be payable on this account. For the purpose of payment, the actual area of each type of granite/ marble stone as laid shall be measured.

- c) For the steps (risers and treads) in the linear profile, the granite/ marble stone shall be provided in single pieces up to 2.0m as per the architectural drawings, unless otherwise specifically permitted by the Engineer-in-Charge. Wherever grooves are required to be provided the same is to be done as per architectural drawings and as directed by the Engineer-in-charge. Wherever required, the joints shall be provided as per the architectural drawings. Nothing extra shall be payable on these accounts.
- d) The granite/ marble slabs used for providing and fixing in the sills, soffits and jambs of doors, windows, ventilators and similar locations shall be in single piece unless otherwise directed by the Engineer-in-Charge. Wherever stone slab other than in single piece is allowed to be fixed, the joints shall be provided as per the architectural drawings and as per the directions of the Engineer-in-Charge. In the cabin areas, the joints in sills shall preferably be provided in line with the partition wall. Depending on the number of joints, as far as possible, the stone slabs shall be procured and fixed in slabs of equal lengths as per the architectural drawings and as directed by Engineer-in-Charge.
- f) While fixing the granite/ marble slabs in sills, soffits and jambs of doors, windows, ventilators etc., rebates shall be made by overlapping the stones at the required places for fixing shutters for doors, windows and ventilators etc. as shown in the architectural drawings and as per the directions of the Engineer-in-Charge. Epoxy based adhesives shall be used for fixing the granite/ marble stones to each other, or wherever required. The authorized overlap as per the architectural drawings or as directed by the Engineer-in-Charge shall be measured for payment under the same item. However, any extra mortar thickness required due to the overlap arrangement shall be deemed to have been included in the rate of this item. Nothing extra shall be payable on this account. The granite/ marble stone slab shall be fixed over low level storage cabinets using necessary adhesive as per the manufacturer's specification. The stone shall have uniform thickness and shall be provided in sizes as per the architectural drawings. The stone slab shall have uniformly leveled surface after fixing. All the joints shall be finished smoothly in a workmanlike manner.
- f) The granite/ marble work shall be adequately protected by a layer of Plaster of Paris, which shall be maintained throughout and removed just before handing over of the works for which nothing extra shall be payable.

Note :-The basic rate of granite used for all granite works shall not be less than Rs. 1800 per SQM.

Acceptance Criteria: - The stone/tile work shall carry Five years guarantee after completion of work against unsound material, workmanship as per guarantee bond. **Five years guarantee** in prescribed Performa attached must be given by the specified firm, which shall be counter signed by the contractor, in token of his overall responsibility. 10% (ten percent) of the cost of these items would be retained as security deposit in addition to normal security deposit of the whole work and the amount so deducted would be released after five years from the date of completion of the entire work under the agreement, if the performance of the items is found satisfactory. If any defect is noticed during the guarantee period, the contractor should rectify it within seven days and if not attended to the same will be got done from another agency at the risk and cost of contractor. However, this security deposit can be released in full if bank guarantee of equivalent amount is produced and deposited with the department.

SAMPLES FOR STONE WORK

Samples of each item of stone work either individually or in combination shall be prepared for approval of Engineer-in-charge before commencement of work.

10. WOOD WORK

- a) The wood work in general shall be carried out as per CPWD Specifications 2019 Vol-I & II with up-to-date correction slips.
- b) The factory shall be got approved from the Engineer-in-charge before commencement of work for factory made wood work. The sample of timber to be used shall be deposited by the contractor with Engineer-in-charge before commencement of work.
- c) The shape and size of beading shall be as per drawings. The joints of beading shall be mitred.
- d) Timber shall be of specified species, good quality and well-seasoned. It shall have uniform colour, reasonably straight grains and shall be free from knots, cracks, shakes and sapwood. It shall be close grained. The contractor shall deposit the samples of species of timber to be used with the Engineer-in-Charge for testing before commencement of the work.
- e) Wood work shall not be painted, oiled or otherwise treated before it has been approved by the Engineer-in-charge. All portion of timber including architrave abutting against masonry, concrete, stone or embedded in ground shall be painted with approved wood preservative or with boiling coal tar.
- f) The contractor(s) shall produce cash voucher and certificates from approved Kiln Seasoning Plants about the timber used on the work having been kiln seasoned and chemically treated by them, falling which it would not be so accepted as kiln seasoned and/or chemically treated.
- g) Transparent sheet glass conforming to IS: 2835 – 1977 shall be used. Thickness being governed as under unless otherwise specified in the item in wood work/steel work:

Area of Glazing	Thickness
(a) For glazing area up to 0.50 sqm	4.0 mm
(b) For glazing area more than 0.50 sqm	6.0 mm

- h) Factory made wooden flush door shutters shall be carried out as per CPWD specifications 2019, Vol-I & II with upto date correction slips.
- i) The work shall be executed through specialized agencies to be approved by the Engineer in Charge.
- j) The contractor shall propose well in advance to Engineer-in-Charge, the names and address of the factory where from the contractor intends to get the shutters manufactured along with the credential of the firm. The contractor shall place the order for manufacturing of shutters only after obtaining approval of the Engineer in Charge whose decision in this case shall be final & binding. In case the firm is not found suitable he shall propose another factory. The factory may also be inspected by a group of officers before granting approval; shutters shall however be accepted only if these meet the specified test.
- k) Contractor will arrange stage wise inspection of the shutters at factory by the Engineer-in-Charge or his authorized representative. The contractor will have no claim if the shutters brought at site in part or full lot are rejected by the Engineer-in-Charge due to bad workmanship / quality. Such defective shutters will not be measured and paid. The contractor shall remove the same from the site of work within 7 days after the written instruction in this regard are issued by the Engineer-in- Charge.
- l) The shutters should be brought at site without primer / painting.

11. FIRE RATED DOORS

Fire rate doors shall conform to specifications lay down by NBC and/or relevant BIS codes etc.

12. STEEL WORK

All steel work shall be carried out as per CPWD Specifications 2019 Vol-I & II with up-to-date correction slips.

13. FLOORING

- a) All work in general shall be carried out as per CPWD Specifications 2019 Vol-I & II with up-to-date correction slips.
- b) Whenever flooring is to be done in patterns of tiles and stones, the contractor shall get samples of each pattern laid and approved by the Engineer-in-charge before final laying of such flooring. Nothing extra shall be payable on this account.
- c) Different stones / tiles used in pattern flooring shall be measured separately as defined in the nomenclature of the item and nothing extra for laying pattern flooring shall be paid over and above the quoted rate. No additional wastage, if any, shall be accounted for any extra payment.
- d) Samples of flooring stones/ Tile (Kota/ Marble/ Granite/ Ceramic tiles/ Vitrified tiles etc.) shall be deposited well in advance with the Engineer-in-Charge for approval. Approved samples should be kept at site with the Engineer-in-Charge and the same shall not be removed except with the written permission of Engineer-in-Charge. No payment whatsoever shall be made for these samples.
- e) The Marble/ Kota/ Granite or any other stone shall be fully supported by the details establishing the quarry and its location.
- f) Full width Marble/ Kota/ Granite stone over kitchen platform shall be provided which shall not be less than 900mm long except to adjust for closing pieces. The marble / stone flooring in treads and risers of staircase shall not be less than 1500mm long except to adjust the closing pieces. Nothing extra shall be paid on these accounts.

g) Vitrified Tile Flooring

The tiles shall be of approved make and shall generally conform to Table 12 of IS15622.

The full body Vitrified tiles of specified sizes shall be used & sample of tiles shall be got approved from the Engineer-in-Charge. All tiles shall be rectified and double charge minimum. The Mandatory tests for vitrified tiles shall be got done as per CPWD Specifications (volume-1)/relevant BIS Code.

h) Ceramic Tiles Flooring

The tiles shall be procured from the approved manufactures of the specified shade & colour. The floor & wall tiles shall be conforming to IS:15622 for floor and wall tiles respectively.

Tiles for dado shall be 300mm x 600mm (minimum size) or more (GROUP-III) as approved.

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Tiles for flooring shall be 600mm x 600mm (minimum size) or more (GROUP-V) as approved.

Test shall be conducted to satisfy the quality of material as per CPWD Specifications. The rate of items of flooring is inclusive of providing sunken flooring in bathrooms, kitchen etc. and nothing extra on this account is admissible. The proper gradient shall be given to flooring for toilets, verandah, kitchen, courtyard, etc. as per the directions of Engineer-in-charge.

The entire responsibility for the quality of work will however rest with the building contractor

only and he shall submit a Guarantee Bond as per Proforma attached. **10% (ten percent)** of the cost of all tile items in addition to normal security deposit of the whole work, would be retained as security deposit and the amount so deducted would be released after Five years from the date of completion of the entire work under the agreement, if the performance of the items is found satisfactory. If any defect is noticed during the guarantee period, the contractor should rectify it within seven days and if not attended to the same will be got done from another agency at the risk and cost of contractor. However, this security deposit can be released in full if bank guarantee of equivalent amount is produced and deposited with the department.

14. WATER PROOFING FOR SUNKEN FLOORS: -

The work shall be got executed from the specialized agency as approved by the Engineer in Charge.

Total quantity of the water proofing compound required shall be arranged only after obtaining the prior approval of the make by Engineer-in-charge in writing. Materials shall be kept under double lock and key and proper account of the water proofing compound used in the work shall be maintained. It shall be ensured that the consumption of the compound is as per specified requirements.

The finished surface after water proofing treatment shall have adequate smooth slope as per the direction of the Engineer-in-charge.

Before commencement of treatment on any surface, it shall be ensured that the outlet drain pipes / spouts have been fixed and the spout openings have been chased and rounded off properly for easy flow of water.

GARANTEE BOND FOR ALL WATER PROOFING ITEMS:-

Ten years Guarantee bond in prescribed proforma attached shall be submitted by the contractor which shall also be signed by both the specialized agency and the contractor to meet their liability/ liabilities under the guarantee bond. However, the sole responsibility about efficiency of water proofing treatment shall rest with the building contractor. 10% (Ten per cent) of the cost of water-proofing work shall be retained as Security Deposit addition to normal security deposit of the whole work and the amount so deducted would be released after ten years from the date of completion of the entire work under the agreement, if the performance of the treatment is found satisfactory. If any defect is noticed during the guarantee period, the contractor shall rectify it within 15 days of receipt of intimation of defects in the work. If the defects pointed out are not attended to within the specified period, the same will be got done from another agency at the risk and cost of contractor.

16. FINISHING:-

The work shall be done in accordance with CPWD Specifications 2019 Vol-I & II with up-to-date correction slips and/or manufacturers specifications wherever applicable.

All painting material of approved brand and manufacturer shall be brought to the site of work in the original sealed containers. The material brought to the site of work shall be sufficient for at least 30 days of work. The material shall be kept under the joint custody of contractor and representative of the Engineer-in-charge. The empty containers shall not be removed from the site till the completion of the work without permission of the Engineer-in-charge.

In the item of finishing walls with water proofing cement paint, only the plain/flat area shall be measured for payment and nothing extra shall be paid on account of pointed wall surface.

17. SANITARY INSTALLATIONS /WATER SUPPLY / DRAINAGE: -.

(i) The contractor shall submit schematic drawing of water supply and sanitary installation showing details of layout, including internal water supply and drainage details, showing the

detail of water supply lines including fittings diameter wise and fixtures connecting to soil waste through traps and connection of W.C. to main shaft pipe for drainage including its ventilation system for approval of Engineer-in-Charge.

(ii) For the work of water supply and sanitary installations, the contractor shall engage the approved licensed plumbers and submit the name of proposed plumbing agencies with their credentials for approval of the Engineer-in-Charge.

(iii) The work in general shall be carried out as per CPWD Specifications 2019 Vol-I & II with up-to- date correction slips.

(iv) The tendered rates shall include the cost of cutting holes/cores in walls, floors, RCC slabs etc. wherever required and making good the same for which nothing extra shall be paid.

(v) The Centrifugally spun cast iron pipe IS: 3989-1984 wherever necessary shall be fixed to RCC columns, beams etc. with rawl plugs of approved quality and nothing extra shall be paid for on this account.

(vi) The pig lead to be used in the jointing should be as per CPWD specifications.

(vii) Nothing extra for providing & fixing CP Brass caps /extension pieces wherever required for CP Brass fittings shall be paid beyond the rates payable for corresponding CP Brass fittings.

(viii) The entire responsibility for the quality of work will however rest with the building contractor only and he shall submit a Guarantee Bond as per Performa attached. **10% (ten percent)** of the cost of these items would be retained as security deposit in addition to normal security deposit of the whole work and the amount so deducted would be released after five years from the date of completion of the entire work under the agreement, if the performance of the items is found satisfactory. If any defect is noticed during the guarantee period, the contractor should rectify it within seven days and if not attended to the same will be got done from another agency at the risk and cost of contractor. However, this security deposit can be released in full if bank guarantee of equivalent amount is produced and deposited with the department.

(viii) Providing, fixing, testing and commissioning of Hubless Centrifugally cast iron pipes and fittings (Epoxy coated inside & outside) as per ISO: 6594/ IS: 15905 standard and jointing with stainless steel shielded couplings with a double stainless steel bolt and screw housing incorporating a EPDM rubber gasket as per IS: 15905/ ASTM 1277 standard inclusive of all necessary specials like bends, tees, offsets, junctions, cowls, end plug, inspection pipes etc. laid under floor/ fixed on walls and in pipe shafts. The rate shall be including angle supports, hanger, nuts bolts, anchor fasteners, fixing clamps/ channels with U-Bolts etc. complete. Hubless cast iron pipes & fitting shall have tested for noise level which shall not be more than 25 dB (A) at 2 L/s.

18. Aluminium doors, windows, ventilators etc. glazing specifications, uPVC window
Extent and Intent: -

(i) The work shall be carried out in the factory through an approved Special Agency, who shall furnish all material, labour, accessories, equipment, tool and plants and incidentals required for providing and installing anodized/powder coated aluminium doors, windows, claddings, louvers and other items as called for on the drawings. The drawings and specifications cover the major requirements only. The supplying of additional fastenings, accessories, fixtures and other items not mentioned specifically herein, but which are necessary to make a complete installation shall be a part of this contract. Hinges for open able panel shall be stainless steel friction hinges / stays selected for specified wind load and dead loads or specifically extruded in-built hinges.

(ii) **General:** - Aluminium doors, windows etc. shall be of sizes, section details as shown on the Architectural drawings. The details shown on the drawings indicate generally the sizes of the component parts and general standards. These may be varied slightly to suit the standard adopted by the manufacturers. Before proceeding

with any manufacturing, the contractor shall prepare and submit complete manufacturing and installation drawings for approval of the Engineer-in-Charge and no work shall be performed until the approval of these drawings is obtained.

(iii) Shop Drawings:— The contractor shall submit the shop drawings of doors, windows, louvers, cladding and other aluminium work, based on the architectural drawings to the Engineer-in-Charge for his approval. The shop drawing shall show full size sections of doors, windows etc. thickness of metal (i.e. wall thickness) details of construction, sub frame/rough ground profile, anchoring details hardware as well as connection of windows, doors and other metal work to adjacent work. Samples of all joints and methods of fastening and joining shall be submitted to the Engineer-in-Charge for approval well in advance of commencing the work.

(iv) Samples: - Samples of doors, windows louvers etc. shall be fabricated, assembled in the factory and submitted to Engineer-in-Charge for his approval. They shall be of sizes, types etc. as decided by Engineer-in-Charge. All samples shall be provided at the cost of the contractor.

(v) Sections: - Aluminium doors and windows shall be fabricated from extruded sections of profiles as detailed on drawings. The sections shall be extruded by the manufacturers approved by the Engineer-in-Charge. The aluminium extruded sections shall conform to BIS designation IIE/IIV 9 WP alloy, with chemical composition technical properties, as per IS: 733 and IS: 1285. The permissible tolerance of the extruded sections shall be such as not to impair the proper and smooth function/ operations and appearance of doors and windows.

(vi) Fabrication: - Doors, windows etc. shall be fabricated to sizes at factory and shall be of section, sizes, combinations and details as shown on the drawings. All doors, windows etc. shall have mechanical joints. The joints shall be designed to withstand a minimum wind load of 150 Kg. per Sqm. The design shall also incur that the maximum deflection of any member shall not exceed 1/175 of the span of the member. All members shall be accurately machined and fitted to form hairline joints prior to assembly. The joints accessories such as cleats, brackets etc. shall be of such material as not to cause any bimetallic action. The design of the joints and accessories shall be such that the accessories are fully concealed. The fabrication of doors, windows, etc. shall be done in suitable sections to facilitate easy transportation, handling and installation. Adequate provision shall be made in the door and window members for anchoring to support and fixing of hardware and other fixture as approved by the Architect.

