

Indian Institute of Technology Mandi

Name of work : Construction of Animal House near Badminton Court
at Kamand Campus of IIT Mandi.

NIT

INDIAN INSTITUTE OF TECHNOLOGY MANDI

O/o Superintending Engineer, IIT Mandi, Kamand campus
Distt. Mandi (H.P.) Pin 175005

INDIAN INSTITUTE OF TECHNOLOGY MANDI

Name of Work: Construction of Animal House near Badminton Court at Kamand Campus of IIT Mandi.

GENERAL INDEX

Sl. No.	Description	Sheet Nos.
1	Part A	3-21
	Volume I (Information and instructions to contractors & CPWD-6)	3-12
	Volume II (CPWD -8, SCHEDULE A to F & GCC 2010)	13-21
2	Part B (Civil)	22-73
	Special conditions (Civil)	24-38
	Additional Conditions of contract specific to Green Building Practices	39-40
	Particular Specifications (Civil)	41-59
	Guarantee Bond for Water Supply, Sanitary Installations and drainage	60
	Guarantee Bond for removal of defects in respect of stone/tile work	61
	Guarantee Bond for Aluminium/UPVC Work	62
	List of approved makes of Materials, Fixtures & Fittings etc.	63-65
	List of Mile Stone(s)	66
	Form of Integrity Pact	67-73
3.	Part C (Electrical)	74-103
	Schedule A to F	76-80
	Special Conditions (Electrical)	81-82
	Terms & Conditions for Internal Electrical Work	83-91
	Memorandum of Understanding	92-93
	Willingness Certificate	94
	Integrity Pact	95-101
	List of approved makes	102-103
4	Part D (Schedule of Quantities)	104-121
	Schedule of Quantities (Civil)	106-117
	Schedule of Quantities (Electrical)	118-121

It is certified that this document contains Four parts i.e. Part A, Part B, Part C & Part-D containing pages no. 1 to 121.

-sd-
Superintending Engineer,
IIT Mandi, Kamand campus

INDIAN INSTITUTE OF TECHNOLOGY MANDI

Name of work: Construction of Animal House near Badminton Court
at Kamand Campus of IIT Mandi.

Volume I
of Part A

O/o Superintending Engineer, IIT Mandi, Kamand campus

INDEX- Volume I of Part A

SL. NO.	DESCRIPTION	PAGES
1	Information and Instructions for contractors for e- tendering	5-7
2	Notice inviting e-tender (CPWD – 6)	8-11
3	Brief Particulars of the work	12

Certified that this tender Document volume-I of part A contains total pages from 5 to 12.

-sd-
Superintending Engineer,
IIT Mandi, Kamand campus

**INFORMATION AND INSTRUCTIONS FOR BIDDERS FOR e-TENDERING FORMING
PART OF BID DOCUMENT AND TO BE POSTED ON WEBSITE
(Applicable for inviting open bids)**

The Superintending Engineer, IIT Mandi, Kamand campus, Distt Mandi (HP) on behalf of BoG invites online item rate composite bids from approved and eligible contractors of appropriate class enlisted with Central/State Govt. organization/Central Autonomous body/Central Public Sector undertaking in two bid system for the following work(s):

Sr. No.	NIT No.	Name of work & Location	Estimated cost put to Bid	Cost of tender document	Earnest money	Period of completion	Last date & time of submission of technical & financial bid	Date & time of opening of eligibility/technical bid	Last date & Time for submitting EMD and other documents by lowest bidder	Last date & Time for submitting Tender cost
1	2	3	4	5	6	7	9	10	11	12
1	IIT Mandi(CW)/SE-821/2016-17/3177-79 dated 31-03-17	Construction of Animal House near Badminton Court at Kamand Campus of IIT Mandi.	Rs 38,60,952/- { Rs 29,34,022 (Civil) + Rs 9,26,930/- (Elect.) }	500/-	Rs 77,219/-	120 Days	19-04-2017 upto 03:00 PM	20-04-2017 at 03:30 PM	Within a week of opening of financial bid.	At the time of opening of bid by bidder or their representative.

Note: Tender cost shall be submitted by the bidder or their representative in the shape of DD in favour of Registrar, IIT Mandi payable at Mandi at the time of opening of bid.

- Contractors who fulfill the following requirements and having definite proof from the appropriate authority, which shall be to the satisfaction of the competent authority, of having satisfactorily completed similar work of the magnitude specified below during the last seven years ending last day of March 2017 shall be eligible for bidding. Joint ventures and conditional tender will not be accepted. Three similar works each of value not less than 40% of estimated cost or two similar work each of value not less than 60% of estimated cost or one similar work of value not less than 80% of estimated

cost for above mentioned work in Central/State Govt. organization/Central Autonomous body/Central Public Sector undertaking.

The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7% per annum; calculated from the date of completion to last date of receipt of applications for tenders.

2. The intending bidder must read the terms and conditions of CPWD-6 carefully. He should only submit his bid if he considers himself eligible and he is in possession of all the documents required.
3. Information and Instructions for bidders posted on web site shall form part of bid document.
4. Plan, specification can also be seen in the office of the SE, IIT Mandi at Kamand campus on working days except on Saturday, Sunday and Public Holidays before last date/time of submission of bid. The bid document consisting of the schedule of quantities of various types of items to be executed and the set of terms and conditions of the contract to be complied with and other necessary documents can be seen and downloaded from Central Public Procurement Portal website <http://eprocure.gov.in/eprocure/app>
5. The bid can only be submitted after uploading the mandatory scanned documents such as Demand Draft or Pay order or Banker's Cheque or Deposit at call Receipt or Fixed Deposit Receipts of any Scheduled Bank towards EMD in favour of The Registrar, IIT Mandi payable at Mandi and other documents as specified.
6. Those contractors not registered on the website mentioned above, are required to get registered beforehand. If needed they can be imparted training on online bidding process as per details available on the website.
7. The intending bidder must have valid digital signature to submit the bid.
8. Contractor can upload documents in the form of **JPG format and PDF format**.
9. Contractor must ensure to quote rate of each item. If any cell is left blank and no rate is quoted by the bidder, rate of such item shall be treated as "0" (ZERO).

List of Documents to be scanned and uploaded on due date and time mentioned above:

- a. Demand Draft of any scheduled bank against tender cost. Original to be deposited at the time of opening of technical bid.
- b. Demand Draft or pay order or Banker's Cheque or Fixed Deposit Receipts or Deposit at Call Receipt of any Scheduled Bank against EMD.
- c. Enlistment Order of the Contractor.
- d. Certificate of Registration for Sales Tax / VAT.
- e. Certificate of Registration for Service Tax, if applicable.

- f. An undertaking that "The physical EMD shall be deposited by me/us with the SE calling the bid in case I/We become the lowest bidder within a week of opening of bid otherwise the department may reject the bid and also take action to withdraw my/our enlistment /debar me/ us from tendering in IIT Mandi."
- g. Income Tax return of last three years.

Note: If the contractor who fails to upload all the above required documents, his tender is liable to be rejected.

-sd-
Superintending Engineer,
IIT Mandi, Kamand campus,
Distt. Mandi (H.P.) Pin 175005
(For and on behalf of the BoG)

Copy to:

1. Institute website.
2. CPP Portal.
3. Notice board.

Superintending Engineer

CPWD-6 FOR e-TENDERING

1. The Superintending Engineer, IIT Mandi, Kamand campus, Distt. Mandi (H.P.) on behalf of the BoG invites the online item rate composite bids from approved and eligible contractors of appropriate class enlisted with Central/State Govt. organization/Central Autonomous body/Central Public Sector undertaking in two bid system for Construction of Animal House near Badminton Court at Kamand Campus of IIT Mandi.

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)

- a. The work is estimated to cost Rs 38,60,952/- {Rs 29,34,022 (Civil) + Rs 9,26,930/-(Elect.)}. This estimate, however, is given merely as a rough guide.
2. Contractors who fulfill the following requirements shall be eligible for bidding. Joint ventures and conditional tender will not be accepted.
Should have satisfactorily completed the works as mentioned below during the last Seven years ending last day of the month March, 2017.
Three similar works each of value not less than 40% of estimated cost or two similar work each of value not less than 60% of estimated cost or one similar work of value not less than 80% of estimated cost for above mentioned work.
3. Agreement shall be drawn with the successful tenderer on prescribed Form No. CPWD 8 which is available as a Govt. of India Publication and also available on website www.cpwd.gov.in. Tenderer shall quote his rates as per various terms and conditions of the said form which will form part of the agreement.
4. The time allowed for carrying out the work will be 120 Days 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 tender documents.
5. The site for the work is available.
6. Plan, specification can be seen in the office of the SE, IIT Mandi at Kamand campus on working days except on Saturday, Sunday and Public Holidays before last date/time of submission of bid. The tender document consisting of the schedule of quantities of various types of items to be executed and the set of terms and conditions of the contract to be complied with and other necessary documents except Standard General Conditions of Contract Form can be seen and downloaded from Central Public Procurement Portal website <http://eprocure.gov.in/eprocure/app>
7. After submission of the tender the contractor can re-submit revised tender any number of times but before last time and date of submission of tender as notified.
8. While submitting the revised bid, contractor can revise the rate of one or more item(s) any number of times (he need not re-enter rate of all the items) but before last time and date of submission of tender as notified.
9. Earnest Money Rs 77,219/- can be paid in the form of Demand Draft or pay order or Banker's Cheque or Deposit at Call Receipt or Fixed Deposit Receipts (drawn in favour of The Registrar, IIT Mandi, payable at Mandi/Kamand) of any Scheduled Bank which shall be scanned and uploaded to the e-tendering website within the period of tender submission.

The intending bidder has to fill all the details of Demand Draft/ Pay Order/ Banker's Cheque/Deposit at call receipt/ Fixed Deposit Receipts (bankers name, amount, number and date) against EMD etc.

The physical EMD of the scanned copy of EMD uploaded shall be deposited by the lowest tenderer within a week after opening of financial bid failing which the tender shall be rejected and he shall be

debarred from tendering in IIT Mandi.

The following undertaking in this regard shall also be uploaded by the intending bidders: -

“The physical EMD shall be deposited by me/us with the SE calling the tenders in case I/We become the lowest tenderer within a week after the opening the financial bid otherwise the department may reject the tender and also take action to withdraw my/our enlistment/ debar me /us from tendering in IIT Mandi.”

10. The bid submitted shall be opened at 03:30 PM on 20-04-2017.
11. The bid submitted shall become invalid if:
 - a. The bidder is found ineligible.
 - b. The bidder does not upload all the documents (including service tax registration/ VAT registration/ Sales Tax registration, Certificate of completed works etc.) as stipulated in the bid document including the undertaking about deposition of physical EMD of the scanned copy of EMD uploaded.
 - c. If any discrepancy is noticed between the documents as uploaded at the time of submission of bid and hard copies as submitted physically by the lowest tenderer in the office of tender opening authority.
 - d. The lowest bidder does not deposit physical EMD within a week of opening of tender.
12. The contractor whose bid is accepted will be required to furnish performance guarantee of 5% (Five Percent) of the tendered amount within the period specified in Schedule F. This guarantee shall be in the form of Deposit at Call receipt /Banker's Cheque/Demand Draft/Pay order or Fixed Deposit Receipts of any Scheduled Bank 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 tender shall be returned after receiving the aforesaid performance guarantee.
13. Site of construction is located at South campus of IIT Mandi at Kamand, Distt. Mandi (H.P.) Pin 175005.
14. Intending bidders are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their tenders as to the nature of the ground and sub-soil (so far as is practicable), the form and nature of the site, the means of access to the site, the accommodation they may require and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their tender. A tenderer shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charge consequent upon any misunderstanding or otherwise shall be allowed. The tenderer 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 tender by a tenderer implies that he has read this notice and all other contract documents and has made himself aware of the scope and specifications of the work to be done and of conditions and rates at which stores, tools and plant, etc. will be issued to him by the Government and local conditions and other factors having a bearing on the execution of the work.
15. The competent authority on behalf of the BoG does not bind itself to accept the lowest or any other tender and reserves to itself the authority to reject any or all the tenders received without

the assignment of any reason. All tenders in which any of the prescribed condition is not fulfilled or any condition including that of conditional rebate is put forth by the tenderer shall be summarily rejected.

16. Canvassing whether directly or indirectly, in connection with tenderer is strictly prohibited and the tenders submitted by the contractors who resort to canvassing will be liable to rejection.
17. The competent authority on behalf of BoG 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.
18. The contractor shall not be permitted to tender for works in the IIT Mandi responsible for award and execution of contracts, in which his near relative is posted as a Divisional Accountant or as an officer in any capacity between the grades of Superintending 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 IIT Mandi. Any breach of this condition by the contractor would render him liable to be removed from the approved list of contractors of this Department.
19. 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 previous 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 tender or engagement in the contractor's service.
20. The bid for the works shall remain open for acceptance for a period of Sixty (60) days from the date of opening of financial bids. If any bidder withdraws his bid before the said period or issue of letter of acceptance, whichever is earlier, or makes any modifications in the terms and conditions of the bid which are not acceptable to the department, then the Government shall, without prejudice to any other right or remedy, be at liberty to forfeit 50% of the said earnest money as aforesaid. Further the bidders shall not be allowed to participate in the re-bidding process of the work.
21. 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 contract consisting of: -
 - a. The Notice Inviting bid, all the documents including Special Conditions, General Specifications/ Particular Specifications and drawings, if any, forming part of the bid as uploaded at the time of invitation of bid and the rates quoted online at the time of submission of bid and acceptance thereof together with any correspondence leading thereto.
 - b. Standard C.P.W.D. Form 8 or other Standard CPWD form as applicable.
22. For Composite Tenders
 - 22.1 The 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 tender.
 - 22.2 The bid document will include following four components:
 - Part A: CPWD-6, CPWD form - 8 including schedule A to F for the major component of the work, Standard General Conditions of Contract for CPWD 2010 as amended upto date.
 - Part B: General / specific conditions, specifications

- Part C: Schedule A to F for minor component of the work. (Superintending Engineer of major component shall also be competent authority under clause 2 and clause 5 as mentioned in schedule A to F for major components) General/ specific conditions, specifications.
- Part D: Schedule of quantities applicable to Civil and electrical work.
- 22.3 The bidders must associate with himself, agencies of the appropriate class registered with Central/State Govt. organization/Central Autonomous body/Central Public Sector undertaking and eligible to bid for each of the minor component individually.
- 22.4 The eligible bidders shall quote rates for all items of major component as well as for all items of minor components of the bid.
- 22.5 After acceptance of the bid by competent authority, the Engineer in charge of major component of the work shall issue letter of award on behalf of the BoG. After the work is awarded, the main contractor will have to enter into one agreement with Engineer in charge of major component and has also to sign two or more copies of agreement depending upon number of Engineer in charge of minor components. One such signed set of agreement shall be handed over to Engineer in - charge of minor component. Engineer of major component will operate part A and part B of the agreement. Engineer in - charge of minor component(s) shall operate Part C along with Part A of the agreement.
- 22.6 Entire work under the scope of composite tender including major and all minor components shall be executed under one agreement.
- 22.7 The main contractor has to associate agency(s) for minor component(s) conforming to eligibility criteria as defined in the tender document and has to submit detail of such agency(s) to Engineer-in-charge of minor component(s) within prescribed time. Name of the agency(s) to be associated shall be approved by Engineer-in-charge of minor component(s).
- 22.8 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 respective Engineer-in-charge/ DDH of the agreement. The new agency/ agencies shall also have to satisfy the laid down eligibility criteria. In case Engineer-in-charge of respective discipline 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.
- 22.9 The main contractor has to enter into agreement with contractor(s) associated by him for execution of minor component(s). Copy of such agreement shall be submitted to Engineer-in-charge of each minor component as well as to Engineer in charge of major component. In case of change of associate contractor, the main contractor has to enter into agreement with the new contractor associated by him.
- 22.10 Running payment for the major component shall be made by Superintending Engineer 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 directly to the main contractor.
- 22.11 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.
- 22.12 Final bill of whole work shall be finalized and paid by the Superintending Engineer of major component. 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 Superintending Engineer of major component for including in the final bill for composite contract.
- 22.13 It will be obligatory on the part of the tenderer to sign the tender documents for all components before the first payment is released.

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Superintending Engineer,
IIT Mandi, Kamand campus,
Distt. Mandi (H.P.) Pin 175005
(For and on behalf of the BoG)

SECTION – I
BRIEF PARTICULARS OF THE WORK

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

Sr. No.	Name of Work	Approx. Cost	Period of completion
1	Construction of Animal House near Badminton Court at Kamand Campus of IIT Mandi.	38,60,952/-	120 Days

2. The work is situated at IIT Mandi South Campus at Kamand near Mandi (H.P).
- 3.0 Features:
 - 3.1 General features and major components of the work are as under:
 - i) As per schedule of quantity.
4. Work shall be executed according to General Conditions of Contract 2010 Form 8 for Central P.W.D. Works as amended/corrected up to date.
5. Work shall be executed according to CPWD specification.