(vii) Anodizing/ powder coating: -All aluminium sections shall be Powder coated (minimum 50 micron thickness) as per requirement as per IS: 7088 and to required colour as specified in the item as per IS: 1868 grading as specified in item schedule after cutting the member to requisite sizes before the final assembly. Powder coating shall be of minimum 50 micron thickness. Anodizing conforming to specified grade with minimum average thickness of 15 microns when measured as per IS: 612. The anodic coating shall be properly sealed by steams or in boiling water are cold sealing process as per IS:1868/IS: 6057. Polythene tape protection shall be applied on the anodised section before they are brought to site. All care shall be taken to ensure surface protection during transportation, storage at site and installation. The tape protection shall be removed on installation. The sample will be tested in the approved laboratory and cost of samples; etc. shall be borne by the contractor.

(viii) Protection of finish: - All aluminium members shall be wrapped with approved self-adhesive non-staining. PVC tapes.

(ix) Handling and Stacking: -

Fabricated materials shall be carried in an approved manner to protect the material against any damage during transportation. The loading and unloading shall be carried out with utmost care. On receipt of material at site, it shall be carefully examined to detect any damaged pieces. Arrangements shall be made for expeditious replacement of damaged pieces/ parts. Materials found to be acceptable on inspections shall be repacked in crates and

stored safely.

In the case of composite windows and doors, the different units are to be assembled first. The assembled composite units should be checked for line, level and plumb before final fixing is done. Units may be serial numbered and identified as out how to be assembled in their final locations if situation so warrants.

The contractor shall be responsible for assembling composite, bedding and filling the grove with polysulphide sealant inside and outside, at transoms and mullions placing the doors, windows etc. in their respective openings. After the doors/ windows have been fixed in their correct assigned position, the open hollow sections abutting masonry concrete shall be fitted with approved polysulphide sealant densely packed and finished neat.

The contractor shall be responsible for doors, windows, etc. being set straight, plumb, level and for their satisfactory operation after fixing is complete.

(x) Installation:

Just prior to installation the doors, windows, etc. shall be uncreated and stacked on edge on level bearers and supported evenly. The frame shall be fixed into position true to line and level using adequate number of expansion machine bolts, anchor fasteners, of approved size and manufacture and in an approved manner. The holes in concrete/masonry members for housing anchor bolts shall be drilled with an electric drill.

The door/ windows assembled as shown on drawings shall be placed in correct final position on the opening and marks made on concrete members at jambs, sills and heads against the holes provided in frames for anchoring. The frame shall then be removed from the opening and laid aside. Neat holes with parallel sides of appropriate size shall then be drilled in the concrete members with an electric drill at the marking to house the expansion bolts. The expansion bolts shall then be inserted in the holes, struck with a light hammer till the nut is forced into the anchor shell. The frame shall then be placed in final position in the opening and anchored to the support through cadmium plated machine screws of required size and anchored to the support through cadmium plated machine screws of required size threaded to expansion bolts. The frame shall be set in the opening by using wooden wedges at supports and be plumbed in position. The wedges shall invariably be placed at the meeting at points of glazing bars and frame.

(xi) EPDM Rubber / Neoprene gaskets: The contractor shall provide and install EPDM Rubber / Neoprene gaskets of approved size and profile at all locations as shown and as called for to render the doors, windows etc. absolutely air tight and weather tight. The contractor shall produce samples of the gaskets for approval and shall procure the same after approval only.

(xii) Fittings: Hinges, stays, handles, tower bolts, locks and other fittings shall be of quality and manufacturer as approved by the Engineer-in-Charge.

(xiii) Manufacturer's Attendance: The manufacturer immediately prior to the commencement of glazing shall adjust and set all windows and doors and accept responsibility for the satisfactory working of the opening frames.

(xiv) Poly-sulphide: The gaps between frames and supports and also any gaps in the door and windows sections shall be raked out as directed and filled with poly-sulphide of approved colour and make to ensure complete water tightness. The poly-sulphide shall be of such colour and composition that it would not stain the masonry/concrete work, shall receive paint without bleeding, will not sag or run and shall not set hard or dry out under any conditions of weather. The sample of poly-sulphide to be used for this purpose shall be got approved from the Engineer-in-Charge before its actual use.

(xv) Details of Test:

The various tests on aluminium sections shall be conducted in accordance with the relevant IS codes.

The minimum number of tests for anodizing/powder coating and corrosion resistance shall be as given below: -

Sr. No.	Details	No. of Tests
1.	Doors, windows and ventilators	One test for every 1000 kg or part thereof.

The samples of major member of each unit of doors/ windows shall be selected at random by Engineer-in-Charge as such that all the aluminium section shall be got tested.

(xvi) Acceptance Criteria: - The entire responsibility for the quality of work will however rest with the building contractor only. The aluminium work shall carry Five years guarantee after completion of work against unsound material, workmanship and defective anodizing/ powder coating as per Guarantee Bond. Five years guarantee in prescribed Performa attached must be given by the specified firm, which shall be counter signed by the contractor, in token of his overall responsibility. **10% (ten percent) of the cost of these items would be retained as security deposit and the amount so deducted would be released after five years from the date of completion of the entire work under the agreement, if the performance of the items is found satisfactory.** If any defect is noticed during the guarantee period, the contractor should rectify it within seven days and if not attended to the same will be got done from another agency at the risk and cost of contractor. However, this security deposit can be released in full if bank guarantee of equivalent amount is produced and deposited with the department.

Rates: -

The rates of the item shall include the cost of materials, labour required in all the above operations.

The rates exclude the cost of stainless-steel friction hinges / stays selected for specified wind load and dead loads or specifically extruded in-built hinges, and rest of the fittings shall also be paid separately.

19. Structural Glazing of Aluminium Work

General:

The work shall be carried out through an approved specialized agency, who shall furnish all materials, labour, accessories, equipment, tool and plant and incidentals required for providing and installing Structural Glazing work. The specialized agency shall be got approved from the Engineer-in-charge, well before actual commencement of the item of work. Necessary performance certificates in respect of agencies proposed to be engaged shall be submitted within 30 days from the date of issue of acceptance letter to substantiate technical capability and experience of the agency for prior approval of the Engineer-in-charge.

The Contract Documents define only the design intent and general performance requirements. The Contractor is entrusted with total responsibility for design, structural calculations, shop drawings, fabrications, installation, warranties, certifications and related documentation.

The Contractor shall be entirely responsible for the design, fabrication and erection of the systems, and all work shall be performed entirely by his own forces.

Design approved metal framing members to accommodate expansion and contraction of components without buckling, creating stress on glass, structural components and fasteners, joint seals or other damaging effects.

The Contractor shall provide to sealant manufacturer samples of all relevant substrates, including finished aluminium, coated glass, gaskets, setting blocks and brackets.

Sealant manufacturer shall perform tests to verify adhesion, staining and chemical compatibility. The Contractor shall use sealants and substrates only in combinations for which favourable addition and compatibility results have been obtained.

Aluminium surfaces in contact with mortar, concrete, plaster, masonry, wet application of the fire proofing and absorptive materials shall be coated with an anti- galvanic, moisture barrier material.

Conceptual design:

- Component and hardware description.
- Design, fabrication & execution methodologies.
- Detailed bar chart & showing all activities from macro to micro details.
- Structural design and engineering fabrication, supply and erection of the Structural/ Structural Glazing wall system including but not limited to the following:
- Extrusion aluminium framing members.
- All interior trim covers and closures.
- All anchor clips, fasteners, and brackets.
- Glazing, including materials, gaskets, sealants, spacers and related work.
- A continuous gutter system at each floor of the unitized Structural Glazing wall.
- Field water tests.

Samples:

Sample of one typical panel shall be fabricated, assembled and installed for approval. It shall be of type as per approved drawings. All samples shall be provided at no cost to the Project In- charge.

Design Considerations:

The Contractor should possess adequate engineering background and facilities inclusive of trained system personnel from their parent company and should be able to prove their design and engineering capabilities to meet structural design parameters. The Contractor should carry adequate Professional Indemnity Insurance supporting a design warranty to the benefit of the Project In-charge. Copies of the same to be forwarded to the Project In-charge within 2 weeks of signing the Agreement.

The Contractor shall submit structural calculations for the system and it shall be stamped and signed by a qualified structural engineer, including mock-up complying with current design rules of the relevant aluminium code include analysis for wind, dead loads, deflections and if appropriate seismic loads on framing members and anchors. All Structural Glazing shall have mechanical joints shall be designed IS 875.

The design shall also ensure that the maximum deflection of any member shall not exceed 1/175 of the span between supports or 20mm, whichever is less for vertical elements & 1/250 of the span between supports for horizontal elements. Air leakage through windows should not exceed

0.60 Cu.ft/Sq.ft. Minimum design pressures both inward, outward and acting perpendicular to glass (including return surfaces) shall be per the requirements the Indian Wind Loading Code IS875 Part 3 and earth quake regulations.

The framing members should be designed such that deflection perpendicular to the wall plane of any unsupported span shall not exceed 1/175 or 20mm whichever is the least, under the required design load both positive and negative. Also, no failure of structural silicone Joints, damage to joinery, components, or permanent set in the framing members in excess of 0.2 percent of the span shall occur under 1.5 times the design load. Deflection in the wall plane of any glazed horizontal span should not exceed ½ the glass edge clearance dimension below.

The Contractor shall also submit the calculations for the structural silicone joint, size as required.

Water Tightness:

A complete drainage system must be incorporated into the Structural Glazing wall frame. Water leakage and condensation shall be drained or discharged to exterior face of the wall and all internal spaces shall be vented by acceptable means to ensure air-pressure

equalization when possible.

Drainage system shall be sealed off per floor height to prevent infiltrated water from leaking to lower floors.

Movement of water behind and on exposed surfaces must be controlled to ensure that water is not retained and that elements will not be damaged or corroded by water and to minimize the potential for algae and fungus growth as a result of standing or trapped water.

Shop Drawings:

The Contractor shall prepare detailed shop drawings incorporating all allowances for construction and fabrication tolerances.

The Contractor shall submit detailed shop drawings for the Structural wall system, aluminium composite panel cladding works to the Project In-charge for review.

The Architect's review will be conformance to the design concept and for the general arrangement only. And such review shall not relieve the Contractor of any responsibilities as stated herein or any other applicable items herein specified.

The Shop drawings shall show joinery techniques, provisions for horizontal and vertical expansion, glass and metal thickness, framing and anchor member profiles, identification all materials including metal alloys, glass types, fasteners and glazing materials, all shop and field sealants by product name. This shall also show relative layout of all adjacent walls, beams, columns and slabs with all dimensions to each other and grid lines/ dimension position of glass edge relative to metal daylight, anchorage details to the building structure and coping details at the parapet are also to be submitted. The drawing shall also indicate all gaskets, weather strips and Aluminium extrusions.

Shop Drawings shall be signed and sealed by a Qualified Structural Engineer with specific experience in Structural Glazing Wall construction and design.

Samples:

The Contractor shall submit samples for review three (3) sets of labelled samples of each required type and colour of metal finish, on 300mm long sections of aluminium extrusion shapes. Samples must show extremes of colour texture variation. Samples will be reviewed by Project In-charge for colour and texture only. Compliance with other requirements is the responsibility of the Contractor. Colour and texture range of production material shall match approved samples.

Project In-charge reserves the right to require samples which will show the fabrication techniques and workmanship of the component parts, and the design of accessories and other exposed auxiliary items, before fabrication of this work proceeds.

The Contractor shall also submit samples for review three (3) sets of labelled samples of sealant backers, anchor components, anchor assemblies and epoxies.

Aluminium:

Extruded aluminium sections should conform to BIS designation HE9WP/HV9WP, the chemical composition requirements of IS:733, and technical properties as laid down in IS:1285. Standard commercial tolerances shall apply to finished, fabricated and assembled materials.

The sections of mullions and transoms shall be designed to withstand deflection and wind pressure as described in specifications and shall be rigid enough to support and retain the

glass and other construction variation as indicated.

Reinforcing member, where used, shall be completely enclosed and if fabricated from steel shall be galvanized and protected with two coats of zinc chromate where welded shall be treated in the same way.

The frames shall be formed by integrated PVDF 3 coats (40 – 45 microns) as per AAMA 2605 specification aluminium section with provision to receive fixed glass spandrel and other construction variation as indicated.

Sections of the frame shall be cut and profiled for assembly in the best workmanlike manner and finished in a neat and weatherproof construction with proper tempering of aluminium sections.

All dimensions of the Structural Glazing wall shall conform to the overall sizes shown on the drawings. They shall be fabricated to proven and tested detail designs. All parts shall be supplied ready for fixing and complete with all necessary fittings. The exact dimensions for frame work shall be physically checked at site before starting fabrication.

All joints shall be mechanical, jointed with aluminium angles with stainless steel screws.

Silicone Sealant:

The Contractor shall send a sample of PVDF 3 coats (40 – 45 microns) as per AAMA2605 specification aluminium section & selected glass to the silicon sealant manufacturer and get his approval. A copy of that certificate to be submitted to Project In-charge. The cost of samples, carriage of the samples and testing charges, if any shall be borne by the Contractor.

The Contractor shall submit, for record only, glass manufacturer's written statement that any insulated glass, reflective glass and spandrel glass is supported by structural silicone is suitable for such application.

The colour/ shade of sealant shall be decided by the Engineer-in-charge and the Contractor to get approval before procurement.

Glass Specification:

Providing and fixing aluminium semi unitized vertical Structural glazing system with single glass vision panel and spandrel panel of approved make having main frame of verticals and horizontals made out of specially designed extruded aluminium sections to withstand wind pressure of 175 kg/sqm at a height of 40m and fabricated, fixed at all levels, elevation and heights to the Masonry

/ RC walls with necessary clamps, brackets and anchor fasteners. All clamps and brackets shall be Mild Steel Hot dip galvanized minimum 80 microns thick and shall conform to IS: 4759-1996. The extruded aluminium section shall be anodized in approved colour with an anodic coating of minimum 20 microns. Extruded section shall be of 6063 T5 or T6 alloy conforming to ASTM B

221. Any other fastening straps, nuts, bolts, rivets, washers, Fire stops at all floor levels etc. shall be in stainless steel SS 304 grade. All tapes shall be of approved make. The system shall be designed to withstand a wind pressure of 200 kg/Sqm and shall be fixed to the masonry/RC walls with necessary clamps, brackets and anchor fasteners, clamps and brackets shall be Hot dip galvanized minimum 80 microns thick all complete as per manufacturer's manual and specifications. The spandrel panel shall have 50mm thick fiber glass insulation of 48 kg/Cum density of approved make conforming to IS-8183 and 1.0 mm thick Twiga black tissue conforming to BS 476 Part 7. This insulation shall be enclosed in a GI tray fabricated out of 1mm thick. GI sheet and fixed to the glazing framework with stainless steel fasteners. The gap between the GI framework and the concrete framework shall be sealed with Aluminium flashing fixed with stainless steel fasteners. All gaps shall be sealed with Silicone sealant of approved brand. Insulation should be provided in between the Structural glazing aluminium frame work (i.e., behind the spandrel glazed panel) and the structure. Providing 6 mm thick toughened fully tempered hard coated glass of blue/green/blue-green or approved colour having VLT = 32 to 48

%, External reflectance= 6 to 16%, Internal reflection = 8 to 20%, Solar factor = 0.33 to 0.36, U Factor = 2.8 to 3.6 W/sqm K etc.

Accessories:

Silicon gaskets, weather stripping, extruded seals and spacers, which do not come into contact with structural silicone sealant shall be of Silicon gasket or approved equivalent. Where in parallel contact with structural silicone sealants, all gaskets, setting blocks and spacers other than foam glazing tapes shall be of heat cur silicone rubber, chemically compatible with the silicone sealant and suitable for the specific purpose intended. All extruded gaskets, weather stripping and spacers other than foam glazing tapes shall have continuous mechanical engagement to framing members adhesive attachment is not acceptable.

The cladding system shall be constructed with (and shall maintain during its design life) a standard of seal which shall not result in any reduction of sound insulation performance.

Gaskets, weather stripping and seals used to achieve the required weather proofing and/ or air tightness shall be selected to accommodate fully the range of dimensional tolerances associated with fabrication and installation of the cladding system. Gaskets, weather stripping and seals shall be formed from materials capable of retaining their elastic qualities, dimensions and resistance to physical and chemical attack sufficient to maintain the full water tightness, air tightness and acoustic performance for the design life of the Structural wall.

Extruded gaskets, weather stripping, seals and spacers mechanically engaged by flutes or pockets extruded in framing member shall be installed without residual tension or extension. Dry lubricants may be used to reduce drag during installation of synthetic rubber extrusions and to induce compression so as to prevent gradual elastic shrinkage and retraction from their ends. Wet lubricants containing detergent shall not be used for any purpose which may bring the liquid into contact with the coated surfaces of vision and spandrel glass.

Fabrication & Installation:

Installation shall be in true line vertically and horizontally.

Work shall be done by competent workmen who are thoroughly skilled in their trade. Assemblies shall be neat and free of defects that impair strength, function or appearance. The work shall be accomplished in compliance with the specified criteria without buckling opening or joints. Under stress on fasteners, sealants and gaskets, opening of welds cracking of glass leakage noises and other harmful effects.

As far as practicable fitting and assembly of the work, shall be done in the shop.

All exposed work shall be carefully matched to produce continuity of line and design.

All joints in exposed metal work, unless otherwise shown or specified shall be accurately fitted and rigidly secured with joint sizes conforming to industry standards.

Except where otherwise shown specified or directed the method of assembly and joining shall be as per approved shop drawings. Fabricate and fasten metal work so that the work will not be distorted nor the fasteners over stressed from the expansion and contraction of the metal.

All welding shall be in accordance with the appropriate recommendations of the Indian welding codes and shall be done with electrodes and/ or by methods recommended by the manufacturer of the alloys being welded. All welds behind finished surfaces shall be done as to minimize distortion and/ or dis-coloration on the finished side. All weld spatter and welding oxides on finished surfaces shall be removed by de-scaling and/ or grinding.

Unless otherwise shown or specified, all weld beads or exposed surfaces shall be ground and finished to match and blend with finish on adjacent parent metal. Grinding and polishing of nonferrous metal shall be done only with clean wheels and compounds free from iron and iron compounds. No soldering and/ or brazing shall be allowed.

The Contractor shall conceal all the fasteners where visible in the finished work.

All aluminium components shall fabricate before finishing, cutting of components will not be

acceptable.

As the building is exposed to varying weather actions, all fasteners shall be stainless steel, self-tapping screws with Aluminium brackets. Steel anchors shall be pre-holed and galvanized. The bolts shall be steel chromium plated along with nuts and covered with butyl sealing compound.

Where aluminium comes into contact with masonry, brickwork, concrete, plaster or dissimilar metals, it shall be coated with an approved insulation lacquer, paint or plastic tape to ensure that electro-chemical corrosion is avoided.

The Contractors shall be responsible for placing in position the Structural Glazing wall frames for the satisfactory performance and should be totally leak proof for a minimum period of ten years. Sealant and Gasket Application Sealant and gasket shall be provided wherever shown in the drawings or required for a permanently weather tight installation. The sealing mechanism for each location and use shall be as indicated on drawings in those locations where a mechanism is necessary but is not indicated. It shall be of type recommended by the Contractor and approved by the Project In-charge.

All adjoining surfaces shall be protected to receive sealants against staining by masking and/ or other methods.

Joints and joint surfaces shall be clean, dry and free of any material that may have an adverse effect on the bonding and/ or seal of the sealant and gasket materials.

Apply sealants and gasket under the conditions recommended by the manufacturer(s). Prime all surface to receive sealants and gasket unless recommended otherwise. Use no sealant that has started to set in its container or a sealant that has exceeded the self life published by the manufacturer.

Fill all joints continuously and completely with sealant forming a neat uniform concave bead. Finish the material flush with adjoining surfaces unless otherwise shown on the drawings. All sealant surfaces shall be tooled smooth.

Certification:

The Contractor shall submit a letter of certification from the sealant manufacturer stating that the sealant has been tested for adhesion and compatibility on production samples of metals, glass, and other glazing components, and that all sealant details and application procedures shown on the reviewed shop Drawings are acceptable for use.

Where the Structural Glazing wall and other cladding impinges on, intercepts, covers, is attached to or supported by the work of other trades, for instance at parapet-level junctions with roof membranes and back-up walls, the Contractor's shop drawing and location drawings shall clearly distinguish elements and components of construction by other.

Anchorage System and Building Frame.

Each mullion shall be fixed to the structural slab at each floor level. All steel fasteners shall be galvanized to minimum 80-90 microns coated with zinc chromate primer and supplied by the Contractor.

Water Tightness:

No gross leakage shall be observed when subject to test for water penetration as described in BS 4315 Part-1.

GUARANTEE:

Contractor & Specialized agency to offer a warranty on the structural glazing for a period of Five Years to be reckoned from the date after the expiry of maintenance period prescribed in the contract of the work against faulty workmanship, finishing, unsound materials, structural instability and other related problems.

Five Years Guarantee bond in prescribed Performa attached herewith shall be submitted by the contractor to meet their liability / liabilities under the guarantee bond.

Five percent of the cost of structural glazing shall also be retained as security deposit and the amount so withheld would be released after Five Years to be reckoned from the date after the expiry of maintenance period prescribed in the contract, if the performance of the work done is found satisfactory. If any defect is noticed during the guarantee period, it shall be rectified by the contractor within seven days of receipt of intimation of defects in the work. If the defects pointed out are not attended to within the specified period, the same will be got done from another agency at the risk and cost of contractor.

However, the security deposit deducted may be released in full against bank guarantee of equivalent amount in favour of Engineer in charge, if so decided by the Engineer in charge.

The Security deposit against this item of work shall be in addition to the security deposit mentioned elsewhere in contract form.

20. WPC Decking over bridges

- i) The work shall comprise **providing, supplying and installing exterior-grade wood composite deck flooring** using factory-manufactured wood-plastic composite planks of approved make (square foot, Shubh wood, etc.), size **140 mm × 19 mm** and random lengths varying from **900 mm to 1800 mm**, suitable for external applications and resistant to moisture, UV radiation, termites and fungal attack.

ii) Materials & Quality

- a) Composite decking planks shall be **exterior grade**, uniform in colour and texture, free from warping, cracks, surface defects and manufacturing flaws, and conforming to manufacturer's specifications and relevant standards.
- b) Aluminium sub-frame sections shall be of size **46.5 mm × 22.5 mm × 1.02 mm thickness**, straight, corrosion-resistant and free from dents or distortions.
- c) **Seasoned wooden battens** inserted inside aluminium sections shall be well-treated, kiln seasoned and free from knots, decay and moisture.
- d) Fasteners shall be **top-mounted gypsum screws or approved equivalent**, corrosion-resistant and suitable for exterior use.
- e) Fillers such as **M-seal or approved wood filler** shall be compatible with composite material and exterior conditions.
- f) Linseed oil shall be of approved quality, suitable for exterior wooden/composite finishes.

iii) Execution / Fixing

- a) Aluminium sections shall be laid over existing **MS box section beams** (cost of MS members excluded), aligned true to line and level, and fixed securely at **600 mm centre-to-centre spacing** or as recommended by the manufacturer.
- b) Wooden battens shall be tightly inserted within aluminium sections to provide adequate screw holding and rigidity.
- c) Composite planks shall be laid evenly over the prepared grid, maintaining uniform gaps and grooves of approximately **2 mm wherever required**, with permissible variation as per manufacturer's recommendations to allow for expansion and drainage.
- d) Planks shall be fixed firmly using approved screws, ensuring proper embedment without damage to plank surfaces.
- e) Screw heads shall be neatly filled, surfaces sanded smooth, and finished evenly.
- f) **Two coats of linseed oil** shall be applied after surface preparation, ensuring uniform coverage and proper drying between coats.

iv) General Requirements

- a) Work shall be executed strictly as per **approved samples, approved shop drawings, manufacturer's specifications, CPWD specifications** and directions of the **Engineer-in-Charge**.
- b) The rate shall include all materials, labour, tools & plants, scaffolding, fixing accessories, wastage, surface preparation, finishing, protection and incidentals necessary to complete the work.
- c) Finished decking shall be true to level, firm, aesthetically uniform and free from visible defects.

21. Thermowood Purlins:

- i) The work shall comprise **providing and fixing thermo wood purlins for trellis work**, manufactured from **heat-treated exterior-grade wood** of approved make and shade, suitable for prolonged outdoor exposure and resistant to moisture, dimensional instability, fungal growth and insect attack.

ii) Materials & Quality

- a) Thermo wood purlins shall be factory heat-treated, uniform in section, colour and finish, free from cracks, warping, knots, surface defects or oil exudation, and conforming to manufacturer's specifications for exterior applications.
- b) Cross-sectional dimensions of the purlin shall be 140mm x 42mm
- c) Timber shall be properly seasoned and thermally modified to enhance durability, UV resistance and dimensional stability.
- d) Fixing accessories, including **stainless steel screws, brackets, cleats and connectors** of size allowing snug fit and minimum thickness of 3 mm shall be corrosion-resistant, of approved design and suitable for exterior conditions.
- e) Sealants, if used, shall be weather-resistant and compatible with thermo wood.

iii) Execution / Fixing

- a) Purlins shall be cut, shaped and fabricated to the required sizes and profiles, ensuring accuracy and neat workmanship.
- b) Members shall be fixed over the existing **MS framework** (cost of MS works excluded), aligned true to line, level and plumb, as per **approved drawings** and directions of the Engineer-in-Charge.
- c) Fixing shall be carried out using approved stainless steel fasteners, brackets or cleats, ensuring firm anchorage without inducing splits, cracks or distortions in the wood.
- d) Adequate spacing, joint detailing and fixing methodology shall be followed to accommodate natural movement of timber due to temperature and moisture variations.

iv) Finish & General Requirements

- a) All exposed surfaces shall be smooth, even and uniform in appearance, free from scratches, dents, stains or deformities.
- b) The work shall be executed strictly as per **approved make, approved shade, approved samples, drawings, manufacturer's specifications**, and instructions of the Engineer-in-Charge.
- c) The rate shall include cost of all materials, labour, tools & plants, scaffolding, cutting, shaping, wastage, transportation, fixing accessories, fasteners, sealants and all incidentals necessary for completion of the work.
- d) Finished trellis purlins shall be rigid, aesthetically consistent and fit for their intended purpose.

22. Ferro Crete work :

- j) The work shall comprise **providing and laying ferro-crete fascia works resembling natural stone / rock finish** for **cascade application**, of **average thickness 60 mm**, over existing base / external

surfaces, of approved make and design, complete in all respects, suitable for **continuous exposure to flowing water**.

(ii) Materials & Quality

- a) Cement mortar shall be **1:2.5 (1 cement : 2.5 coarse sand)**, machine-mixed using clean, hard and well-graded sand suitable for hydraulic structures.
- b) **Integral waterproofing compound** shall be added **@ 1 litre per bag of cement and bonding agent @ 200 grams per bag of cement**, strictly as per manufacturer's specifications.
- c) Reinforcement shall comprise **8–12 mm dia zinc-coated / galvanized TMT bars**, welded wire mesh, metal lath, MS bars, MS sections and internal supports as required for structural stability and shaping.
- d) All steel reinforcement and MS components shall be properly cleaned, coated and protected against corrosion prior to embedding.
- e) Construction chemicals, anchoring materials, expansion joint materials, pipes and accessories shall be of approved make and specifically suitable for **permanent submersion and flowing water conditions**.
- f) Artistic plaster, mineral pigments and protective coatings shall be **UV-resistant, water-resistant and non-leaching**, capable of maintaining appearance under continuous water flow.

ii) Execution / Fixing

- a) Existing base surface shall be thoroughly cleaned, repaired and waterproofed, and treated with approved bonding agent before commencement.
- b) Reinforcement cage shall be fabricated by cutting, bending, hooking, tying and welding of TMT bars, MS bars, wire mesh and metal lath to achieve the required rock profile, ensuring adequate strength to withstand water pressure and erosion.
- c) The ferro-crete system shall be **securely anchored to the parent structure** using suitable mechanical reinforcement and anchorage systems.
- d) Cement mortar shall be applied in layers over the reinforcement cage, compacted properly and finished to the specified thickness, profile and texture.
- e) Artistic modelling, texturing, plastering and finishing shall be carried out to produce a natural stone / rock appearance consistent with approved samples.
- f) Proper **internal drainage paths, weep arrangements and spouts** shall be provided to prevent water accumulation within hollow cavities and to ensure controlled discharge.

iii) Waterproofing & Performance Requirements

- a) The entire ferro-crete assembly shall be **completely waterproof**, ensuring **zero ingress of water into hollow cavities** under operating cascade conditions.
- b) Expansion joints, construction joints and interfaces shall be sealed with approved elastomeric or polymer-modified construction chemicals suitable for constant water flow.
- c) All cavities shall be pressure-tested or water-tested, if directed by the Engineer-in-Charge, before final finishing.

iv) General Requirements

- a) Work shall be executed **at all heights**, including up to **10 metres above and below normal ground level**, including scaffolding, staging and safety arrangements.
- b) Contractor shall submit **artistic sketches and detailed shop drawings**, including reinforcement detailing, materials, waterproofing methodology and drainage arrangements, for approval prior to execution.

- c) The rate shall include cost of all materials, labour, tools & plants, scaffolding, fabrication, welding, bending, anchoring, construction chemicals, wastage, equipment and all incidentals required to complete the work.
- d) Finished work shall be structurally sound, erosion-resistant, watertight and aesthetically consistent throughout the cascade.
- e) **Measurement for payment shall be in elevation only** (length × breadth). Foundation footing, if required, shall be paid for separately.

23. Slate Roof:

The work shall comprise **providing and fixing Himachal black slate stone roofing**, using natural slate stones of approved quality and uniform shade, of size **600 mm × 300 mm × 12 mm thickness**, laid over existing truss / purlin / frame work at the required **slope or pitch**, complete in all respects and suitable for exterior roofing applications.

Materials & Quality

- Slate stones shall be **natural Himachal black slate**, hard, dense, durable, non-laminated and free from cracks, fissures, warping, stains or defects, with true edges and uniform thickness.
- Slates shall be properly quarried, dressed and finished, ensuring consistent colour and surface texture.
- Fixing fasteners shall be **hexagonal cap-headed stainless steel self-drilling / self-tapping screws**, size **M6 × 50 mm long**, complete with **3 mm thick EPDM sealing washers**, suitable for exterior and weather-exposed conditions.
- EPDM washers shall be UV-resistant, waterproof and compatible with slate and metal framing.

Execution / Fixing

- Slate stones shall be cut, drilled and dressed accurately to the required dimensions and profiles, ensuring neat workmanship and minimal wastage.
- Roofing slates shall be laid over the existing truss / purlin / frame work at the specified slope or pitch, aligned true to line and level, as per approved drawings.
- Each slate shall be securely fixed to purlins or frame members using approved stainless steel screws with EPDM washers, ensuring firm anchorage and watertight fixing without cracking or damage to the slate.
- Adequate overlap, joint alignment and fixing pattern shall be maintained to ensure proper drainage of rainwater and prevent ingress of water.
- All cut edges, junctions and terminations shall be finished neatly to maintain structural integrity and aesthetic appearance.