Indian Institute of Technology Mandi

Name of work: Construction of Animal House near Badminton Court
at Kamand Campus of IIT Mandi.

Volume II Of Part A

O/o Superintending Engineer, IIT Mandi, Kamand campus

Indian Institute of Technology Mandi

Name of work: Construction of Animal House near Badminton Court at Kamand Campus of IIT Mandi.

INDEX – Volume II of Part A

Sl. No.	Particulars	Sheet No.
1	Item rate tender for work (Form CPWD-8)	15-16
2	Schedule (A to F) and GCC 2010	17-21

Certified that this tender Document Volume-II of Part A contains pages from 15-21.

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Superintending Engineer,
IIT Mandi, Kamand campus,
Distt. Mandi (H.P.) Pin 175005
(For and on behalf of BoG)

FORM NO.8

Indian Institute of Technology Mandi

STATE: HIMACHALPRADESH

DI STT.: MANDI

ITEM RATE TENDER & CONTRACT FOR WORKS

(A) Tender for the work of: -

Name of Work: Construction of Animal House near Badminton Court at Kamand Campus of IIT Mandi.

- i) To be submitted online by 03:00 PM on 19-04-2017 through website <http://eprocure.gov.in/eprocure/app> to Superintending Engineer, IIT Mandi, Kamand campus, Distt. Mandi (H.P.).
- ii) To be downloaded online in presence of qualified tenderer/their authorized representatives who may be present at 03:30 PM on 20-04-2017 in the office of Superintending Engineer, IIT Mandi, Kamand campus, Distt. Mandi (H.P.).
- iii) Issued to (contractor)

Signature of Officer issuing the document.....

Designation:- Superintending Engineer, IIT Mandi, Kamand campus, Distt. Mandi (H.P.)

AE(C)

15 AE(E)

SE

Correction.. Nil Deletion.. Nil Insertion.. Nil Overwriting.. Nil

TENDER

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 and 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 BoG within the time specified in Schedule 'F', viz. Schedule of Quantities and in accordance in all respects with the Specifications / Special conditions, Designs, Drawings and instructions in writing as referred to in this tender document and with such materials as are provided for, by and in respects in accordance with, such conditions so far as applicable.

CPWD FORM NO.8

We agree to keep the tender open for (60) Sixty days from the date of opening of Financial bid and not to make any modifications in its terms and conditions.

A sum of Rs 77,219/- is hereby forwarded in Demand Draft or Pay order or Banker's Cheque or Deposit at call Receipt or Fixed Deposit Receipts of any Scheduled Bank as earnest money. If I/we fail to furnish the prescribed Performance Guarantee within prescribed period, I/we agree that the said BoG or his successor 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 the work as specified, I/we agree that BoG or his successors in office shall, without prejudice to any other right or remedy available in law, be at liberty to forfeit the said earnest money and the Performance Guarantee absolutely, otherwise the said earnest money shall be retained by him towards security deposit to execute all the works referred to in the tender documents upon the terms and conditions contained or referred to therein and to carry out such deviations as may be ordered, up to maximum of the percentage mentioned in Schedule 'F' and those in excess of that limit at the rates to be determined in accordance with the provision contained in Clause 12.2 & 12.3 of the tender form. Further, I/We agree that in case of forfeiture of earnest money or both Earnest Money & 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 IIT MANDI 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 may authorized to communicate the same or use the information in any manner prejudicial to the safety of the State.

Dated: _____	}	Signature of Contractor _____	}
Witness: - _____		Postal Address: - _____	
Address: - _____			
Occupation: - _____		Telephone No. _____ Fax: - _____ E-Mail: - _____	

ACCEPTANCE

The above tender (as modified by you as provided in the letters mentioned hereunder) is accepted by me for and on behalf of BoG for a sum of Rs (Rupees)

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

- i)
- ii)

-sd-

Superintending Engineer,
IIT Mandi, Kamand campus,
Distt. Mandi (H.P.) Pin 175005
(For and on behalf of the BoG)

AE(C)

16 AE(E)

SE

Correction.. Nil Deletion.. Nil Insertion.. Nil Overwriting.. Nil

SCHEDULES (A to F)

SCHEDULE 'A'

Schedule of quantities - As per Part-D Sheet Nos. 107 to 126 (Civil Works)

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 be charged to the contractor	Place of issue
(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
		NIL	

SCHEDULE 'D'

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

1. Special Conditions - Sheet No. 24-38
2. Particular Specifications. - Sheet No. 41-59
3. Annexures - Sheet No. 60-73
{Sanitary installations/water supply/for removal of defects in Stone/tile work/Aluminium UPVC work Form of Integrity Pact etc.}.

SCHEDULE 'E'

Reference to General Conditions of Contract : General Conditions of contract 2010 for CPWD works amended up to date.

- 1.1 Name of Work: Construction of Animal House near Badminton Court at Kamand Campus of IIT Mandi.
- 1.2 Estimated Cost of work: -
 - (i) For civil component Rs 29,34,022/-
 - (ii) For Electrical component Rs 9,26,930/-
 - Total Rs 38,60,952/-
- 1.3 Earnest Money: - 77,219/-

1.4	Performance Guarantee	5.00% of tendered value
1.5	Security Deposit	5.00% of tendered value

SCHEDULE 'F':-

General Rules & Directions:-
Officer Inviting Tender

Superintending Engineer,
Indian Institute of Technology Mandi,
Kamand campus, Distt. Mandi (H.P.) Pin 175005

Maximum percentage for quantity of items of work to be executed beyond which rates are to be determined in accordance with Clauses 12.2 & 12.3 of GCC.

Refer Clause-12

Definitions:-

2(v) Engineer-In-Charge

Superintending Engineer,
Indian Institute of Technology Mandi,
Kamand campus, Distt. Mandi (H.P.) Pin 175005

2(viii) Accepting Authority

Superintending Engineer, IIT Mandi.

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

15%

2(xi) Standard Schedule of Rates

Delhi Schedule of Rates 2016

2(xii) Department

Indian Institute of Technology Mandi

9(ii) Standard CPWD Contract Form

GCC 2010, CPWD Form 8 as amended upto date.

Clause-1:

(i) Time allowed for submission of performance guarantee after date of issue of letter of acceptance

15 days

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

1 to 15 days

Clause-2:

Authority for fixing compensation under clause-2.

Superintending Engineer, IIT

Clause – 2A :

Whether clause-2A shall be applicable.

Yes, applicable

Clause-5:

Number of days from the date of issue of letter of acceptance for reckoning date of start	22 days.
Mile Stone	Refer Para (A) Table of Milestones at Sheet No. 66.
Time allowed for execution of work	120 Days
Authority to decide	
i. Extension of time for completion of work.	Superintending Engineer, IIT Mandi
ii. Re-scheduling of Mile stone	Dean(I&S), IIT Mandi
iii Shifting of date of start in case of delay in handing over of site.	Superintending Engineer, IIT Mandi
Clause-6, 6A: -	
Clause applicable- (6 or 6A) :-	6
Clause-7: -	
Gross work to be done together advances for material collected, if any, since the last such payment for being eligible to interim payment	10% of the awarded amount
Clause-10A: -	
List of testing equipment to be provided by the contractor at site lab.	N.A.
Clause-10-B (ii).	
Whether clause 10-B (ii) shall be applicable	No
Clause-10C: -	
Component of labour expressed as Percent of value of work	N.A.
Clause 10 CA	N.A.
Clause-10-CC: -	NA.
Schedule of component of other materials, Labour, POL etc. for price escalation: -	
Component of civil (Except materials covered under clause 10CA)/	----
Electrical construction materials expressed as percent of total value of work.	
Component of labour expressed as percent of total value of work.	----
Component of P.O.L. expressed as percent of total value of work.	Nil.
Clause-11: -	
Specifications to be followed for execution of work	C.P.W.D. Specifications 2009 Vol. I & II. with correction slips issued upto date

Clause-12:-

Type of Work :

Original work.

12.2 & 12.3 Deviation limit beyond which clause 12.2 & 12.3 shall apply for building work.

30%

12.5 Deviation limit beyond which clause 12.2 & 12.3 shall apply for foundation works

100%

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

Superintending Engineer,
Indian Institute of Technology Mandi,
Kamand campus, Distt. Mandi (H.P.)
Pin 175005

Clause-18:-

List of mandatory machinery tools & Plants to be deployed by the Contractor at site

N.A.