General Requirements

- Work shall be executed strictly as per **approved drawings, CPWD specifications**, and directions of the **Engineer-in-Charge**.
- The rate shall include cost of all slate stones, fasteners, EPDM washers, fittings, accessories, labour, tools & plants, scaffolding, cutting, dressing, fixing, wastage and all incidentals required to complete the work.
- Finished roofing shall be firm, weather-tight, properly aligned and free from loose or damaged slates.
- **Cost of truss / purlin / frame work shall be paid separately**

24. FRP Sculptures:

- k) The work shall comprise **providing, supplying and fixing Fibre Reinforced Plastic (FRP) sculptures**, including **stone / rock formations and a lion sculpture**, of approved design and model, having **average thickness between 3 mm and 5 mm**, complete in all respects and suitable for **exterior, weather-exposed locations**.

ii) Materials & Quality

- a) FRP shall be fabricated using high-quality **glass fibre reinforcement and exterior-grade resin system**, suitable for outdoor exposure and capable of maintaining shape, strength and durability over time.
- b) The FRP laminate shall be uniform in thickness and free from cracks, pinholes, air voids, delamination or surface waviness.
- c) Internal **armature / framework** shall be adequately designed and fabricated to support the sculpture, maintain its shape and withstand wind and environmental loads.
- d) All surface finishing materials, fillers, pigments and coatings shall be **weatherproof, UV-resistant and non-leaching**.
- e) Exterior-grade waterproof paints and protective coatings shall be of approved make and shade.

iii) Fabrication, Artistic Detailing & Realistic Finish

- a) Sculptures shall be fabricated strictly in accordance with **approved drawings, models, artistic references and samples**, ensuring accurate proportions, detailing and surface finish.
- b) **Stone / rock sculptures** shall incorporate realistic textures such as stratification, fissures, undulations, chipped edges and natural irregularities to replicate natural rock formations.
- c) **Lion sculpture** shall exhibit lifelike anatomical proportions, facial expression, musculature, mane detailing, posture and surface texture consistent with a natural appearance.
- d) Multi-layer finishing techniques including **hand sculpting, surface texturing, colour layering, shading and highlighting** shall be employed to achieve depth, realism and natural tonal variation.
- e) Finishes shall avoid flat or artificial appearance and shall replicate natural weathering and shadow effects.

iv) Artistic Control & Stage-wise Approval

- a) The contractor shall obtain **stage-wise approval** from the Engineer-in-Charge / Architect / authorised representative at critical stages of execution, including:
 - 1. Concept sketches, 3D views or artistic references indicating form, proportions, posture, texture and intended finish.
 - 2. Mock-up or sample panel demonstrating surface texture, colour treatment and degree of realism.
 - 3. Internal armature and framework stage prior to FRP lamination.
 - 4. Unpainted FRP shell stage showing sculptural detailing.
 - 5. Final painted and finished stage prior to installation.
- b) No subsequent stage of work shall be commenced without **written approval** of the preceding stage.
- c) Any work executed without approval or found inconsistent with the approved artistic intent, sample or model shall be **modified, rectified or redone** by the contractor at no extra cost.
- d) Final acceptance shall be subject to satisfaction of the Engineer-in-Charge regarding **realism, detailing, proportion, surface finish and overall aesthetic quality**, in addition to structural stability.

v) Installation & Fixing

- a) Sculptures shall be transported, handled and erected carefully to avoid damage or deformation.
- b) Fixing shall be carried out over prepared foundation / base (paid separately) using concealed anchors, embedded fixtures or approved mechanical fasteners to ensure stability while maintaining visual realism.
- c) All joints, fixing points and interfaces shall be concealed and sealed to prevent ingress of moisture.

vi) Finish & Performance Requirements

- a) Finished sculptures shall be structurally stable, weather-resistant and free from cracks, visible joints or patch marks.
- b) Surfaces shall retain colour, texture and detailing under prolonged exposure to sun, rain and environmental conditions.
- c) Protective coatings shall enhance durability without altering the approved appearance.

vii) General Requirements

- a) Work shall be executed strictly as per **approved drawings / models, approved samples, CPWD specifications** and directions of the **Engineer-in-Charge**.
- b) The rate shall include cost of FRP materials, internal armature, artistic fabrication, texturing, painting, transportation, handling, erection, labour, tools & plants and all incidentals required to complete the work.
- c) **Measurement shall be on a per-job basis.** Foundation / base shall be measured and paid for separately.

25. STP :

Prefabricated FRP STP Tank (Biological Treatment Module)

i) **Providing, designing, supplying, transporting, unloading and installing prefabricated Glass Fibre Reinforced Plastic (FRP) packaged Sewage Treatment Plant (STP) tank**, suitable for decentralised treatment of **domestic sewage**, based on **anaerobic contact media and aerobic moving bed bio-reactor (MBBR) process**, of capacity **40 KLD / 20 KLD / 10 KLD** (as specified), complete in all respects.

ii) The FRP tank shall be factory manufactured, corrosion-resistant and suitable for underground or above-ground installation, comprising integral chambers including sedimentation and separation chamber, anaerobic contact media chamber with recirculation provision, aerobic moving bed chamber with bio-media retainers, secondary sedimentation chamber, disinfection chamber and in-built circulation system, complete with access manholes and covers.

iii) **Rate includes:** FRP tank, internal baffles and partitions, anchoring arrangements, handling, positioning and installation at site.

Measurement: Per unit.

iv) Mechanical Equipment for STP

- a) **Providing, supplying, installing, testing and commissioning mechanical equipment for prefabricated FRP STP**, including submersible sewage pumps (duty and standby), air blowers for

aerobic treatment and agitation, bio-media for moving bed chamber, bar screen arrangement and all associated accessories, complete in all respects.

- b) All equipment shall be of approved make, suitable for continuous operation in sewage environment and conforming to relevant IS standards.

v) Internal Piping, Valves and Interconnections

Providing and fixing internal interconnecting piping for prefabricated FRP STP, including UPVC/FRP pipelines, valves, bends, tees, unions and fittings, up to required length within the plant boundary, complete as per approved drawings and directions of the Engineer-in-Charge.

Electrical Control Panel and Wiring

- a) **Providing, supplying, installing, testing and commissioning electrical control panel** for operation of pumps, blowers and associated equipment of prefabricated FRP STP, complete with starters, overload protection, indication lamps, cabling and earthing, suitable for outdoor installation.

b) Installation, Testing, Commissioning and Trial Run

- c) **Providing services for installation supervision, testing, commissioning, trial run and handing over of prefabricated FRP STP**, including hydraulic testing, biological stabilization, performance testing to meet CPCB discharge norms, operator training.

- d) **Performance Compliance :- Ensuring treated effluent quality** from the STP conforms to CPCB norms, including BOD ≤ 20 mg/L, COD ≤ 50 mg/L, TSS ≤ 30 mg/L and Oil & Grease ≤ 10 mg/L, or as directed by the Engineer-in-Charge, during commissioning and trial run period.

- e) **The STPs are to be operated by agency for one year after its completion / commissioning without any additional cost. All required manpower / resources and chemical etc. are to be arranged by the agency and nothing extra shall be paid on this account.**

29 OTHER CONDITIONS w.r.t. RATES AND PAYMENTS

- (a) The rates quoted by the contractor are deemed to be inclusive of site clearance, setting out work, profile, setting lay out on ground, establishment of reference bench mark(s), installing various signage, taking spot levels, survey with total station, construction of all safety and protection devices, compulsory use of helmet and safety shoes, and other appropriate safety gadgets by workers, imparting continuous training for all the workers, barriers, preparatory works, construction of clean, hygienic and well ventilated workers housings in sufficient numbers as per drawing supplied by Engineer in charge, working during monsoon or odd season, working beyond normal hours, working at all depths, height, lead, lift, levels and location etc. and any other unforeseen but essential incidental works required to complete this work. Nothing extra shall be payable on this account and no extension of time for completion of work shall be granted on these accounts.
- (b) The rates quoted by the tenderer shall be firm and inclusive of all taxes, royalty charges and levies including GST. Taxes shall be deducted at source as per statutory orders and Govt. rules and regulation, from bill payments to the contractor by Engineer-in-charge.
- (c) No foreign exchange shall be made available by the Department for importing (purchase) of equipment, plants, machinery, materials of any kind or any other items required to be carried out during execution of the work. No delay and no claim of any kind shall be entertained from the Contractor, on account of variation in the foreign exchange rate.
- (d) All ancillary and incidental facilities required for execution of work like labour camp, stores, fabrication yard, offices for Contractor, watch and ward, temporary ramp required

to be made for working at the basement level, temporary structure for plants and machineries, water storage tanks, installation and consumption charges of temporary electricity, telephone, water etc. required for execution of the work, liaison and pursuing for obtaining various No Objection Certificates, completion certificates from local bodies etc., protection works, testing facilities / laboratory at site of work, facilities for all field tests and for taking samples etc. during execution or any other activity which is necessary (for execution of work and as directed by Engineer-in- Charge), shall be deemed to be included in rates quoted by the Contractor, for various items in the schedule of quantities. Nothing extra shall be payable on these accounts. Before start of the work, the Contractor shall submit to the Engineer-in-Charge, a site / construction yard layout, specifying areas for construction, site office, positioning of machinery, material yard, cement and other storage, steel fabrication yard, site laboratory, water tank, etc for approval.

- (e) For completing the work in time, the contractor might be required to work in two or more shifts (including night shifts). No claim whatsoever shall be entertained on this account, not with- standing the fact that the contractor may have to pay extra amounts for any reason, to the labourers and other staff engaged directly or indirectly on the work according to the provisions of the labour and other statutory bodies regulations and the agreement entered upon by the contractor with them.
- (f) All material shall only be brought at site as per program finalized with the Engineer-in-Charge. Any pre-delivery of the material not required for immediate consumption shall not be accepted and thus not paid for.
- (g) Nothing extra shall be payable to the contractor for compliance of various additional conditions, special conditions, general terms & conditions, additional /general specifications, etc. as prescribed in bid document except specifically stated therein, on and above the quoted rate(s) of various items of schedule of quantities (civil as well as electrical work) of the bid document.
- (h) The full nomenclature of the items shall be adopted in preparing abstract of final bill in the measurement book and also in the bill form for final bill.
- (i) In the case of items of which abbreviated nomenclature is not available in the above cited publication and also in case of extra and substituted items of works for which abbreviated nomenclature is not provided in the agreement, the full nomenclature of items shall be reproduced in the measurements books and bill forms for running account bill.
- (j) Contractor should hand over the warranty of all the specialized items and non specialized items, if any such warranty provided by manufacturer, which have been installed in the constructed building to the department.
- (k) Contractor shall give performance test of the water supply, sanitary, sewer and electrical installation(s) as per the specifications in the presence of the Engineer-in- charge or his authorized representative before the work is finally accepted and nothing extra what-so-ever shall be payable to the Contractor for the test.
- (l) Contractor shall not divert any RA bill payments and advance payments or part thereof for any work other than that needed for completion of the contracted work. All advance payments received as per terms of the contract (i.e.mobilisation advance, secured advance against materials brought at site etc) are required to be re-invested in the contracted work to ensure advance availability of resources in terms of materials, labour, plant & machinery needed for required pace of progress for timely completion of work.
- (m) The temporary huts for labour can be erected at the site of work by the contractors at location approved by the Engineer In-charge. He is required construct/arrange labour

accommodation and nothing extra shall be paid by CPWD on this account. He shall also do installation of fully automatic concrete batch plant, yard for keeping various materials, cement/ steel store within Zoo campus at location approved by the Engineer In-charge. He will also provide temporary/semi permanent structure for samples room, toilets for labour etc., working yard and other essential requirements inside the campus at location approved by the Engineer In- charge. All labour and staff of contractor shall possess valid identity cards. Before tendering, he shall visit the site and assess the manner in which he is able to arrange the above facilities. The Engineer-in-Charge shall in no way be responsible for any delay on these accounts and no claim, whatsoever, on these accounts shall be entertained.

- (n) The contractor has to built his site office for housing their staff and engineers, sample rooms, testing laboratories, conference hall, toilet etc. The conference room should be air-conditioned and have at least capacity of 15 persons around a conference table and also prepare temporary/semi permanent structure of 250 sqm finished with proper furniture arrangement, electricity, electrical fittings, AC and any other arrangement as required by the Engineer-In- charge.
- (o) The original copies of challan/cash memos towards the quantity of various materials procured shall be made available by the contractor at the request from the Engineer-in-Charge and a copy of the same shall be kept in record. Warranty / Guarantees cards of various materials shall also be submitted by the contractor during handing over of the buildings to the client.
- (p) The bidder may have to build temporary enabling road from village/Major District Road / State Highway/National Highway, road inside or outside the campus for different construction activities at site. Nothing extra shall be payable on this account and no extension of time for completion of work shall be granted on these accounts.

Section-VIII

ADDITIONAL CONDITIONS OF CONTRACT SPECIFIC TO GREEN BUILDING PRACTICES

30.0 CONDITIONS SPECIFIC TO GREEN BUILDING PRACTICES

It is envisaged to obtain "GREEN" rating of GHAR system of rating for various buildings to be constructed under this contract. The contractor shall strictly adhere to the following conditions as part of his contractual obligation.

- 30.1 The Contractor should follow the construction plan as proposed by the Architect /Engineer in Charge to minimize the site disturbance such as soil pollution due to spilling. Use staging and spill prevention and control plan to restrict the spilling of the contaminating materials at site. Protect top soil from erosion by collection storage and reapplication of top soil, constructing sediment basin, contour trenching, mulching etc.
- 30.2 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 instructions of the Engineer in Charge. The surplus excavated earth shall be disposed of by the contractor for reuse. A certificate of reuse as required by the Engineer-in-Charge shall be submitted by the contractor.
- 30.3 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 any preservation area shall not be modified unless specifically directed by the Engineer-in-charge.
- 30.4 The contractor shall not carry out any work which results in the blockage of natural drainage.
- 30.5 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.
- 30.6 Contractor shall reduce pollution and land development impacts from automobiles used during construction.
- 30.7 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 must take place. No overloading shall be permitted.
- 30.8 Preserve and Protect Landscape during Construction
 - a) The contractor shall ensure that no trees, existing or otherwise, shall be harmed and damage to roots should be prevented during trenching, placing backfill, driving or parking heavy equipment, dumping of trash, oil, paint, and other materials detrimental to plant health. These activities should 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 to be permitted.
 - b) The contractor shall take steps to protect trees or saplings identified for preservation within the construction.
 - c) Contractor should limit all construction activity within the specified area as per the Construction Management Plan (CMP) approved by 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 a canopy projected on the ground) of all the trees or group of trees. Separate the zones of movement of heavy equipment, parking, or excessive foot traffic from the fenced plant protection zones.
 - e) The contractor shall ensure that maintenance activities during construction period shall be performed as needed to ensure that the vegetation remains healthy.
 - f) The permission for cutting of trees and / or Transplanting of the trees shall be obtained by the contractor from BMC or any other authority of the State Government.
- 30.9 Contractor shall collect all construction waste generated on site. Segregate these 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.

- 30.10 The contractor shall provide potable water for all workers.
- 30.11 The contractor shall provide the minimum level of sanitation and safety facilities for the workers at site. 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 standard. Adequate toilet facilities shall be provided for the workman 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 provided from the start of building operations, connection to a sewer 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 objects. Toilet facilities shall be maintained in a sanitary condition. A sufficient quantity of disinfectant shall be provided. Natural or artificial illumination shall be provided.
- 30.12 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 loads of dusty materials, wheel-washing facility, gravel pit, and water spraying. Contractor shall ensure the following activities to prevent air pollution during construction:
- Clear vegetation only from areas where work will start right away.
 - Vegetate / mulch areas where vehicles do not ply.
 - Apply gravel / landscaping rock to the areas where mulching /paving is impractical.
 - Identify roads on-site 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. Add surface gravel to reduce source of dust emission. Limit amount of fine particles (smaller than 0.075mm) to 10 - 20%
 - Water spray, through a simple hose for small projects, to keep dust under control. Fine mists 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.
 - 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 road
 - Areas where excavation or earth moving activities are to be carried out
 - The contractor shall ensure that the speed of vehicles within the site is limited to 10 km/hr.
 - All material storages should be adequately covered and contained so that they are not exposed to situations where winds on site could lead to dust / particulate emissions.
 - 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 of 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 or runoff in nearby areas
 - Provide hoardings of not less than 3m high along the site boundary, next to a road or other public area
 - Provide dust screens, sheeting or netting to scaffold along the perimeter of the building
 - Cover stockpiles of dusty material with impervious sheeting
 - Cover dusty load on vehicles by impervious sheeting before they leave the site
- 30.13 The contractor shall ensure that no construction leachate (e.g. cement slurry etc.), is allowed to percolate into the ground. Adequate precautions are to be taken to safeguard against this including, reduction of wasteful curing processes, 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).

- 30.14 The storage of material shall be as per standard good practices as specified in Storage, Stacking and Handling practices, NBC 2016 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 the Contractor
- is 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 with proper access and proper maneuverability of the vehicles carrying the materials. While planning the layout, the requirements of various materials, components and equipment at different stages of construction shall be considered.
- 30.15 The contractor shall ensure the following activities for construction workers safety, among other measures:
- Guarding all parts of dangerous machinery.
 - Precautionary signs for working on machinery Maintaining hoists and lifts, lifting machines, chains, ropes, and other lifting tackles in good condition.
 - Durable and reusable formwork systems to replace timber formwork and ensure that formwork where used is properly maintained.
 - Ensuring that walking surfaces or boards at height are of sound construction and are provided with safety rails or belts.
 - Provide protective equipment; helmets etc. -
 - Provide measures to prevent fires. Fire extinguishers and buckets of sand to be provided in the fire-prone area and elsewhere.
 - Provide sufficient and suitable light for working during night time
- 30.16 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.
- 30.17 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.
- 30.18 Contractor shall collect & submit the relevant material certificates for materials 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.
- 30.19 The contractor shall ensure that a flush out of all internal spaces is conducted prior to handover. This shall comprise an opening of all doors and windows for 14 days to vent out any toxic fumes due to paints, varnishes, polishes, etc.
- 30.20 WATER USE DURING CONSTRUCTION
- Contractor should spray curing water on concrete structure and shall not allow free flow of water or else use curing compound/plastic film/hessian cloth. Contractor shall make his own arrangement of water for construction purpose as well as drinking water for worker and staff. Concrete structures should be kept covered with plastic film/hessian cloth/ thick cloth/gunny bags and water should be sprayed on them. Contractor shall do water ponding on all slabs using cement and sand mortar bund i/c ponding of sunken slabs also. No payment on account of using curing compound/ plastic film/ water/ hessian cloth/ thick cloth/gunny bags etc. shall be made.
- 30.21 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 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, if available.