Clause-25 :

Constitution of Dispute Redressal Committee (DRC)	Competent Authority to appoint DRC
DRC shall constitute one Chairman and two members.	Director, IIT Mandi

Clause-42:-

- | | | |
|-----|---|--|
| i) | a) Schedule / Statement for determining theoretical quantity of cement & bitumen | Delhi Schedule of Rates 2016 with upto date correction |
| ii) | Variations permissible on theoretical Quantities. | |
| | a) Cement for works with estimated cost put to tender not more than Rs. 5 Lacs. | 3% plus / minus. |
| | Cement for works with estimated cost put to tender for more than Rs. 5 Lacs. | 2% plus / minus. |
| | b) Steel Reinforcement and structural steel sections for each diameter, section and category. | 2% plus / minus. |
| | c) Bitumen for all work. | 2.5% Plus only, if applicable. |
| | d) All other materials. | Nil. |

Indian Institute of Technology Mandi

Name of work: Construction of Animal House near Badminton Court at Kamand Campus of IIT Mandi.

PART B

O/o Superintending Engineer, IIT Mandi, Kamand campus

INDEX - PART B

Sl. No.	Particulars	Sheet No.
1	Special conditions (Civil)	24-38
2	Additional Conditions of contract specific to Green Building Practices	39-40
3	Particular Specifications (Civil)	41-59
4	Guarantee Bond for Water Supply, Sanitary Installations and drainage	60
5	Guarantee Bond for removal of defects in respect of stone/tile work	61
6	Guarantee Bond for Aluminium Work/UPVC work	62
7	List of approved makes of Materials, Fixtures & Fittings etc.	63-65
8	List of Mile Stone(s)	66
9	Form of Integrity Pact	67-73

Certified that this part of document i.e. Part B contains pages from 24-73.

-sd-

Superintending Engineer,
IIT Mandi, Kamand campus,
Distt. Mandi (H.P.) Pin 175005

SPECIAL CONDITIONS

1.0 General

1.1 Except for the items, for which Particular Specifications are given or where it is specifically mentioned otherwise in the description of the items in the schedule of quantities, the work shall generally be carried out in accordance with the "CPWD Specifications 2009 Vol. I & II" with upto date correction, additional/Particular Specifications, Architectural /structural drawings and as per instructions of Engineer-in-Charge.

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.

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 and Special Conditions, if any.
- (iii) Drawings
- (iv) CPWD Specifications.
- (v) Indian Standard Specifications of B.I.S.
- (vi) Manufacturers' specifications & as decided by Engineer-in-charge.

"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".

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.

The works to be undertaken by the contractor shall interalia include the following:

- i. Preparation of detailed SHOP drawings and As Built drawings wherever applicable.
- ii. Obtaining of Statutory permissions where-ever applicable and required.
- iii. Pre-commissioning tests as per relevant standard specifications, code of practice, Acts and Rules wherever required.
- iv. Warranty obligation for the equipments and/or fittings/fixtures supplied by the contractor.

Contractor shall provide all the shop drawings or layout drawings for all the co-ordinated 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.

1.2 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.

- 1.3 All the hidden items such as water supply lines, drainage pipes, conduits, sewers etc. are to be properly tested before covering.
- 1.4 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.
- 1.5 The contractor, his authorized representative, workmen etc. shall strictly observe orders pertaining to fire precautions prevailing in the area.
- 1.6 Contractor(s) shall study the soil investigation report for the site, 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.
- 1.7 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.
- 1.8 Contractor shall take all precautionary measures to avoid any damage to adjoining property. All necessary arrangement shall be made at his own cost.
- 1.9 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.
- 1.10 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.
- 1.11 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 equipments shall be got calibrated in advance from laboratory, approved by the Engineer-in-Charge. Nothing extra shall be payable on this account.
- 1.12 Contractor shall provide permanent bench marks, flag tops and other reference points for the proper execution of work and these shall be preserved till the end of work. All such reference points shall be in relation to the levels and locations, given in the Architectural and plumbing drawings.
- 1.13 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.
- 1.14 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 supercede 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.

- 1.15 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.
- 1.16 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.
- 1.17 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.
- 1.18 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.

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.

- 1.19 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 IIT Mandi. No extra payment shall be made on this account.
- 1.20 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.
- 1.21 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.
- 1.22 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.
- 1.23 For works below ground level the contractor shall keep that area free from water. If dewatering or bailing out of water is required the contractor shall do it and nothing extra shall be paid except otherwise provided in the items of schedule of quantities.
- 1.24 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.

- 1.25 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.
- 1.26 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.
- 1.27 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.
- 1.28 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.
- 1.29 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.
- 1.30 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.

- 1.31 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.
- 1.32 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.
- 1.33 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 equipments 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 first hand information of site constraints. Accordingly, they should quote their tenders. Nothing extra shall be payable on this account.
- 1.34 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.

1.35 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.

1.36 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.

The Contractor shall cooperate with and provide the facilities to the associate-Contractors and other agencies working at site for smooth execution of the work. The Contractor shall

- (a) Allow use of scaffolding already erected, toilets, sheds etc.
- (b) Properly co-ordinate their work with the work of other Contractors.
- (c) Provide control lines and benchmarks to his associate-Contractors and the other Contractors.
- (d) Provide electricity and water at mutually agreed rates.
- (e) Provide hoist and crane facilities for lifting material at mutually agreed rates.
- (f) Co-ordinate with other Contractors for leaving inserts, making chases, alignment of services etc. at site.
- (g) Adjust work schedule and site activities in consultation with the Engineer-in-Charge and other Contractors to suit the overall schedule completion.
- (h) 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.

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

- (a) Run off of all piping and their diameters including soil, waste pipes and vertical stacks.
- (b) Ground and invert level of all drainage pipes together with locations of all manholes and connections, upto out fall.
- (c) Run off of all water supply lines with diameters, location of control valves, access panels etc.

In case the contractor fails to supply "as built drawing" aforesaid within 30 days of the date of completion, then the recovery @ Rs.10, 000/- for each such set of drawings shall be made from the contractor's final bill.

2.0 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.

3.0 QUALITY ASSURANCE/TESTING OF MATERIALS: -

3.1.1 Samples of materials required for testing shall be provided free of charge by the contractor. The cost of tests to be carried out on Steel in approved labs shall be borne by the contractor. The cost of other than steel tests to be carried out in approved labs shall be borne by the contractor / department in the manner indicated below: -

- a) By the contractor, if the results show that the material does not conform to relevant specifications.
- b) By the department, if the results show that the material conforms to relevant specifications.

All other expenditure required to be incurred for taking samples; conveyance, packing etc. shall be borne by the contractor himself.

3.1.2 However, if any ultrasonic pulse velocity / load testing or special testing is to be done for concrete whose strength is doubtful, the cost of the same shall be borne by the contractor.

3.1.3 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.

3.2 SAMPLE OF MATERIALS:-

3.2.1 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 Approved Makes as at Sheet No. 63-65 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.

3.2.2 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.

3.2.3 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.

3.2.4 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.

4.0 CEMENT & STEEL REINFORCEMENT

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

4.2 CEMENT:-

- 4.2.1 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 and J.K. Cement. The cement of approved make as aforesaid in 50 kg. bags bearing manufacturer's name and ISI marking, along with manufacturers test certificate for each lot shall be procured by the contractor. 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. However, if the contractor uses higher grade of cement or uses OPC only nothing extra shall be paid.
- 4.2.2 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/department in the manner indicated below:
- i) By the contractor, if the results show that the cement does not conform to relevant BIS Codes.
 - ii) By the department, if the results show that the cement conforms to relevant BIS Codes.
- 4.2.3 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.
- 4.2.4 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-42 of the contract and shall be governed by the conditions laid therein.
- 4.2.5 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 - 42), 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 Superintending Engineer regarding theoretical quantity of the cement, which should have been actually used, shall be final and binding on the contractor.

- 4.2.6 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.
- 4.2.7 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.
- 4.2.8 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.

4.3 STEEL REINFORCEMENT: -

- 4.3.1 The contractor shall procure Thermo Mechanical Treated (TMT) Steel Reinforcement bars of Fe 500D grade from Primary Steel producers such as SAIL, Tata Steel Ltd., Rashtriya Ispat Nigam Ltd., Jindal Steel and Power Ltd. and JSW Steel Ltd.
 - a) The grade of the steel shall be Fe 500 D shall be as per BIS 1786-2008.
 - b) The TMT bars procured from Primary Producers shall conform to manufacture's specifications.
 - c) TMT Bars procured from Primary Producers, the specifications shall meet the provision of IS 1786:2008.
- 4.3.2 The contractor shall have to obtain and furnish test certificates & challan from Manufacturers to Engineer –in- Charge in respect of all the supplies brought by him to the site of work.

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.

- 4.3.3 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, as defined under para 4.3.1 (a) above, 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 or written orders from the Engineer-in Charge to do so: -
- 4.3.4 The steel reinforcement 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 these accounts. Bars of different sizes and lengths shall be stored separately to facilitate easy counting and checking.
- 4.3.5 Unless OTHERWISE specified elsewhere in the contract document, the testing (nominal mass, tensile strength, bend test, rebend test etc.) shall be done as per frequency of samples not less than as given below :

SIZE OF BAR	FOR CONSIGNMENT BELOW 100 TONNES	FOR CONSIGNMENT OVER 100 TONNES
Under 10 mm dia	One sample for each 25 tonnes or part thereof.	One sample for each 40 tonnes or part thereof
10 mm to 16 mm dia	One sample for each 35 tonnes or part thereof.	One sample for each 45 tonnes or part thereof
Over 16 mm dia	One sample for each 45 tonnes or part thereof	One sample for each 50 tonnes or part thereof

- 4.3.6 The Actual issue and consumption of steel on work shall be regulated and proper account maintained as provided in clause 10 of the contract. The theoretical consumption of steel shall be worked out as per procedure prescribed in Clause 42 of the contract and shall be governed by

conditions laid therein. In case the consumption is less than theoretical consumption including permissible variation, recovery at the rate so prescribed shall be made. In case of excess consumption no adjustment need to be made.

- 4.3.7 Steel brought to site and steel remaining unused shall not be removed from site without the written permission of the Engineer-in-Charge
- 4.3.8 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.
- 4.3.9 Reinforcement including authorized spacer bars and lappages 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.
- 4.3.10 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.

5.0 SECRECY

- 5.1 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.
- 5.2 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.
- 5.3 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.

6.0 LABOUR AND SECURITY

- 6.1 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.
- 6.2 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.
- 6.3 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.

- 6.4 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").
- 6.5 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.
- 6.6 Normally contractor shall be allowed to carryout work between 7 AM to 6 PM. However, he may also be allowed to carryout the work beyond 6 PM & upto 7 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.
- 6.7 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".
- 6.8 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.
- 7.0 TRANSPORTATION AND OFFICE INFRASTRUCTURE:
- 7.1 The contractor shall make arrangement for Helmets and leather shoes (meant of construction work at sites) for all field staff of the department during the entire period of construction for safety reasons. One helmet and two pairs of shoes per staff member (maximum ten members) of the departments per year shall be arranged by the contractor.
- 8.0 DOCUMENTATION
- 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.
- 9.0 PROGRAM CHART: -
- 9.1 The Contractor shall prepare an integrated program chart for the execution of work, showing clearly all activities from the start of work to completion, with details of manpower, equipment and machinery required for the fulfillment of the program within the stipulated period or earlier and submit the same for approval of the Engineer-in-Charge within 15 days of the issue of letter of acceptance for the contract. The integrated program chart so submitted should not have any discrepancy with the milestones attached in the Contract Agreement.

- 9.2 The work has to be completed in stages as indicated in the Milestones under Schedule 'F' and the program should be prepared in such a manner to achieve these Milestones as indicated therein or earlier.
- 9.3 The program chart should include the following: -
- a) Descriptive note explaining sequence of various activities.
 - b) Network (PERT / CPM / BAR CHART) prepared which will indicate resources in financial terms, manpower and specialized equipments for every important stage.
 - c) Programme for procurement of materials by the contractor.
- 9.4 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.
- 9.5 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.

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.

10.0 PROGRESS AND MONITORING OF WORK:

- 10.1 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) Man-power statement, indicating individually the names of all the staff deployed on the work, along with their designations.
 - (iv) 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.
- 10.2 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 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.
- 10.3 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.

- 10.4 The contractor shall conduct his work, so as not to interfere with or hinder the progress or completion of the work being performed by other contractor(s) or by the Engineer-in-Charge and shall as far as possible arrange his work and shall place and dispose off the materials being used or removed so as not to interfere with the operations of other contractor or he shall arrange his work with that of the others in an acceptable and coordinated manner and shall perform it in proper sequence to the complete satisfaction of Engineer-in-charge.
- 10.5 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.
- 10.6 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.
- 11.0 Defect liability:
- 11.1 The contractor's liability during the defect liability period from the final date of completion shall be limited to rectification of defects including replacement as follows which in the opinion of Engineer-in-Charge are not manmade.

Sl. No.	Description	Defect Liability
(i)	Concrete	(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 & Iron work	(a) Rectification / Replacement of defective part of rolling shutter.

Sl. No.	Description	Defect Liability
		(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. (b) Settlement of foundation & floors, hollow sounding, cracks in tiles/stones.
(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 over head 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)	General	(a) All manufacturing defects of structures / fixtures / fittings / equipments other than listed above including any defects of shrinkage or other faults that appear in the work within twelve months after a certificate of its completion is given by the Engineer-in-Charge shall be rectified by the contractor.

12.0 SAFETY MEASURES

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

12.2 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.

12.3.1 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.

12.3.2 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.

13.0 Special condition for Hardware and sanitary wares:

13.1 Engineer-in-Charge will take a decision regarding model numbers of equivalent Door/window hardwares/ sanitary wares 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."

ADDITIONAL CONDITIONS OF CONTRACT SPECIFIC TO GREEN BUILDING PRACTICES

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

1.1 SITE

1.1.1 The contractor shall ensure that adequate measures are taken for the prevention of erosion of the topsoil during the construction phase.

1.1.2 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.

1.1.3 No excavated earth shall be removed from the campus unless suggested otherwise by Engineer in Charge. All subsoil shall be reused in backfilling/landscape, etc. as per the instructions of the Engineer in Charge. The surplus excavated earth shall be disposed of by the contractor at his own cost for reuse.

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

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

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

1.1.7 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.

1.2 CONSTRUCTION PHASE AND WORKER FACILITIES

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

1.2.2 Preserve and Protect Landscape during Construction

(a) The contractor shall ensure that construction 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 site using tree guards of approved specification.

(c) The contractor shall ensure that maintenance activities during construction period shall be performed as needed to ensure that the vegetation remains healthy.

1.2.3 The contractor shall provide potable water for all workers.

1.2.4 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. 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.

- 1.2.5 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 that the speed of vehicles within the site is limited to 10 km/hr.
- 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.
- 1.2.6 The contractor shall ensure that no construction leachate (e.g. cement slurry etc.), is allowed to percolate into the ground.
- 1.2.7 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.
- 1.2.8 The contractor shall comply with the safety procedures, norms and guidelines (as applicable).
- 1.2.9 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.
- 1.2.10 The storage of material shall be as per standard good practices to the satisfaction of the Engineer in Charge. Watch and ward of the Contractor's materials shall be his own responsibility.
- 1.2.11 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
- 1.2.12 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.
- 1.2.13 The contractor shall provide O & M Manuals wherever applicable.

PARTICULAR SPECIFICATIONS

1.0 EARTH WORK:-

1.1 Earth work shall be executed as per CPWD specifications. The surplus earth if any shall be disposed of within the campus of IIT Mandi at Kamand as per the directions of Engineer-in-Charge.

2.0 R.C.C. WORK:-

2.1.1 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
- (a) Fine Aggregate:- As per CPWD Specifications
- (b) Water:- It shall conform to requirements laid down in IS:456-2000 / Para 3.1.1 of CPWD Specifications (Vol I 2009)
- (c) Cement:- Portland Pozzolona Cement (Fly Ash based) conforming to IS: 1489/ OPC of grade 43 shall conform to IS: 8112, 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 number 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.
- (d) 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.

2.1.2 Water Cement Ratio and Slump :-

2.1.2.1 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.

2.1.2.2 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.

2.2 SAMPLING AND STRENGTH OF CONCRETE MIX

2.2.1 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.

2.2.2 Frequency of Sampling

2.2.3 Sampling Procedure

A random sampling procedure shall be adopted to ensure that each concrete batch shall have a reasonable chance of being tested that is the sampling should be spread over the entire period of concreting and cover all mixing units.

2.2.4 Frequency

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

Quantity of Concrete in the Work, m ³	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 m ³

or part thereof

NOTE- At least one sample shall be taken from each Shift. Where concrete is produced at continuous production unit, such as batch-mixed concrete plant, 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.

2.2.5 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.

2.2.6 Test Results of Sample

The test results of the sample shall be the average of the strength of three specimens. The individual variation should not be more than ± 15 percent of the average. If more, the test results of the sample are invalid.