- (e) The contractor shall minimize the use of electricity.
- 30.22 CONSTRUCTION WASTE
- (a) Contractor shall minimize the generation of construction waste as per the requirement for obtaining "GREEN" rating for GHAR.
 - (b) 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. Employ measures to segregate the waste on site into inert, chemical, or hazardous wastes.
 - (c) All construction debris shall be used for road preparation, back filling, etc, as per the instructions of the Engineer in Charge, with necessary activities of sorting, crushing, etc.
 - (d) No construction debris shall be taken away from the site, without the prior approval of the Engineer in Charge.
 - (e) The contractor shall recycle the unused chemical/hazardous wastes such as oil, paint, batteries, and asbestos.
 - (f) If and when construction debris is taken out of the site, after prior permissions 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.
- 30.23 DOCUMENTATION
- (a) The contractor shall, during the entire period of the construction, submit the following records to the Engineer in Charge on a monthly basis:
 - i) Water consumption in liters
 - ii) Electricity consumption in 'kwh' units
 - iii) Diesel consumption in liters
 - iv) Quantum of waste (volumetric/weight basis) generated at site and the segregated waste types divided into inert, chemical and hazardous wastes.
 - (b) Digital photo documentation to demonstrate compliance of safety guidelines as specified in the tender. 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 workers facilities, the waste and other material storage yards, pre-fabrication and block making works, etc as guided by the Engineer in Charge
 - (c) The contractor shall submit a document after construction of the buildings, a brief description along with photographic 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 and measures adopted for top soil preservation during construction.
 - (d) The contractor shall submit to the Engineer in Charge after construction of the buildings, a detailed as built quantification of the following:
 - i) Materials used,
 - ii) Total top soil stacked 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 personnel.

- (g) Provide supporting document from the manufacturer of the Batch mix/ Ready Mix concrete specifying the use of Fly Ash.
- (h) Provide supporting document from the manufacturer of the pre-cast building blocks specifying the fly ash content of the blocks used in an infill wall system.
- (i) 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.

31.0 CONSTRUCTION PHASE AND WORKER FACILITIES

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.

32.0 PRESERVE AND PROTECT LANDSCAPE DURING CONSTRUCTION

The contractor shall ensure that no trees, existing or otherwise, shall be harmed and damage to roots should be prevented during trenching, placing backfill, driving or parking heavy equipment, dumping of trash, oil, paint and other materials detrimental to plant health. These activities should 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 to be permitted.

The contractor shall take steps to protect trees or saplings identified for preservation within the construction site using tree guards of approved specification.

Contractor should limit all construction activity within the specified area as per the Construction Management Plan (CMP) approved by Engineer-in-Charge.

The contractor shall avoid cut and fill in the root zones, through delineating and fencing the drip line (the spread limit of a canopy projected on the ground) of all the trees or group of trees. Separate the zones of movement of heavy equipment, parking, or excessive foot traffic from the fenced plant protection zones.

As the site is located near the bank of river, contractor should take every necessary protective measures so as to prevent collapse of river bank and to facilitate storm water drainage during execution of work.

Contractor shall collect all construction waste generated on site. Segregate these 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.

The contractor shall provide potable water for all workers. Adequate measures for welfare of workers, staff and their children are to be taken. At camp /labour hut site, shelters/crutches shall be made with adequate facilities light, drinking water, teaching facilities for children. Adequate shelters for labour shall be also constructed at site of work as per direction of Engineer-in- Charge.

The contractor shall provide the minimum level of sanitation and safety facilities for the workers at their camp/labour site *and at work sites*. The contractor shall ensure cleanliness of workplace with regard to the disposal of waste and effluent, provide clean drinking water, water closets and urinals as per applicable standard. Adequate toilet facilities *with signages* shall be provided for the workmen within easy access of their place of work. The total numbers to be provided shall not be less than 1 per 30 employees in any one shift. *Separate toilet facilities for ladies (staff and workers) are to be provided.* Toilet connected with *Septic tank* facilities shall be provided from the start of building operations. Connection to a sewer line 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 objects. Toilet facilities shall be maintained in a sanitary condition. A sufficient quantity of disinfectant shall be provided. Natural or artificial illumination shall be provided.

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 loads of dusty materials, wheel-washing facility, gravel pit, and water spraying. Contractor shall ensure the following activities to prevent air pollution during construction:

- (i) Clear vegetation only from areas where work will start rightaway.
- (ii) Vegetate / mulch areas where vehicles do notply.
- (iii) Apply gravel / landscaping rock to the areas where mulching / paving is impractical.
- (iv) Identify roads on-site 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 and base. Add surface gravel to reduce source of dust emission. Limit amount of fine particles (smaller than 0.075mm) to 10 – 20%.
- (v) Water spray, through a simple hose for small projects, to keep dust under control. Fine mists should be used to control fine particulate. However, this should be done with care so as not to waste water. Heavy watering canalso 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.
- (vi) 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 road
 - Areas where excavation or earth moving activities are to be carried out
- (vii) The contractor shall ensure that the speed of vehicles within the site is limited to 10km/hr.
- (viii) All material storages should be adequately covered and contained so that they are not exposed to situations where winds on site could lead to dust / particulate emissions.
- (ix) 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 of 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 / leaned up immediately before they can infiltrate into the soil / ground or runoff in nearby areas
- (x) Provide barricading of height of 2.40 meter or more, around construction site for safety and security keeping in view good aesthetic of campus/site. All structures shall be duly covered with green clothes for safety and security as per direction of Engineer- in-Charge. Cost component of 2.40 m high Barricading i/c shifting of barricading from one location to another location as many times as required during the execution of the entire work till its completion is included in cost of Project. This also includes its maintenance for damages, repainting, all incidentals. Barricading of appropriate height shall also be provided around batching plant or other public area and as per local body norms. For this nothing shall be paid on account of providing barricading and part shifting thereafter, if required.
- (xi) Provide dust screens, sheeting or netting to scaffold along the perimeter of the Building.
- (xii) Cover stockpiles of dusty material with impervious sheeting
- (xiii) Cover dusty load on vehicles by impervious sheeting before they leave the site

- (xiv) Contractor should use equipment/techniques to avoid generation of C&D waste work. Contractor should use small equipments to make chases and avoid breakage by levelling or making arrangement for no cuttings for water supply lines in the walls/electrical conduits. Also contractor shall use small equipment to drill holes and avoid levelling/hammering in walls to take out services.

Contractor shall be required to provide an easily accessible area that serves the entire building and is dedicated to the separation, collection and storage of materials for recycling including (at a minimum) paper, corrugated cardboard, glass, plastics, and metals. He shall coordinate the 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.

The contractor shall ensure that no construction leachate (e.g.cement slurry etc.), is allowed to percolate into the ground. Adequate precautions are to be taken to safeguard against this including, reduction of wasteful curing processes, 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 sewerline).

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.

The contractor shall comply with the safety procedures, norms and guidelines (as applicable) as outlined in the document Part 7, Constructional practices and safety, National Building code of India 2016 Vol-2, 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 action taken thereon shall be forwarded to the competent authorities.

All workers of contractor and associate agencies, invariably and at all the times, must follow all safety norms, adopt safe construction practices and use all required safety gadgets in their working throughout the project duration.

The contractor shall issue Photo Identity Cards with unique numbers containing salient information of workers. Further the contractor shall establish a Time Office at the entry to demarcated area of site. The Time Office shall maintain a computerized record of all the workers allowed entry / working inside the demarcated area

Formation of Safety Monitoring Committee: The contractor within 15 days of start of work shall submit the names of Safety In-charge and Safety Supervisors to the CPWD, who shall be monitoring committee. The main working mandate of this monitoring committee will be to monitor and achieve the objectives of construction safety continuously, progressively and through affirmative action and to inculcate the safety culture among all stake holders. This committee will oversee implementation of safety aspects over the entire construction period.

33.0 Workers Safety Training and Awareness

Training: The training shall be in two phases - first induction training and then periodic training / refresher workshop.

- (i) Induction Training: All the workers shall have to undergo a training program of 16 hrs (8 hrs for 2 days) and to be declared satisfactorily trained by the Safety Manager before they are allowed to work on site.
- (ii) Orientation Program: An orientation program shall be arranged for all people (other than

workers) who normally work at or visit the site.

- v) 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

Where possible, the contractor shall select materials / vendors, harvested and manufactured regionally, **50% of the materials by cost should be within 400 km radius.**

- vi) The contractor shall ensure that a flush out of all internal spaces is conducted prior to handover. This shall comprise an opening of all doors and windows for 14 days to vent out any toxic fumes due to paints, varnishes, polishes, etc.

- vii) 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 **should be in compliance with IGBC.**

Paint	VOC limit (g/L less water)	Adhesive	VOC limit (g/L less water)
Non-Flat (glossy paints)	150	Glazing Adhesive	100
Flat (Mat) paints	50	Tile adhesive	65
Anti-corrosive/anti rust paints	250	Wood adhesive	30
Varnish	350	Wood flooring adhesive	100

- viii) **Water Use during Construction**

Contractor should spray curing water on concrete structure and shall not allow free flow of water. Concrete structures should be kept covered with thick cloth/gunny bags and water should be sprayed on them. Contractor shall do water poundings on all sunken slabs using cement and sand mortar.

- ix) The contractor shall provide O&M Manuals wherever applicable.

34.0 MATERIALS & FIXTURES FOR THE PROJECT

- Cement:- cement used shall be PPC (Portland Pozzolana Cement). The PPC must meet the requirements of IS 1489 (Part I) as regards to fly ash content in cement.
- Portland Pozzolana Cement confirming to IS 1489 (Part I) may be used for other items of work.
- Admixtures/ Plasticizers:- The admixture shall confirm to IS:9103, wherever required, the admixture of approved quality and from preferred make list attached to this tender document only shall be used to attain the required workability. Nothing extra shall be paid for use of admixtures.
- 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

material.

- e. All plumbing and sanitary fixtures installed shall be as per the direction of the Engineering Charge and shall adhere to the minimum LPM (litres per minute) and LPF (litres per flush) mentioned. The contractor shall employ 100% zero ODP (ozone depletion potential) insulation; HCFC (hydro-chlorofluorocarbon)/ and CFC (chlorofluorocarbon) free HVAC and refrigeration equipments and/halon-free fire suppression and fire extinguishing systems.

35.0 RESOURCES CONSUMED DURING CONSTRUCTION

- 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 such bad practices are corrected.
- The contractor shall ensure that all run-off water from the site, during construction is collected and reused to the maximum.

36.0 EQUIPMENT

- 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.
- Generally, the lighting installed by the contractor around the site and at the labour quarters during construction shall be CFL bulbs of the appropriate illumination levels.

37.0 LIST OF FIELD TESTS

- i) Particle size and shape
- ii) Slump test
- iii) Flakiness & Elongation Index tests
- iv) Compressive strength (concrete or bricks) test
- v) Rebound Hammer test
- vi) Bulking of sand
- vii) Silt content of sand
- viii) Temperature measuring with thermometer with brass protected end 0-200 C

38.0 FIELD TESTING EQUIPMENT AND INSTRUMENTS

A. Testing Equipment at Field Laboratories

- i) Balances
 - a) 7kg to 10 kg. Capacity, Semi-self indicating type-Accuracy 10 gm
 - b) 500 gm. Capacity, Semi-self indicating type Accuracy 1 gm
 - c) Pan Balance - 5 Kg. Capacity, accuracy 10 gm.
 - d) Weighing scale platform type 100kg capacity.
- ii) 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, 25 mm, 20 mm, 12.5 mm, 10 mm, 6.3 mm, 4.75 mm complete with lid and pan.
 - b) IS Sieves – 200 mm internal dia (brass frame) consisting of 2.36 mm, 1.18 mm, 600 microns, 425 microns, 300 microns, 212 microns, 150 microns, 90 microns, 75 microns with lid and pan.
- iii) Sieve shaker capable of 200 mm and 300 mm dia sieves, motorized operated with timing switch assembly.
- iv) Equipment for slump test - Slump Cone, Steel Plate, tamping rod, steel scale, scoop.
- v) Duly calibrated 100 tonnes compression testing machine, electrical-cum manually operated.
- vi) Graduated measuring cylinders 200 ml capacity
- vii) Enamel trays (for efflorescence test for bricks and other tests)

- a) 300 mm X 250 mm X 40 mm
- b) Circular plates of 250 mm dia
- c) 600 mm X 450 mm X 500 mm
- d) 450 mm X 300 mm X 40 mm.
- viii) ISI marked 150X150X150 mm concrete cube moulds as per site requirement - 18 Nos.
- ix) Graduated cylinder 1000 ml. Capacity.
- x) Pumps & pressure gauges for hydraulic testing of pipes.
- xi) Moisture meter
- xii) PH Meter.
- xiii) Any other equipment for site tests as outline in BIS and as directed by the Engineer-in-charge.

B. Field Testing Instruments

- i) Steel tapes - 3 m
- ii) Digital Vernier Calipers
- iii) Digital Micrometer Screw 25 mm gauge
- iv) A good quality plumb bob
- v) Spirit level minimum 30 cms long with 3 bubbles for horizontal vertical
- vi) Wire gauge (circular type) disc.
- vii) Foot rule
- viii) Long nylon thread
- ix) Digital Rebound hammer for testing concrete
- x) Magnifying glass
- xi) Screw driver 30 cms long
- xii) Ball pin hammer, 100 gms
- xiii) Plastic bags for taking samples
- xiv) Digital Distance meter
- xv) Leveling machine
- xvi) Theodolite
- xvii) Ultrasonic Pulse velocity meter

Note: The above list is only indicative and not exhaustive. (If the contractor fails to bring any of the equipments mention under A & B of above necessary recovery shall be made from the contractor.

PROFORMA FOR TESTS CARRIED OUT

NAME OF THE WORK :

DIVISION/

AGREEMENT NO. & DATE :

SUB-DIVISION

Sl. No.	Item	Quantities as per agreement	Frequency as per specification	No. of tests required	R.A. bill No.	Upto date quantity	No. of tests required	No. of tests actually done	Remarks
1	2	3	4	5	6	7	8	9	10

Signature of Contractor

CEMENT/PAINT REGISTER

NAME OF WORK:

AGREEMENT NO.

DIVISION

SUB-DIVISION

Date of Receipt	Source of receipt with details if any	Batch No.	Date of manufacture	Date of expiry	Qty. received	Progressive e Total	Date of Issue	Qty Issued	Items of workfor which Issued	Qty. Returned at the end of day's work
1	2	3	4	5	6	7	8	9	10	11

<u>Particulars of Issue</u>							
Net Qty. Issued	Progressive Total	Daily Balance in Hand	Contractor's Initial	J.E.'s Initial		Periodical Check	
						By AE	By EE
12	13	14	15	16		17	18

(Guarantee offered by Bank to CPWD in connection with the execution of contracts)

**Form of Bank Guarantee for Earnest Money Deposit /Performance Guarantee /
Security Deposit/Mobilization Advance**

Whereas the **Executive Engineer & Senior Manager (Civil) Sirmaur-1, IIM Sirmaur Project Division, CPWD, Dhaula Kuan, Distt.-Sirmaur (H.P)** on behalf of the President of India (hereinafter called "The Government") has invited bids under **NIT No: - 07/SE cum PD/IIM Sirmaur/2026-27** dated for "**Name of work: Development of Permanent Campus of IIM Sirmaur at Dhaula Kuan, District Sirmaur, Himachal Pradesh. SH: C/o Student Hostel-Type A, B, C, Married Hostel, Connecting Corridor Hostels, Student Mess, Student Activity Center, Virtual Learning Centre, Director Residence, internal sanitary, plumbing and electrical installations, development and external services work like water supply line, sewerage, firefighting, electrical line, road work etc. in all over phase-I.**
(SH:- Balance work)

1. The Government has further agreed to accept irrevocable Bank Guarantee of Rs.(rupees.....only) valid upto (date) as **Earnest Money Deposit** from(name of Address of the "Contractor") for compliance of his obligations in accordance with the terms and conditions of the said NIT.