2.2.7 ACCEPTANCE CRITERIA

As per specification.

2.2.8 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.

2.3 MEASUREMENT

(i) As per CPWD Specifications.

2.4 TOLERANCES - As per CPWD Specifications.

2.5 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.
- (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.

2.6 RCC WORK (ORDINARY)

2.6.1 The work shall be done in accordance with CPWD Specifications.

2.6.2 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.

2.7 FORM WORK

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

2.7.2 Only M.S. centring / 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.

2.7.3 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.

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

2.7.5 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 centring, 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.

2.7.6 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.

2.8 REINFORCEMENT:-

2.8.1 The reinforcement shall be done as per CPWD Specifications.

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

3.0 BRICK WORK:-

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

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

3.3 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.

4.0 STONE / MARBLE WORK

4.1 General: - The execution of stones work shall be in general as per CPWD Specifications (Volume-I) 2009, with up-to-date correction slips.

4.2 GRANITE/ MARBLE WORKS

4.2.1 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.

4.2.2 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.

5.0 WOOD WORK

5.1 The wood work in general shall be carried out as per CPWD Specifications (Volume-I) 2009, with up-to-date correction slips

- 5.2 The sample of timber to be used shall be deposited by the contractor with Engineer-in-charge before commencement of work.
- 5.3 The shape and size of beading shall be as per drawings. The joints of beading shall be mitred.
- 5.4 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.
- 5.5 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

- 5.6 Factory made wooden flush door shutters shall be carried out as per CPWD specifications (Volume-I, 2009 with correction slips upto 14.05.2013).
- 5.7 The shutters should be brought at site without primer / painting.

6.0 STEEL WORK

6.1 STRUCTURAL STEEL WORK SPECIFICATIONS- GENERAL

6.1.1 Scope of Specification

This specification covers the scope of work of structural steel works, submittals by the Contractor, applicable codes of practice for structural steel work and the specifications for the materials to be used, including steel, bolts & nuts, washers etc and the storage thereof.

6.1.2 Scope of Work

The scope of work for the contractor in respect of structural steel work shall cover, but shall not be limited to the following:

A. Preparation of complete detailed shop fabrication drawings based on the design drawings for approvals, required for all the permanent structures.

B. Procurement and testing of all raw structural steel materials in lots for fabrication taking into account wastage margin etc., sand blasting as per specifications including storage and upkeep of the materials.

C. Providing all materials, labour, tools & plant and equipments and all types of consumables required for fabrication using submerged arc welding or as mentioned in approved fabrication drawing including all necessary bolts, nuts, washers with wastage margins.

D. 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 are to be included in item.

E. Provision of shop painting including all primers etc. to all fabricated steelwork, as per requirements of the related specification of the painting.

F. Suitably marking, bundling and packing for transport of all fabricated materials.

G. Loading and transporting all fabricated steelwork and field connection materials including site unloading and erection of structure in final position with all HSFG bolts, nuts, bearing etc.

H. To submit erection plan showing a methodology & procedure for erection 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.

I. 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.

J. All major/ minor modifications of the fabricated steel structures, as directed by the Engineer-in-charge, including but not limited to the following:

- i) Removal of bends, kinks, twists etc. for parts damaged during transportation and handling.
- ii) Cutting, chipping, filling, grinding etc. if required or preparation and finishing of site connections.
- iii) Reaming of holes for use of higher size bolt if required.
- iv) Re-fabrication of parts damaged beyond repair during transport and handling or re-fabrication of parts which are incorrectly fabricated.
- v) Fabrication of parts omitted during fabrications by error, or subsequently found necessary.
- vi) Drilling of holes which are either not drilled at all or are drilled in incorrect location during fabrication.
- vii) Carry out tests in accordance with the related Specification which will be inspected by Engineer-in-charge.
- viii) Site touch up for the paints damaged during transportation & handling and final finish coat on the structure as per specification.
- ix) Details of erection equipment machinery including capacity & specifications, tools, tackles etc. to be used for erection purpose.
- x) Necessary formwork & staging required for erection of structural steel girders including design of formwork for all the anticipated loads.
- xi) All procedures and tests on welds as per specifications and welded parts to ensure the strength requirements of joints.

6.2 PRODUCTS

6.2.1 Materials

A. All materials to be supplied by the Contractor shall conform to relevant Indian Standards as approved by the Engineer-in-charge.

B. Steel materials required for the work shall be free from imperfections, mill scales, slag intrusions, laminations, pittings, rusts etc. that may impair strength, durability and appearance. All materials shall be of tested quality only. Test Certificates in respect of each consignment shall be submitted to Engineer-in-charge before use in work. Whenever the materials are permitted for procurement from identified stocks, a random sample shall be tested at an approved laboratory, as directed by the Engineer-in-charge.

6.2.2 Structural Steel

A. Structural steel conforming to IS:2062 : Grade B- Fe 410 (yield strength=240 MPa shall be used for main members of girder structures, cross girder members, bracings, gussets plates etc.

6.2.3 Bolts and Nuts

For splicing of any structural member wherever required HSFG bolts and nuts of property class-8.8 conforming to IS:3757 and IS:6623 (1985) respectively shall be used. Unless specified otherwise, the bolts shall be hexagonal. All the HSFG bolts are tightened up to the proof load as per IS: 4000 (1992). All anchor bolts shall be of property class of 8.8 shall conform to IS:1363 (1992), IS:1364 (1992) and IS:1367, as applicable, and unless specified otherwise, shall be hexagonal. All nuts shall conform to property class compatible with the property class of the bolt used.

6.2.4 Washers

For HSFG bolts , washer shall be conforming to IS:6649 (1985).

Plain washers shall be conforming to IS:5369 (1975), unless otherwise specified. One washer shall be supplied with each bolt and, in case of special types of bolts, more than one washer

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as needed for the purpose shall be supplied. An additional double coil helical spring washer, conforming to IS:6755 (1980), shall be provided for bolts carrying dynamic or fluctuating loads and those in direct tension.

6.3. STORAGE OF MATERIALS

6.3.1 General

All materials shall be so stored as to prevent deterioration, and to ensure the preservation of their quality and fitness for the work. If required by the Engineer-in-charge, the materials shall be stored under cover and suitably painted for the protection against weather condition. Any material, which has deteriorated or has been damaged shall be removed from site and replaced by new members, as directed by the Engineer-in-charge at no extra cost and time.

A. The steel to be used in fabrication shall be stored in a separate stack clear of the ground sectionwise and lengthwise.

B. The storage area shall be kept clean and properly drained. Structural steel shall be so stored and handled in such a manner that members are not subjected to excessive stresses and damage. Girders and beams shall be placed in upright position. Long members shall be supported on closely spaced skids to avoid unacceptable deflection.

C. The Contractor shall have a suitable shop storage yard at his own premises for storing the fabricated steel structures and other materials. The yard shall have proper facilities such as drainage and lighting including access for cranes, trailers and other heavy equipments.

D. All Shop / field connection materials, shop paints etc. shall be stored on racks and platforms, off the ground in a properly covered building by the contractor.

E. The contractor shall have proper arrangement for sand blasting of steel sections so that these sand blasted material may be used for fabrication wherever required.

6.4. STRUCTURAL STEELWORK SPECIFICATION FOR WELDED STRUCTURE

6.4.1 General

Scope of Specification

This Specification covers the supply, fabrication transportation and erection at Site of welded structural steelwork, including the supply of approved consumables, electrodes, wires and other materials required for fabrication and field connections of all structural steelwork covered under the scope of the Specification. The shear connectors studs as specified in the drawing shall also be welded in the shop.

6.4.2 General

All workmanship shall be in accordance with the best practices in modern structural shops. Greatest accuracy shall be maintained in the manufacture of every part of the work and similar parts shall be strictly interchangeable. The contractor shall not proceed with any welding until the Engineer-in-charge has approved his welding plan, which shall include.

- All information's on welding procedures, equipment, additives and preheating during welding operation.
- Details of non-destructive testing methods
- Precautions with regard to welding shrinkage
- Possible treatment of completed welds by grinding
- Procedure and programme of welding sequence

During Design & Detailing of component lengths, care has been taken to avoid butt weld in built up members. Therefore it is essential to use only nearest size and length of section that have been procured to scheduled sizes and lengths by proper planning by contractor. No butt weld shall be carried out without approval of Engineer-in-charge.

6.4.3.1 Templates

Templates used throughout the work shall be of steel. In cases where actual materials have been used as templates for drilling similar pieces, the Engineer-in-charge shall decide whether such materials are fit to be used as parts of the finished structure.

6.4.3.2 Straightening

All materials shall be straight and free from twists, and if necessary, before being worked, shall be straightened and/or flattened by pressure, unless required to be of curvilinear form.

6.4.3.3 Clearance

The clearance between fraying surface of bolted connections shall not be greater than 1mm at each end. If separation is between 1 to 3mm, the surface should be tapered to eliminate the separation. Separation of 3mm or more shall be filled with filler plates / washers. Such situations may be avoided and if situations are more, the correction may be carried out by the contractor as per the direction of the Engineer-in -charge.

6.4.3.4 Shearing, Cutting and Planning

Cutting shall be done automatically. Cutting by shearing machine may be used for plates not exceeding 10 mm in thickness provided that the plate edges be fully enclosed in a weld. For Plates above 10mm, Oxygen cutting/flame cutting may be used provided a smooth and regular surface free from cracks and notches is secured.

1. Chipping of edges of plates, wherever necessary, shall be done without damaging the parent metal. Chipped edges shall be ground to a neat finish and sharp corners and hammered rough faces shall be rounded off.
2. The edges and ends of all cut/sheared plates shall be planed/ground. Edge preparation for welding may be done by machine controlled flame cutting, with edges free from burrs should be clean and straight.
3. The butting surfaces at all joints of girders shall be planed so as to butt in close contact throughout the finished joint.

6.4.3.5 Assembly

1. All parts assembled for welding shall be in as close contact as practicable over the whole surface.
2. The component parts shall be so assembled that they are neither twisted nor otherwise damaged. Specified cambers, if any, shall be provided.
3. All parts of bolted and welded members shall be held firmly in position by means of jigs or clamps while bolting or welding. No drifting of holes shall be permitted, except to draw the parts together and no drift used shall be larger than the nominal diameter of the bolt. Drifting done during assembling shall not distort the metal or enlarge the holes.
4. Trial assemblies shall be carried out at the fabrication stage to ensure trial assemblies. accuracy of workmanship. These checks shall be witnessed by the Engineer-in-charge and such trial assemblies shall be at the cost of the Contractor. Nothing extra is to be paid for.

6.4.4 Welding

6.4.4.1 General

The welding shall conform to code, IS: 816 (1969) and IS: 9595 (1980) and other applicable codes and standards, unless otherwise specified. As much work as possible shall be welded in shops and the layout and sequence of operations shall be so arranged as to eliminate distortion and shrinkage stresses. Submerged arc welding and Gas Metal arc welding (MIG)

shall only be done in the shop. No welding is permitted at site except tack welding for temporary structure.

6.4.4.2 Electrodes/Wires / Flux

All electrodes/ wires / flux shall be kept under dry conditions. Any electrode / wires /flux damaged by moisture shall not be used unless it is guaranteed by the manufacturer that, when it is properly dried, there will be no detrimental effect. Any electrode, which has part of its flux coating broken away or is otherwise damaged, shall be rejected. Any electrode /wires/ flux older than six (6) months from the date of manufacture shall not be used. Batch certificates for electrodes/ wires /flux shall be submitted by the Contractor.

6.4.4.3 Preparation of Joints

1. The edges shall be prepared, with an automatically controlled flame cutting torch, correctly to the shape, size and dimensions of the groove, prescribed in the design and fabrication drawings. In case of U-groove joints, the edges shall be prepared with an automatic flame cutting torch in two phases, following a bevel out with a gouging pass, or by machining.
2. The welding surfaces shall be smooth, uniform and free from fins, tears, notches or any other defects, which may adversely affect welding, and shall be free of loose scale, slag, rust, grease, paint, moisture or any other foreign material.

6.4.4.4 Welding Procedure

1. All welding procedures shall be submitted to the Engineer-in-charge for approval, well before starting fabrication.
2. The welding procedures shall be arranged by the Contractor to suit the details of the joints, as indicated in the drawings, and the position at which welding has to be carried out. Welding procedure shall cover the following:
 - a. Type and size of electrodes
 - b. Current and (for automatic submerged arc welding) arc voltage
 - c. Length of run per electrode; or (for automatic welding) speed of travel
 - d. Number and arrangement of runs in multi run welds
 - e. Position of welding
 - f. Preparation and set-up of parts
 - g. Welding sequence
 - h. Pre or post heating
 - i. Any other relevant information.
3. The welding procedures shall be so arranged that distortion and shrinkage stresses are reduced to the minimum.
4. Any weld found defective shall be removed, by using either chipping hammer or gouging torch, in such a manner that parent material is not injured in any way.
5. Welding shall not be carried out when temperature is below 10°C or surface is wet or during periods of strong winds unless the work and the welder is adequately protected.

6.4.4.5 Fusion Faces and Surrounding Surfaces

1. Fusion faces and the surrounding surfaces within 50mm of the welds shall be free from all mill scale and free from oil, paint or any substance which might affect the quality of the welds or impede the quality/progress of welding. These shall be free from irregularities, which would interfere with the deposition of the specified size of weld or be the cause of defects.
2. All mill scale within 50mm of welds shall be removed prior to welding, either by pickling followed by thorough power wire brushing, or by other approved methods.
3. If preparation or cutting of the fusion faces is necessary, the same shall be carried out by shearing, chipping, gas cutting or flame gouging.
4. Where hand gas cutting or hand gouging is employed, the blowpipe or gouging blowpipe shall be properly guided.

- 6.4.4.6 Assembly for Welding
Parts to be welded shall be properly assembled and held firmly in position by means of jigs and clamps prior to and during welding.
- 6.4.4.7 Plate Construction
Automatic submerged arc welding shall be employed for fabrication of all members. Metal inert gas welding (CO₂) may be done for short length where access to the location of the weld does not permit submerged arc welding subject to approval of Engineer-in-charge.
- 6.4.4.8 Accuracy of Fit-Up
Parts to be fillet welded shall be brought into as close contact as practicable, and the gap due to faulty workmanship or incorrect fit-up shall not exceed 1.5mm. If greater separation occurs at any position, the size of fillet weld shall be increased at such positions by the amount of the gap.
- 6.4.4.9 Jigs and Manipulators
Jigs and manipulators shall be used, where practicable, and shall be designed to facilitate welding and to ensure that all welds are easily accessible to the operators.
- 6.4.4.10 Ends of Butt Welded Joints
The ends of butt joints shall be welded so as to provide full throat thickness. This may be done by the use of extension pieces, cross-runs or other approved means.
- 6.4.4.11 Weld Face and Reinforcement of Butt welds
The weld face shall, at all places, be deposited projecting the surface of the parent metal. Where a flush surface is required, the surplus metal shall be dressed off.
- 6.4.4.12 Testing of Butt Welds Butt-welded joints are to be 25% radio graphically tested by the Contractor at his own cost. If such tests indicate the joints to be defective, the cost of rectification of defective welds shall also be borne by the Contractor. The agency for testing of welds shall be specified for approval by engineer-in-charge.
- 6.4.4.13 Minimum Leg Length & Throat Thickness in Fillet Welds
The minimum leg length of a fillet weld as deposited shall be not less than the specified size as per codal provisions. In no case shall a concave weld be deposited, unless specifically permitted. Where permitted, the leg length shall be increased above that specified length, so that the resultant throat thickness is as great as would have been obtained by the deposition of a flat-faced weld of the specified leg length.
- 6.4.4.14 Dislodging
After making each run of welding, all slag shall be thoroughly removed and the surface cleaned.
- 6.4.4.15 Quality of Welds
The weld metal, as deposited (including tack welds), shall be free from-cracks, slag inclusions, porosity, cavities and other deposition faults. The weld metal shall be properly fused with the parent metal without under cutting or overlapping at the toes of the weld. The surface of the weld shall have a uniform consistent contour and regular appearance.
- 6.4.4.16 Weather Conditions
Welding shall not be done under weather conditions, which might adversely affect the efficiency of welding.