OR**

Whereas the **Executive Engineer & Senior Manager (Civil) Sirmaur-1, IIM Sirmaur Project Division, CPWD, Dhaula Kuan, Distt.-Sirmaur (H.P)** on behalf of the President of India (hereinafter called "The Government") has entered into an agreement bearing number.....with.....(name and address of the contractor)
.....(hereinafter called "the Contractor") for execution of work: **Development of Permanent Campus of IIM Sirmaur at Dhaula Kuan, District Sirmaur, Himachal Pradesh. SH: C/o Student Hostel-Type A, B, C, Married Hostel, Connecting Corridor Hostels, Student Mess, Student Activity Center, Virtual Learning Centre, Director Residence, internal sanitary, plumbing and electrical installations, development and external services work like water supply line, sewerage, firefighting, electrical line, road work etc. in all over phase-I. (SH:- Balance work)**

The Government has further agreed to accept an irrevocable Bank Guarantee for Rs.....(Rupees.....only) valid upto.....date.....as **Performance Guarantee/Security Deposit/Mobilization Advance** from the said Contractor for compliance of his obligations in accordance with the terms and conditions of the agreement.

2. We, (Indicate the name of the bank), (herein after referred to as "the Bank"), hereby undertake to pay to the Government an amount not exceeding Rs (Rupees..... only) on demand by the Government within 10 days of the demand.

3. We, (Indicate the name of the Bank), do here by undertake to pay the amount due and payable under this guarantee without any demur, merely on a demand from the Government stating that the amount claimed is required to meet the recoveries due or likely to be due from the said Contractor. Any such demand made on the

Bank shall be conclusive as regards the amount due and payable by the Bank under this Guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs..... (Rupeesonly)

4. We,(indicate the name of the Bank), further undertake to pay the Government any money so demanded notwithstanding any dispute or disputes raised by the contractor in any suit or proceeding pending before any Court or Tribunal, our liability under this Bank Guarantee being absolute and unequivocal. The payment so made by us under this Bank Guarantee shall be a valid discharge of our liability for payment there under and the Contractor shall have no claim against us for making such payment.

5. We,(indicate the name of the Bank....., further agree that the Government shall have the fullest liberty without our consent and without affecting in any manner our obligation here under to vary any of the terms and conditions of the said agreement or to extend time of performance by the said Contractor from time to time or to postpone for any time or from time to time any of the powers exercisable by the Government against the said contractor and to forbear or enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such variation or extension being granted to the said Contractor or for any forbearance, act of omission on the part of the Government or any indulgence by the Government to the said Contractor or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.

6. We,(indicate the name of the Bank) further agree that the Government at its option shall be entitled to enforce this guarantee against the Bank as a principal debtor at the first instance without proceeding against the Contractor and notwithstanding any security or other guarantee the Government may have in relation to the Contractor's liabilities.

7. This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor.

8. We,(Indicate the name of the Bank) undertake not to revoke this guarantee except with the consent of the Government in writing.

9. This Bank Guarantee shall be valid up to..... unless extended on demand by the Government. Notwithstanding anything mentioned above, our liability against this guarantee is restricted to Rs..... (Rupees.....only) and unless a claim in writing is lodged with us within the date of expiry or extended date of expiry of this guarantee, all our liabilities under this guarantee shall stand discharged.

Date

Witnesses:

1. Signature
Name and address

Authorized signatory

Name
Designation
Staff code no.
Bank seal

2. Signature
Name and address

Date to be worked out on the basis of validity period of 90 days where only financial bids are invited and 180 days for two/three bid system from the date of submission of tender.

In paragraph 1, strike out the portion not applicable. Bank Guarantee will be made either for earnest money or for performance guarantee/security deposit/mobilization advance, as the case may be.

GUARANTEE BOND TO BE EXECUTED BY THE
CONTRACTOR FOR REMOVAL OF DEFECTS AFTER
COMPLETION IN RESPECT OF
WATER-PROOFING WORKS (All Water - Proofing Items).

The agreement made this..... day of (Two Thousand only) between S/o (hereinafter called the GUARANTOR of the one part) and the PRESIDENT OF INDIA (hereinafter called the Government of the other part)

WHEREAS THIS agreement is supplementary to a contract (Hereinafter called the Contract) dated and made between the GUARANTOR OF THE ONE PART AND the Government of the other part whereby the contractor inter alia undertook to render the building and structures in the said contract recited completely water and leak-proof.

AND WHEREAS THE GUARANTOR agreed to give a guarantee to the effect that the said work will remain water and leak proof, for ten years from the date of completion of work.

NOW THE GUARANTOR hereby guarantee that work executed by him will render the structures completely leak proof and the minimum life of such water proofing treatment shall be **ten years** to be reckoned from the date of the completion of work.

The decision of the Engineer-in-charge with regard to nature and cause of defect shall be final and binding on Guarantor.

During this period of guarantee, the guarantor shall make good all defects and in case of any defect being found render the building water proof to the satisfaction of the Engineer-In-Charge calling upon him to rectify the defects failing which the work shall be got done by the Department by some other contractor at the Guarantor's cost and risk. The decision of the Engineer-in-charge as to the cost payable by the Guarantor shall be final and binding.

That if the guarantor fails to execute the water proofing or commits breach there under, then the guarantor will indemnify the principal and his successor against all loss, damage, cost expense or otherwise which may be incurred by him by reason of any default on the part of the GUARANTOR in performance and observance of this supplementary agreement. As to the amount of loss and/or damage and / or cost incurred by the Government, the decision of the Engineer-in-charge will be final and binding on both the parties.

IN WITNESS WHEREOF these presents have been executed by the obligator.....and by for and on behalf of the PRESIDENT OF INDIA on the day, month and year first above written.

SIGNED, sealed and delivered by OBLIGATOR in the presence of :-

1. 2.

SIGNED FOR AND BEHALF OF THE PRESIDENT OF INDIA BY in the presence of :-

1. 2.

GUARANTEE BOND TO BE EXECUTED BY THE
CONTRACTOR FOR REMOVAL OF DEFECTS AFTER
COMPLETION
IN RESPECT OF SANITARY INSTALLATIONS / WATER SUPPLY / DRAINAGE WORK.

The agreement made this..... day of (Two Thousand only) between S/o (hereinafter called the GUARANTOR of the one part) and the PRESIDENT OF INDIA (hereinafter called the Government of the other part)

WHEREAS THIS agreement is supplementary to a contract (Hereinafter called the Contract) dated and made between the GUARANTOR OF THE ONE PART AND the Government of the other part, whereby the contractor inter alia, undertook to render the work in the said contract recited leak proof with sound material and workmanship.

AND WHEREAS THE GUARANTOR agreed to give a guarantee to the affect that the said work will remain structurally stable, leak proof and guaranteed against faulty material and workmanship, and finishing for **five years** from the date of completion of work.

NOW THE GUARANTOR hereby guarantee that work executed by him will be free from any leakage, seepage, cracks in pipes and guaranteed against faulty material and workmanship improper slope, defective galvanizing etc. for Five years to be reckoned from the date of completion of the work.

The decision of the Engineer-In-Charge with regard to nature and cause of defect shall be final.

During this period of guarantee, the guarantor shall make good all defects and in case of any defect to satisfaction of Engineer-in-charge at his cost and shall commence the work for such rectification within seven days from the date of issue of the notice from the Engineer-in-charge calling upon him to rectify the defects failing which the work shall be got done by the Department by some other contractor at the guarantor's cost and risk. The decision of the Engineer-in-Charge as to the cost payable by the Guarantor shall be final and binding.

That if the guarantor fails to make good all defects or commits breach there under, then the guarantor will indemnify the principal and his successor against all loss, damage, cost expense or otherwise which may be incurred by him by reason of any default on the part of the GUARANTOR in performance and observance of this supplementary agreement. As to the amount of loss and/or damage and or cost incurred by the Government, the decision of the Engineer-in-charge will be final and binding on both the parties.

IN WITNESS WHEREOF these presents have been executed by the obligator and by for and on behalf of the PRESIDENT OF INDIA on the day, month and year first above written.

SIGNED, sealed and delivered by OBLIGATOR in the presence of :-

1. 2.

SIGNED FOR AND ON BEHALF OF THE PRESIDENT OF INDIA BY in the presence of :-

1. 2.

**GUARANTEE BOND TO BE EXECUTED BY THE CONTRACTOR
FOR REMOVAL OF DEFECTS AFTER COMPLETION IN RESPECT OF
STONE WORK/ TILE WORK**

The agreement made this..... day of (Two Thousand_____only)
betweenS/o (hereinafter called the GUARANTOR of the
one part) and the President of India (hereinafter called the Government of the other part)

WHEREAS THIS agreement is supplementary to a contract (Hereinafter called the Contract) dated
.....and made between the GUARANTOR OF THE ONE PART AND the Government of the other
part whereby the contractor inter alia undertook to render the work in the said contract recited structurally
stable workmanship, finishing and use of sound materials.

AND WHEREAS THE GUARANTOR agreed to give a guarantee to the effect that the said work will
remain structurally stable and guaranteed against faulty workmanship, improper slope, finishing and materials.

NOW THE GUARANTOR hereby guarantee that work executed by him will be free from any material defects,
structural defects, cracks, hollow pockets, improper slope, faulty joints etc. for **five years** to be reckoned from
the date of completion of the work.

The decision of the Engineer-in-charge with regard to nature and cause of defect shall be final.

During this period of guarantee, the guarantor shall make good all defects to the satisfaction of the
Engineer-in-charge calling upon him to rectify the defects failing which the work shall be got done by the
Department by some other contractor at the Guarantor's cost and risk. The decision of the Engineer-in-charge
as to the cost payable by the Guarantor shall be final and binding.

That if the guarantor fails to make good all the defects, commits breach there under, then the
guarantor will indemnify the principal and his successor against all loss, damage, cost expense or otherwise
which may be incurred by him by reason of any default on the part of the GUARANTOR in performance and
observance of this supplementary agreement. As to the amount of loss and/or damage and or cost incurred
by the Government, the decision of the Engineer-in-charge will be final and binding on both the parties.

IN WITNESS WHEREOF these presents have been executed by the obligator.....and
..... byfor and on behalf of the President of India on the day,
month and year first above written.

SIGNED, sealed and delivered by OBLIGATOR in the presence of :-

1. 2.

SIGNED FOR AND BEHALF OF THE PRESIDENT OF INDIA BY in the
presence of :-

1. 2.

GUARANTEE BOND TO BE EXECUTED BY THE CONTRACTOR
FOR REMOVAL OF DEFECTS AFTER COMPLETION
IN RESPECT OF ALUMINIUM / UPVC DOORS, WINDOWS VENTILATOR WORK, ACP WORK AND
STRUCTURAL GLAZING WORKS.

The agreement made this day of (Two Thousand only).....
between S/o (hereinafter called the GUARANTOR of the
one part) and the PRESIDENT OF INDIA (hereinafter called the Government of the other part)

WHEREAS THIS agreement is supplementary to a contract (Hereinafter called the Contract) dated
.....and made between the GUARANTOR OF THE ONE PART AND the Government of the
other part, whereby the contractor inter alia, undertook to render the work in the said contract recited
structurally stable, workmanship, powder coating, anodizing, colouring and sealing etc.

AND WHEREAS THE GUARANTOR agreed to give a guarantee to the effect that the said work will
remain structurally stable and guaranteed against faulty material and workmanship, defective anodizing/
powder coating for five years from the date of completion of work.

NOW THE GUARANTOR hereby guarantee that work executed by him will remain structurally stable
and guaranteed against faulty material and workmanship, defective anodizing/ powder coating for **five years**
to be reckoned from the date of completion of the work.

The decision of the Engineer-In-Charge with regard to nature and cause of defect shall be final.

During this period of guarantee, the guarantor shall make good all defects and in case of any defect to
satisfaction of Engineer-in-charge at his cost and shall commence the work for such rectification within seven
days from the date of issue of the notice from the Engineer-in-charge calling upon him to rectify the defects
failing which the work shall be got done by the Department by some other contractor at the guarantor's cost
and risk. The decision of the Engineer-in-Charge as to the cost payable by the Guarantor shall be final and
binding.

That if the guarantor fails to make good all defects or commits breach there under, then the guarantor
will indemnify the principal and his successor against all loss, damage, cost expense or otherwise which may
be incurred by him by reason of any default on the part of the GUARANTOR in performance and observance
of this supplementary agreement. As to the amount of loss and/or damage and or cost incurred by the
Government, the decision of the Engineer-in-charge will be final and binding on both the parties.

IN WITNESS WHEREOF these presents have been executed by the obligator
.....and by for and
on behalf of the PRESIDENT OF INDIA on the day, month and year first above written.

SIGNED, sealed and delivered by OBLIGATOR in the presence of:-

1. 2.

SIGNED FOR AND ON BEHALF OF THE PRESIDENT OF INDIA BYin the presence
of:-

1. 2.

LIST OF PREFERRED MAKES FOR CIVIL WORKS

LIST OF PREFERRED MAKES		
Sr.No.	Name of Product/ Material	Preferred Brand Names
1	ORDINARY PORTLAND CEMENT (GREY)(43 GRADE)	ACC, ULTRATECH, VIKRAM, SHREE CEMENT, AMBUJA, JAYPEE CEMENT, CENTURY CEMENT & J.K. CEMENT.
2	PORTLAND POZZOLONA CEMENT (GREY)(43 GRADE)	ACC, ULTRATECH, VIKRAM, SHREE CEMENT, AMBUJA, JAYPEE CEMENT, CENTURY CEMENT & J.K. CEMENT.
3	WHITE CEMENT	J.K.WHITE, JAIPUR SUPREME PACKAGING PVT. LTD., ULTRATECH CEMENT LIMITED.
4	REINFORCEMENT STEEL	SAIL, TATA STEEL LTD., RINL, JINDAL STEEL & POWER LTD. AND JSW STEEL LTD.
5	ADMIXTURES	CICO, FAIRMATE, HIND PLAST SUPER, SUPAPLAST, SIKA, FOSROC, ASIAN PAINTS SMARTCARE
6	WATER PROOFING COMPOUND	FOSROC, CICO, KRYTON, BUILDMATE, PIDLITE, FAIRMATE, SIKA, CHEMICO, SIAN PAINTS SMARTCARE
7	FLUSH DOOR SHUTTERS	KUTTY FLUSH DOOR, SAMRAT LAMINATE, NATIONAL PLYWOODS, JAIN WOOD INDUSTRIES, MERINO, MINIMAX, CENTURY, AS TIMBER. ORION, JAIN DOORS PVT. LTD.
8	BLOCK BOARD	MERINO, MINIMAX, NATIONAL, ARCHIDPLY, CENT PLY, JAYNA, CENTURY.
9	LAMINATES	SAMRAT, VIRGO, MERINO, ARCHIDPLY, CENTURY LAMINATES, GREENLAM
10	PRE-LAMINATED PARTICLE BOARD	ARCHIDPLY, CENTURY PLY BOARDS, BALAJI ACTION BUILDWELL, ECOBOARD
11	PARTICLE BOARD (MEDIUM DENSITY)/VENEERED PARTICLE BOARD	CENTURY PLYBOARDS (INDIAN) LTD., BALAJI ACTION BUILDWELL, EVERGREEN BOARDLAM, ECOBOARD INDUSTRIES LTD.
12	PRE-LAMINATED MEDIUM DENSITY FIBREBOARD	CENTURY PLYBOARDS, GREEN PLY, BALAJI ACTION BUILDWELL
13	OMS/ MS DOOR FITTINGS	ASHISH, AGGARWAL STEELS, DOOR DEVICES MANUFACTURING COMPANY, MANU ENGINEERING COMPANY, M.C. MOWJEE & CO., SHRI GANPATI DOORS
14	STAINLESS STEEL DOOR/ WINDOW HARDWARE FITTINGS (FIRE RATED ANDNON-FIRE RATED)	DORMA, ASSA ABLOY, GEZE, D-LINE, KICH, GODREJ, HAFELE, OZONE
15	ANODISED/ ZINC ALLOY/ ALUMINIUM HARDWARE DOOR/ WINDOW FITTINGS	PULSE, SAVIO, HOPPE, ALUTECH
16	FRP DOOR FRAMES & SHUTTERS	ASHISH INDUSTRIES, JAYNA, SAINIK (CENTURY PLYWOOD), SELECTED PRODUCTS CO., JAIN DOORS PVT. LTD.
17	WPC DOOR FRAMES & SHUTTERS	ALSTONE, CENTURY PLY, FLORESTA, ARCHIDPLY
18	UPVC WINDOWS/ DOORS	VEKA, FENESTA, REHAU, PROMINANCE WINDOWSYSTEM, ALUPLAST, ENCRAFT, WINDFALL, SAINT GOBIN
19	UPVC WINDOW/ DOOR HARDWARE FITTINGS (ZINC ALLOY)	PULSE, HOPPE, GU, ROTO, GODREJ, KINLONG, PRAYAG
20	WINDOWS BLINDS	VISTA, MAC, HUNTER, DOUGLAS, DE-DÉCOR
21	STRUCTURAL STEEL SUCH AS MS FLATS,SQUARE BARS ANGLES ETC.	SAIL, TATA STEEL, RINL, JINDAL STEEL & POWER LTD. AND JSW STEEL LTD.

22	FIRE RATED DOORS (METTALIC/ NONMETTALIC)	KUTTY DOORS, NAVAIR, PROMAT, SYNERGY THRISLINGTON, JAIN DOORS PVT. LTD , BHAWANI FIRE (M/S BHAWANI FIRE PROTECTION PVT. LTD.) , ASES (AGNI SURAKSHA)
23	HOT-ROLLED STEEL SECTIONS FOR MSDOORS, WINDOWS AND VENTILATORS	NAV DURGA STEEL CORPN, CRM STEELS P. LTD, SHYAM ISPAT UDYOG, VIMAL, SHIV
24	MILD STEEL DOOR, WINDOWS & VENTILATORS MANUFACTURERS	FRIENDS MANUFACTURING COMPANY, KOTKAPURA, PD INDUSTRIES, SHAKTI INDUSTRIES, STEELMAN INDUSTRIES, SKS STEEL INDUSTRIES, SHIVAM
25	PRESSED STEEL DOOR FRAMESMANUFACTURERS	KRISHNA STEEL FABRICATOR SIRSA, LAXMI STEEL WORKS BAHADURGARH, ASHISH INDUSTRIES GHAZIABAD, ASHWANI & SONS, SHRI GANPATI DOORS, APL APOLLO
26	HOLLOW STEEL SECTIONS	JINDAL INDUSTRIES HISAR, TATA STEEL, STEEL & METAL TUBES (INDIA) PVT. LTD., APL APOLLO
27	STEEL TUBES FOR STRUCTURAL STEEL	JINDAL INDUSTRIES HISAR, TATA STEEL, STEEL & METAL TUBES (INDIA) PVT. LTD., APL APOLLO
28	DASH/ ANCHORING FASTENERS, BOLTS,SCREWS AND NUTS.	HILTI, FISCHER, CKW, ATUL, PRIYA, WUERTH
29	STAINLESS STEEL RAILING	DORMA, KICH, OM STEEL, D-LINE.
30	CHEQUERRED PRE-CAST CC TILES	NTC, SWASTIK TILE, POOJA CONCRETE FABRICATORS, GTC. DALAL TILES
31	CERAMIC TILES	SOMANY, KAJARIA, ORIENTBELL, RAK, ASIAN GRANITO INDIA LTD., VARMORA, SUNHEARRT CERAMIK, SEGA GRANITO LLP
32	VITRIFIED TILES	SOMANY, KAJARIA, ORIENTBELL, RAK, ASIAN GRANITO INDIA LTD., VARMORA, SUNHEARRT CERAMIK, SEGA GRANITO LLP
33	ADHESIVE/ GROUTING FOR USE WITH TILES	FERROUS CRETE, MYK LATICRETE, ARDEX EDURA, FAIRMATE, DURA BUILD CARE, SIKKA, ASIAN PAINTS SMARTCARE, SAKARNI
34	WOODEN LAMINATE FLOORING	PERGO, KRONOTEX, FLORENCE, UNITEX, ACTION TESA
35	UNPLASTICISED RIGID PVC PIPE & FITTINGS	SUPREME, FINOLEX, PRINCE, KISAN, SFMC, DIPLAST, PRAYAG
36	GALVANISED STEEL SHEETS (UNCOATED & PRE-COATED)	SAIL, TATA, JINDAL, NCL
37	ROOFING SHEETS (GALVALUME/ PUFF SANDWICH PANEL)	CRIL, LLOYDS, INTERACH, MULTICOLOR, BHUSHAN POWER STEEL, ALPHA PEB, JINDAL
38	FALSE CEILING- GYPSUM/ GRG (GLASS REINFORCED GYPSUM)	SAINT GOBAIN, VANS GYPSUM, GYPTECH, USG BORAL, LLYOD, DIAMOND CEILING, SAKARNI GYPSKARTON
39	FALSE CEILING- METAL	ARMSTRONG, DEXUNE, SAINT GOBAIN, HUNTER DOUGLAS, GYPTECH, ANAKON, Hi-STEEL, MCRA
40	FALSE CEILING- CALCIUM SILICATE	AEROLITE, ARMSTRONG, PROLAD, GYPTECH, ANAKON
41	ACCOUSTIC: GLASS / WOODEN FIBRE FALSE CEILING AND WOODEN/ FABRIC WALL LINING	ARMSTRONG, DEXUNE, ACCOUSTIBLOK, NEW AGE, Hi-STEEL, HIMALYAN ACOUSTICS, ANUTONE, GYPTECH, PROLAD, ANAKON
42	FALSE CEILING-ALUMINIUM POWDER COATED	ARMSTRONG, DEXUNE, SAINT GOBAIN, GYPTECH, HUNTERDOUGLAS, Hi-STEEL, SAKARNI GYPSKARTON, MCRA
43	LIGHT WEIGHT GYPSUM PLASTER	SAINT GOBAIN, ULTRATECH, FERROUS CRETE, USG BORAL, SAKARNI.
44	OIL BOUND DISTEMPER/ ACRYLIC DISTEMPER	NEROLAC ACRYLIC DISTEMPER, TRACTOR ACRYLIC DISTEMPER (ASIAN PAINTS) , MAXILITE ACRYLIC DISTEMPER (ICI), BISON ACRYLIC DISTEMPER (BERGER).
45	INTERIOR EMULSION/ PLASTIC EMULSION*	DULUX ACRYLIC EMULSION/ SOLITAIRE A-1000 (ICI), APCOLITE PREMIUM EMULSION (ASIAN), BEAUTY GOLD (NEROLAC), SILK (BERGER)
46	ACRYLIC SMOOTH EXTERIOR PAINT*	APEX ULTIMA (ASIAN), DULUX WEATHERSHEILD MAX (ICI), EXCEL (NEROLAC), WEATHERCOAT ALL GUARD (BERGER)

47	DRY DISTEMPER*	NEROLAC, BERGER, ASIAN PAINTS, ICI, JENSON & NICHOLSON (J&N)
48	TEXTURED EXTERIOR PAINT*	NEROLAC, BERGER, ASIAN PAINTS, ICI
49	SYNTHETIC ENAMEL PAINTS*	DULUX HI-GLOSS (ICI), APCOLITE PREMIUM GLOSS (ASIAN), NEROLAC HIGH GLOSS (NEROLAC), LUXOLHI-GLOSS (BERGER)
50	POP	SAKARNI, TRIMURTI, JK, ULTRATECH, BIRLA WHITE.
51	WOOD PRIMER*	NEROLAC, BERGER, ASIAN PAINTS, ICI
52	STEEL PRIMER*	NEROLAC, BERGER, ASIAN PAINTS, ICI
53	EXTERIOR WALL PRIMER*	EXTERIOR NEROLAC PRIMER, EXTERIOR BERGER PRIMER, EXTERIOR ASIAN PAINTS PRIMER, EXTERIOR ICI PRIMER
54	WALL PUTTY (WHITE CEMENT BASED)	BIRLA WALL CARE, JK WHITE, SARA WALL PUTTY, SAKARNI
55	PAVER/ GRASS PAVER BLOCKS & KERBSTONES	NATIONAL TILES CORPORATION, SARAL IMPEX, BALAJI TILES, METRO PAVERS, MGM INFRA, KRISHNA TILES, POOJA CONCRETE FABRICATORS, GIAN NIRMAN LIMITED, A-1 TILES, DALAL TILES
56	VITREOUS CHINA SANITARY WARE	HINDWARE, CERA, PARRYWARE, KAJARIA SANITARY WARE, JOHNSONPEDDER, SOMANY, RAK, PRAYAG, JAQUAR
57	PLASTIC FLUSHING CISTERN FOR WCAND URINALS	JINDAL, STEEL BIRD, SEEMLINE, VIKRAM PLASTIC, PRAYAG POLYMERS (P) LTD.
58	PLASTIC SEAT COVER OF W.C.	AJANTA POLYMERS, JINDAL MALPINE, JAIN POLYMERS, PRAYAG
59	STAINLESS STEEL SINK	ALLEX, JAYNA, JMD INTERNATIONAL, STEEL CRAFT, SILVER SHINE (M/S BLUESTAR SANITARY INDUSTRIES PVT. LTD) , KINGSTON, PRAYAG
60	MIRROR GLASS	ATUL, MODIGUARD, GOLDEN FISH, PRAYAG
61	CENTRIFUGALLY CAST (SPUN) IRONPIPES AND FITTINGS	NECO, BENGAL IRON, DURGAPUR ISPAT UDYOG, SINGHAL IRON FOUNDRY (SKF), KAPILANSH DHATU UDYOG PVT. LTD., RPMF, HIF.
62	HUBLESS CENTRIFUGALLY CAST (SPUN)IRON PIPES	NECO, RAJ PATTERN MAKERS & FOUNDERS, SINGHAL IRON FOUNDRY (SKF).
63	CP FITTINGS & ACCESSORIES	JAQUAR, ROCA, KOHLAR
64	BRASS STOP & BIB COCK	DHAWAN SANITARY UDYOG, JAINKO, SHAKTI, VARDHMAN INDIA PRODUCTS, PRAYAG
65	FERRULES FOR WATER SUPPLY	HIND METAL WORKS, KRITIKA, DRP, SHAKTI
66	BALL COCK WITH ROD	RESP FAUCET INDUSTRIES, DHAWAN SANITARY UDYOG, NEW METAL WORKS, KPR, PRAYAG.
67	POLYETHYLENE WATER STORAGE TANK	SINTEX, VECTUS, KAVERI, PRAYAG, SFMC
68	STONEWARE PIPES & GULLY TRAPS	SORKHI INDUSTRIES, RK INDUSTRIES, NAVNEET, MOLI CERAMICS, OCR, ANAND
69	PRE-CAST CONCRETE PIPES (NON-PRESSURE)	RAMNIK, BFSP, JAGDAMBHEY SPUN PIPE, GURKIRPASPUN PIPES
70	GI PIPE	JINDAL (HISSAR), TATA, BST, BHUSHAN POWERSTEEL , APL APOLLO
71	GI FITTINGS	UNIK, AVR, ZOLOTO, SANT, HBI, C-BRAND, NVR
72	C-PVC PIPE	PRINCE, JINDAL (FLOWKEM), ASTRAL, AJAY POLYMERS, SUPREME, SFMC, FINOLEX, JAIN PIPES, PRAYAG
73	HDPE/SWR pipes	SUPREME, FINOLEX, PRINCE, SFMC, ASTRAL
74	WATER METER	CRESCENT, PRINCE, FEDREL, DASHMESH, NBESON, SANT
75	GUN METAL GATE, GLOBE, CHECKVALVES & NON-RETURN VALVES	LEADER, ZOLOTO, SANT, RAJAN METAL INDUSTRIES, SIR, H.B. METALS, HVI, NVR.

76	CENTRIFUGALLY CAST (SPUN) IRON PIPES (CLASS LA).	TRU FORM ENGINEERS, KAPILANSH, ELECTROSTEEL, HITECH METAL CASTINGS.
77	C.I. SLUICE VALVES & REFLEX VALVES	ZOLOTO INDUSTRIES, SANT VALVES, AMCO INDUSTRIES, KIRLOSKAR, SIR, RATAN INDUSTRIAL CORPORATION, HVI, NVR.
78	STAINLESS STEEL PIPES & FITTINGS	JINDAL STAINLESS STEEL, OM STEEL GROUP, V STEEL, VIEGA, RAMPART INDIA PVT. LTD., J-PRESS
79	STAINLESS STEEL GRADE 304 GRATING	CHILLI, ARC ENGINEERING, LIDCO
80	DUCTILE IRON PIPES & FITTINGS	JINDAL SAW LTD, ELECTRO STEEL, CHANDRANCHAL INFRA, ELECTROTHERAM
81	C.I./ D.I. MANHOLE COVERS & FRAMES	SWASTIKA ENTERPRISES, BENGAL IRON CORPORATION, NECO, BINAY UDYOG, CHANDERANCHAL
82	WATER REPELLANT SILANE CHEMICAL	PIDILITE, FERROUS CRETE, ARDEX ENDURA, ASIAN PAINTS SMARTCARE
83	CORROSION INHIBITORS, MICRO CONCRETE AND MORTAR, CARBON FIBERWRAP, REHABILITATION & RETROFITTING PRODUCTS.	FOSROC, SIKKA, BASF, ASIAN PAINTS SMARTCARE
84	ALUMINIUM SECTIONS DOORS / WINDOWS	HINDALCO, JINDAL, INDIAN ALUMINIUM CO. LUMANI
85	BASIC/ TOUGHENED ETC. GLASS	SAINT GOBAIN, ASAHI, MODI, GOLD PLUS GLASS, PILINGTON.
86	APPROVED PROCESSORS FOR PERFORMANCE GLASS/ TOUGHENED GLASS/ HERMETICALLY SEALED/ LACQUERED GLASS etc.	ART & GLASS, MIRAGE TOUGHENED GLASSES (P) LTD., AAR PAR GLASS, VERMA GLASS.
87	STRUCTURAL GLAZING	ALCOB, ALUPRO, ALUPLAX, SP FABRICATORS, SAINT GOBAIN, GLAVERBEL.
88	FAÇADE GLASS OPENABLE FITTINGS	ALUALPHA, SAVIO, HOPPE, ALUTECH
89	GLASS FAÇADE/ GLASS CANOPY WITH SS SPIDER FITTINGS	ALCOB, ALUPRO, ALUPLAX, SP FABRICATORS, SAINT GOBAIN, GLAVERBEL.
90	FRAMELESS GLAZING WITH SS PATCH FITTINGS	DORMA, ASSA ABLOY, GEZE, D-LINE, KICH
91	ALUMINIUM COMPOSITE PANEL	ALUCOBOND, ALUBOND, VIRGO, ALUDECOR
92	HIGH PRESSURE LAMINATE	VIRGO, MERINO, GREENLAM
93	MODULAR FURNITURE (FACTORY MADE)	GODREJ, FEATHERLITE, STEELCASE, HERMANMILLER, ROCKWORTH
94	WPC DECK FLOORING/ WPC PURLIN	SHUBHWOOD, EGO, SQUARE FOOT, EVERWOOD, HARDY PLAST.
95	8MM THICK ACRYLIC SHEET	GALLINA, POLYPLAST, ROYAL TOUCH, CHENNAI POLYMER HOUSE
96	GLASS REINFORCED CONCRETE JALI/ GLASS REINFORCED CONCRETE VERTICAL FINIS	UNISTONE, DYUTI GRC ENGINEERING, ASR GRC ENGINEERING
97	SEWAGE TREATMENT PLANT (STP)	ION EXCHANGE, DAIKI, SUSBIO

*** Batch test certificate of Paints and Primer shall be supplied along with each lot.**

Note: The SE cum PD, IIM Sirmaur Project, CPWD, Dhaula Kuan, Sirmaur (H.P.) reserves the right to add or delete any materials and brands in the list of preferred materials/ brands. Only ISI marked materials/ brands can be used in the work with the prior approval of SE cum PD, IIM Sirmaur Project, CPWD, Dhaula Kuan, Sirmaur (H.P.).

The Contractor shall get the samples of all the items covered/ not covered in this list, approved from the Engineer - in - charge before commencing the supply. If any item to be executed other than BOQ, this list of preferred makes of material shall be applicable. For use of other make of material than this list, prior approval of NIT approving authority need to be taken.

Schedule of Quantity

Name of Work :- Development of Permanent Campus of IIM Sirmaur at Dhaula Kuan, District Sirmaur, Himachal Pradesh. SH: C/o Student Hostel-Type A, B, C, Married Hostel, Connecting Corridor Hostels, Student Mess, Student Activity Center, Virtual Learning Centre, Director Residence,, Professor Residence,-Type VI, Associate Professor Residence, -Type V & Assistant Professor Residence, Type IV Special, Staff Residence, Type-1 to 4 (1, 2, 3 & 4), Community Centre, Class Room Complex- 01 & 02, Faculty Building, MDP Class Room Complex, Library cum Computer Centre, Auditorium and Incubation Centre, Administrative Block, Guest House & MDP Accommodation, Meditation Centre, ESS-1, 2 & 3, AC Plant Room, Bus Stop & Gate Way Complex i/c all Internal and External Civil, MEP, Hard Landscape, irrigation work etc.

(SH:- Balance work)

S.no.	Items	Quantities	Unit	Rate	Amount
1	Excavating trenches of required width for pipes, cables, etc, including excavation for sockets, depth upto 1.5 m, including getting out the excavated materials, returning the soil as required in layers not exceeding 20 cm in depth, including consolidating each deposited layers by ramming, watering etc., stacking serviceable material for measurements and disposal of unserviceable material as directed, within a lead of 50 m :				
1.1	Ordinary rock:				
1.2	Pipes, cables etc. not exceeding 80 mm dia	100.00	metre	403.30	42380.00
1.3	Pipes, cables etc. exceeding 80 mm dia but not exceeding 300 mm dia	600.00	metre	998.65	629653.00
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 and for all lif.	84.00	cum	196.00	17301.00
3	Surface dressing of the ground including removing vegetation and in- equalities not exceeding 15 cm deep and disposal of rubbish, lead up to 50 m and lift up to 1.5 m.				
3.1	All kinds of soil	1000.00	sqm	34.15	35886.00
4	Extra for levelling & neatly dressing of disposed soil completely as directed by Engineer-in-charge.	600.00	cum	93.05	58668.00
5	Centering and shuttering including strutting, propping etc. and removal of form for				
5.1	Small lintels not exceeding 1.5 m clear span, moulding as in cornices, window sills, string courses, bands, copings, bed plates, anchor blocks and the like	94.00	Sqm	392.15	38736.00

6	Providing and laying in position ready mixed or site batched design mix cement concrete for reinforced cement concrete work; using coarse aggregate and fine aggregate derived from natural sources, Portland Pozzolana / Ordinary Portland /Portland Slag cement, admixtures in recommended proportions as per IS: 9103 to accelerate / retard setting of concrete, to improve durability and workability without impairing strength; including pumping of concrete to site of laying, curing, carriage for all leads; but excluding the cost of centering, shuttering, finishing and reinforcement as per direction of the engineer-in-charge; for the following grades of concrete. Note: Extra cement up to 10% of the minimum specified cement content in design mix shall be payable separately. In case the cement content in design mix is more than 110% of the specified minimum cement content, the contractor shall have discretion to either re-design the mix or bear the cost of extra cement.				
6.1	All works upto plinth level				
6.1.1	Concrete of M30 grade with minimum cement content of 350 kg /cum	2.00	Cum	9655.70	20293.00
7	Brick work with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in superstructure above plinth level up to floor V level in all shapes and sizes in :				
7.1	Cement mortar 1:4(1 cement :4 coarse sand)	20.00	cum	9344.35	196388.00
7.2	Cement mortar 1:6 (1 cement : 6 coarse sand)	4.00	Cum	9105.95	38276.00
8	Providing and fixing expansion hold fasteners on C.C. /R.C.C./Brick masonry surface backing including drilling necessary holes and the cost of bolt etc complete.				
8.1	Wedge expansion type				
8.1.1	Fastener with threaded dia 12 mm	232.00	Each	61.70	15041.00
9	Providing and fixing aluminium extruded section body tubular type universal hydraulic door closer (having brand logo with ISI, IS : 3564, embossed on the body, door weight upto 36 kg to 80 kg and door width from 701 mm to 1000 mm), with double speed adjustment with necessary accessories and screws etc. complete.	176.00	Each	983.15	181831.00

10	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.				
10.1	In gratings, frames, guard bar, ladder, railings, brackets, gates and similar works	1081.00	Kg	172.60	196072.00
11	Providing and fixing hand rail of approved size by welding etc. to steel ladder railing, balcony railing, staircase railing and similar works, including applying priming coat of approved steel primer.				
11.1	M.S. tube	1138.00	Kg	196.80	235350.00
12	Kota stone slab flooring over 20 mm (average) thick base laid over and jointed with grey cement slurry mixed with pigment to match the shade of the slab, including rubbing and polishing complete with base of cement mortar 1 : 4 (1 cement : 4 coarse sand) :				
12.1	25 mm thick	8610.19	sqm	1948.25	17627629.00
13	Providing and laying flamed finish Granite stone flooring in required design and patterns, in linear as well as curvilinear portions of the building all complete as per the architectural drawings with 18 mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including rubbing, curing and polishing etc. all complete as specified and as directed by the Engineer-in-Charge :				
13.1	Flamed finish granite stone slab Jet Black, Cherry Red, Elite Brown, Cat Eye or equivalent.	9.00	Sqm	3186.70	30138.00
14	Pointing on stone work with cement mortar 1:3 (1 cement : 3 fine sand) :				
	Flush/ Ruled pointing	3200.00	sqm	385.40	1295980.00
15	12 mm cement plaster of mix :				
15.1	1:6 (1 cement: 6 coarse sand)	16.00	Sqm	343.65	5778.00
16	15 mm cement plaster on rough side of single or half brick wall of mix:				
16.1	1:6 (1 cement: 6 coarse sand)	21.00	Sqm	395.35	8724.00
17	Providing and applying plaster of paris putty of 2 mm thickness over plastered surface to prepare the surface even and smooth complete.	338.00	Sqm	262.70	93308.00

18	Finishing walls with Premium Acrylic Smooth exterior paint with Silicone additives of required shade:				
18.1	New work (Two or more coats applied @ 1.43 ltr/10 sqm over and including priming coat of exterior primer applied @ 0.90 litre/10 sqm)	338.00	Sqm	171.10	60772.00
19	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade :				
19.1	Two or more coats on new work	112.00	Sqm	155.90	18349.00
20	Dismantling stone slab flooring laid in cement mortar including stacking of serviceable material and disposal of unserviceable material within 50 metres lead.	15.00	sqm	266.45	4200.00
21	Disposal of building rubbish / malba / similar unserviceable, dismantled or waste materials by mechanical means, including loading, transporting, unloading to approved municipal dumping ground or as approved by Engineer-in-charge, beyond 50 m initial lead, for all leads including all lifts involved.	5.00	Cum	263.95	1387.00
22	Providing and applying 2.5 mm thick road marking strips (retro- reflective) of specified shade/ colour using hot thermoplastic material by fully/ semi automatic thermoplastic paint applicator machine fitted with profile shoe, glass beads dispenser, propane tank heater and profile shoe heater, driven by experienced operator on road surface including cost of material, labour, T&P, cleaning the road surface of all dirt, seals, oil, grease and foreign material etc. complete as per direction of Engineer-in-charge and accordance with applicable specifications.	60.00	sqm	747.80	47149.00
23	Providing and laying 60 mm thick factory made cement concrete interlocking paver block of M -30 grade made by block making machine with strong vibratory compaction, of approved size, design & shape, laid in required colour and pattern over and including 50 mm thick compacted bed of coarse sand, filling the joints with line sand etc. all complete as per the direction of Engineer-in-charge.	333.00	sqm	972.00	340132.00

24	Providing and laying at or near ground level factory made kerb stone of M-25 grade cement concrete in position to the required line, level and curvature, jointed with cement mortar 1:3 (1 cement: 3 coarse sand), including making joints with or without grooves (thickness of joints except at sharp curve shall not to more than 5 mm), including making drainage opening wherever required complete etc. as per direction of Engineer- in-charge (length of finished kerb edging shall be measured to calculate volume for payment). (Precast C.C. kerb stone shall be approved by Engineer-in-charge).	9.00	cum	10117.60	95688.00
25	Construction of granular sub-base by providing close graded Material conforming to specifications, mixing in a mechanical mix plant at OMC, carriage of mixed material by tippers to work site, for all leads & lifts, spreading in uniform layers of specified thickness with motor grader on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per specifications and directions of Engineer- in-Charge.				
25.1	With material conforming to Grade-II (size range 53 mm to 0.075 mm) having CBR Value-25	620.46	cum	2924.85	1907014.00
26	Construction of dry lean cement concrete sub base over a prepared sub-grade with coarse and fine aggregate conforming to IS:383, the size of coarse aggregate not exceeding 25 mm, aggregate cement ratio not to exceed 15:1, aggregate gradation after blending to be as per specifications, cement content not to be less than 150 Kg/cum, optimum moisture content to be determined during trial length construction, concrete strength not to be less than 10 Mpa at 7 days, mixed in a batching plant, transported to site, for all leads & lifts, laid with a mechanical paver, compacting with 8-10 tonne vibratory roller, finishing and curing etc. complete as per direction of Engineer-in-charge.	310.23	cum	4148.65	1352469.00

27	Providing and laying tactile tile (for vision impaired persons as per standards) of size 300x300x9.8mm having with water absorption less than 0.5% and conforming to IS:15622 of approved make in all colours and shades in for outdoor floors such as footpath, court yard, multi modals location etc., laid on 20mm thick base of cement mortar 1:4 (1 cement : 4 coarse sand) in all shapes & patterns including grouting the joints with white cement mixed with matching pigments etc. complete as per direction of Engineer-in-Charge.	4.00	Sqm	2017.60	8481.00
28	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings This includes jointing of pipes & fittings with one step CPVC solvent cement, trenching, refilling & testing of joints complete as per direction of Engineer in Charge. External work				
28.1	20 mm nominal dia Pipes	50.00	metre	274.30	14412.00
28.2	25 mm nominal dia Pipes	80.00	metre	355.40	29877.00
28.3	32 mm nominal dia Pipes	100.00	metre	438.60	46090.00
28.4	40 mm nominal dia Pipes	120.00	metre	563.05	71001.00
28.5	50 mm nominal dia Pipes	250.00	metre	794.25	208657.00
28.6	80 mm nominal dia Pipes	350.00	metre	2166.35	796771.00
28.7	100 mm nominal dia Pipes	500.00	metre	3271.70	1719017.00
29	Providing and fixing double scaffolding system (cup lock type) on the exterior side of building/structure, upto 25 metre height, above ground level, including additional rows of scaffolding in stepped manner as per requirement of site, made with 40mm dia M.S. tube, placed 1.5 metre centre to centre, horizontal & vertical tubes joint with cup & lock system with M.S. Tubes, M.S. tube chalis, M.S. clamps and staircase system in the scaffolding for working platform etc. and maintaining it in a serviceable condition for execution of work of cleaning and/ or pointing and/ or applying chemical and removing it thereafter. The scaffolding system shall be stiffened with bracings, runners, connecting with the building etc, wherever required, if feasible, for inspection of work at required locations with essential safety features for the				

	workmen etc., complete as per directions and approval of Engineer-in-charge.				
	Note:- (1) The elevational area of the scaffolding shall be measured for payment purpose. (2) The payment will be made only once for execution of all items for such works.	5408.00	Sqm	338.25	1922274.00
30	Cleaning the sand stone surface and removing dirt, dust, bird dropping, grease, oil, algae, fungus, monkey beats, vegetable growth etc., including providing, applying and washing the surface with liquid Ammonia Chemical of 5% solution and other chemical cleaning agent as approved by Archaeological Survey of India/ Engineer-in-charge, of approved brand and manufacturer, with the help of required scrubbers and also cleaning with machine operated water jet mixed with desired quantity of fine silica where ever required, without causing any scratching/ damage to the stone surface and finally washing the surface with clean water with the help of pressure jet machine, complete in all respect, including taking all precautions to safeguard ventilators, windows, doors etc. by suitable covering so as to avoid any damage to the building/structure, all as per direction of Engineerin- charge (The rate is inclusive of all materials & labours involved except scaffolding).	1500.00	sqm	211.05	332670.00

31	Applying breathable, non-reactive, antifungal, and water repellent Silane/Siloxane chemical as approved by Archaeological Survey of India/ Engineer-in-charge, of approved brand and manufacture, diluted with solvent mineral Turpentine oil in the ratio of 1:12 (One part of approved chemical :12 Part of Turpentine oil), on the existing sand stone masonry surface with two or more coats to give uniform application of chemical on the surface, all complete as per direction of Engineer-In-charge (The rate is inclusive of all materials & labours involved except scaffolding).	5613.00	Sqm	109.90	648189.00
32	Providing, supplying & fixing Sprinkler in CPVC pipe line including cutting and threading the pipe etc. complete (Based on DSR-2023 item no. - 18.49)				
32.1	Full circle sprinkler	900.00	each	198.30	178470.00
32.2	Half circle sprinkler (adjustable)	900.00	each	289.70	260730.00
33	Providing and fixing threaded end brass digital water meter complete in all respect.				
33.1	25 mm dia.	30.00	Each	6009.45	180284.00
33.2	32 mm dia.	20.00	Each	9809.25	196185.00
33.3	40 mm dia.	2.00	Each	13609.10	27218.00
33.4	50 mm dia.	2.00	Each	17410.35	34821.00
34	Providing and fixing 100 cm long 2.0 MM THICK SS kicking plate of size 200x2.00 mm, 2 mm thick Stainless Steel plate grade 304, with necessary screws etc. complete.	210.00	Each	1370.95	287900.00
35	Acid cleaning of tiles & granite. The rate is inclusive of all operation, material and complete as per direction of Engineer-in-Charge:	2800.00	sqm	209.50	586600.00
36	Providing & Fixing SS 304 grade Grab bar/Hand Rail of non slipping grip for bathroom, wash basin , EWC and urinal safety & hand support including cutting and making good the walls as per standard specification of use in disabled toilet complete with brackets suitable for wall installation fixed to wooden cleats with SS screws with concealed fittings as per approved sample complete in all respect complete as per direction of Engineer.Cost of 01 No Grab Bar/Hand Rail.	12.00	Each	3929.10	47149.00

37	<p>Providing and fixing modular ABS plastic speed breaker of approved make and design, having width 250 mm, height 50 mm and length 350 mm or equivalent, manufactured from high-impact, heavy-duty ABS plastic material, UV-resistant and suitable for outdoor vehicular traffic, with high-intensity retro-reflective strips/reflectors for enhanced visibility during night time. The speed breaker shall be supplied in modular interlocking sections and shall be firmly fixed over existing concrete road/pavement as directed by the Engineer-in-Charge, using suitable galvanized/zinc-plated steel anchor bolts, nuts and washers, including drilling of holes in the concrete surface, cleaning of drilled holes, providing and fixing suitable mechanical/chemical anchors and approved epoxy/chemical anchoring compound wherever required, complete as per manufacturer's recommended installation procedure. The speed breaker shall be capable of withstanding normal/heavy vehicular traffic loading without cracking, deformation, loosening or dislodgement and shall be suitable for fixing on concrete pavement. Size: 250 mm width × 50 mm height × 350 mm length per module or equivalent (ISI/BIS certified) The item shall include all materials, modular ABS sections, reflective elements, end pieces, jointing/interlocking arrangements, anchor fasteners, drilling, epoxy/chemical anchoring compound, cutting and making good, transportation, loading, unloading, labour, tools and tackles and all incidental works required for complete and proper installation, including alignment and levelling, complete in all respects as per approved manufacturer's specifications, and directions of the Engineer-in-Charge.</p>	200.00	metre	3175.55	635110.00
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38	<p>Providing, supplying and fixing glass canopy of approved design and shape, comprising 12 mm thick toughened safety glass, supported on Stainless Steel Grade 304 structural frame with Stainless Steel Grade 304 suspension/support cables, brackets, fasteners, bolts, nuts, washers, anchor fasteners and other required accessories, complete with necessary fabrication, welding, grinding, buffing and polishing of SS 304 members, drilling/cutting and edge finishing of glass, suitable gaskets, spacers, sealants and weather-proofing arrangements, anchoring/fixing to existing RCC/structural members, including all necessary accessories and fittings for making it completely stable. The agency shall submit detailed shop drawings indicating plan, elevation, sections, dimensions, details of structural members, glass panels, cable arrangement, connections and anchorage for approval of Engineer-in-Charge before execution. The canopy shall be designed to be structurally stable and safe against dead load, imposed load and wind load applicable at site, including design of SS 304 frame, suspension cables, connections and anchorages, and shall be capable of withstanding the design wind pressure without undue deflection or instability. The complete system shall be made weather-tight/leak-proof by providing suitable slopes, joints, gaskets, sealants, flashing/drip arrangements and other necessary weather-proofing measures, as required. Stainless Steel Grade 304 cables shall be of suitable diameter and load-carrying capacity as per approved structural design/manufacturer's specifications, and all fasteners, anchorages and fixing accessories shall be of Stainless Steel Grade 304. Complete in all respects as per approved shop drawings, manufacturer's specifications and directions of Engineer-in-Charge.</p>	67.00	sqm	13559.35	908476.00
		Total			33734974.00

Executive Engineer & Senior Manager (Civil)-1
IIM Sirmaur, CPWD
Dhaura Kuan, Sirmaur (H.P.)