- 6.4.4.17 **Qualification and Testing of Welders**
The Contractor shall satisfy the Engineer-in-charge that the welders are suitable for the work for which they will be employed, and shall produce evidence to the effect that welders, have satisfactorily completed appropriate tests, as described in IS:817 Part I (1992). The Engineer-in-charge may, at his own discretion, order periodic tests of the welders and/or of the welds produced by them. Such tests shall be at the expense of the Contractor.
- 6.4.4.18 **Supervision**
The Contractor shall employ competent welding supervisors to ensure that the standard of workmanship and the quality of the materials comply with the requirements laid down in this document.
- 6.4.4.19 **Machining of Butts and Bases**
Splices and butt joints of compression members, depending on contact for stress transmission, shall be accurately machined over the whole section. In column bases, the ends of shafts together with the attached gussets, angles, channels etc., after bolting and/or welding together as the case may be, shall be accurately machined so that the parts connected butt over the entire surface of contact. Care shall be taken that connecting angles or channels are fixed with such accuracy that they are not reduced in thickness by machining by more than 0.8mm.
- 6.4.4.20 **Requirement of Welded Joints**
Apart from the requirements of welding specified under the above sub clauses, sections above, the Contractor shall ensure the following requirements in the welded joints.
i. Strength-quality with parent metal.
ii. Absence of defects
iii. Corrosion resistance of the weld shall not be less than that of parent material in an aggressive environment.
- 6.4.4.21 **Studs**
Studs may be used at interface of in-situ deck slab and steel girder to transfer the longitudinal shear. The material used shall have characteristic yield strength of 385 MPa, minimum elongation of 18% and characteristic tensile strength of 495 MPa.
- 6.4.4.22 **Welding of stud shear connectors**
The stud shear connectors shall be fusion welded to the steel girder using stud welding machine as per the manufacturer's instructions . No other type of welding shall be permitted.
The stud and the surface to which studs are welded shall be free from scale, moisture, rust and other foreign material. The stud base shall not be painted, galvanised or cadmium plated prior to welding.
Welding shall not be carried out when temperature is below 10 degrees Celsius or surface is wet or during periods of strong winds unless the work and the welder is adequately protected.
The welds shall be visually free from cracks and shall be capable of developing at least the nominal ultimate strength of studs.
The procedural trial for welding the stud shall be carried out when specified by the Engineer-in-charge.
- 6.4.4.23 **Shop Assembly**
i. The steelwork shall be temporarily shop assembled, as necessary, so that the accuracy of fit may be checked before dispatch. The parts shall be shop assembled with a sufficient number of parallel drifts to bring and keep the parts in place.

- ii. Since parts drilled or punched, with templates having steel bushes shall be similar and, as such, interchangeable, such steelwork may be shop erected in part only, as agreed by the Engineer-in-charge.

6.4.4.24 Erection Marking

- i. Each fabricated member, whether assembled prior to dispatch or not so assembled, shall bear an erection mark, which will help to identify the member and its position in respect of the whole structure, to facilitate re-erection at site.
- ii. These erection marks shall be suitably incorporated in the shop detail and erection drawings.

6.4.5. FIELD INSPECTIONS

Field inspections shall be done as per clause 1905.7 of MORTH Specification- 2001.

6.5 STRUCTURAL STEEL SPECIFICATIONS -PAINTING WORKS

6.5.1 General

6.5.1.1 Scope of Specification

This Specification covers the scope of painting, methods for the surface preparation, application of paints and precautions to be taken for the painting of structural steel work. It covers the supply and delivery of all necessary materials, labour, scaffolding, tools, equipment and everything that is necessary for the job completion on schedule.

6.5.1.2 Applicable Codes

The following Specifications, Standards and Codes are included as part of this Specification. All standards and codes of practice referred to herein shall be the current editions during the currency of project including all applicable official amendments and revisions. In case of discrepancy between this Specification and those referred to herein, this specification shall govern. In case of discrepancy between Contract drawings and this specification, the Contract drawings shall govern.

- a) IS: 102 (1962) : Ready Mixed Paint, Brushing, Red lead, Non Setting, Priming.
- b) IS: 159 (1981) : Ready Mixed Paint, Brushing, Acid Resisting for Protection against Acid Fumes, Colour as Required.
- c) IS: 384 (1979) : Brushes, Paints and Varnishes, Flat.
- d) IS: 487 (1985) : Brush, Paint and Varnish i) Oval Ferrule Bound ii) Round Ferrule Bound.
- e) IS: 958 (1975) : Temporary Corrosion Preventive Grease, Soft Film, Cold Application.
- f) IS: 1153(1975) : Temporary Corrosion Preventive, Fluid, Hard Film, Solvent Deposited.
- g) IS: 1477(1971) : Code of Practice for Painting of Ferrous Metals in Building.
 - Part I -Pretreatment
 - Part II -Painting
- h) IS: 1674(1960) : Temporary Corrosion Preventive Fluid, Soft Film, Solvent Deposited.
- i) IS: 2074(1992) : Ready Mixed Paints, Red Oxide -Zinc Chromate.

6.5.2 Products

6.5.2.1 Materials

Paint

1. All paint delivered to the fabrication shop shall be ready mixed, in original sealed containers, as packed by the paint manufacturers, and no thinners shall be permitted.
2. Paint shall be stirred frequently to keep the pigment in suspension

Storage of Paints

1. All paints shall be stored strictly in accordance with the requirements laid down by the paint manufacturers. The storage area shall be well ventilated and protected from

sparks, flame, direct exposure to sun or excessive heat, preferably located in an isolated room or in a separate building.

2. All paint containers shall be clearly labelled to show paint identification, date of manufacture, batch number, order number and special instructions in legible form. The containers shall be opened only at the time of use. Paints which have liveried, gelled or otherwise deteriorated during storage, shall not be used. Paints for which the shelf life specified by the supplier has expired shall not be used without inspection and approval by the Engineer-in-charge.

6.6 STRUCTURAL STEEL WORK - QUALITY CONTROL & TESTING REQUIREMENTS

6.6.1 General

6.6.2 Scope of Specification

The scope of work of these specifications is to establish the norms for ensuring the required Quality Control through established testing norms of the welded structural steelwork by Engineer-in-charge.

6.6.3 Codes / Standards

Tests and Standards of Acceptance:

The materials shall be tested in accordance with relevant IS specifications and necessary test certificates shall be furnished. Additional tests if required shall be got carried out by the Contractor at his own cost from the approved testing laboratory.

The fabrication, furnishing, erecting and painting of structural steel work shall be in accordance with these specifications and shall be checked and accepted by the Engineer in charge.

6.6.5.4. Bolted connections:

Bolts and bolted connection joints with high strength friction grip bolts shall be inspected and tested according to IS: 4000. The alignment of plates at all bolted splice joints and welded butt joints shall be checked for compliance with codal requirements.

6.6.5.5. Welding and welding consumables :

Welding procedure, welded connection and testing shall be in compliance with codal requirements. All facilities necessary for stage inspection during welding and on completion shall be provided to the Engineer in Charge or his authorized representatives.

Adequate means of identification either by identification mark or other record shall be provided to enable each weld to be traced to the welder(s) by whom it was carried out.

7.0 FLOORING

7.1 All work in general shall be carried out as per CPWD Specifications (Volume 1) 2009 with up-to-date correction slips.

7.2 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.

- 7.3 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.
- 7.4 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.
- 7.5 The Marble/ Kota/ Granite or any other stone shall be fully supported by the details establishing the quarry and its location.
- 7.6 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
- 7.7 **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. The Mandatory tests for vitrified tiles shall be got done as per CPWD Specifications (volume-1)/relevant BIS Code.
- 7.8 **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 120mm x 450mm (minimum size) or more (GROUP-III) as approved.
Tiles for flooring shall be 120mm x 120mm (minimum size) or more (GROUP-V) as approved.
Test shall be conducted to satisfy the quality of material as per CPWD Specifications
- 7.9 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.

8.0 SANITARY INSTALLATIONS /WATER SUPPLY / DRAINAGE:-

- 8.1 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.
- 8.2 For the work of water supply and Sanitary Installations, Internal Electrical 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.
- 8.3 The work in general shall be carried out as per CPWD Specifications (Volume II) 2009 with up-to-date correction slips.

- 8.4 The tendered rates shall include the cost of cutting holes in walls, floors, RCC slabs etc. wherever required and making good the same for which nothing extra shall be paid.
- 8.5 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.
- 8.6 The pig lead to be used in the jointing should be as per CPWD specifications.
- 8.7 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.

9.0 Aluminium doors, windows, ventilators etc. glazing specifications

- 9.1 Extent and Intent: - 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 openable panel shall be stainless steel friction hinges / stays selected for specified wind load and dead loads or specifically extruded in-built hinges.
- 9.2 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.
- 9.3 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.
- 9.4 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.
- 9.5 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
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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.

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

9.7 Installation:

9.7.1 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.

9.7.2 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.

9.8 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.

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

9.10 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.

10.0 Insulation

Walls should be insulated with Resin Bonded rock wool conforming to IS: 8183, having density 48 kg/m³, 50 mm thick, wrapped in 200 G Virgin Polythene Bags fixed to wall with screws, rawel plug & washers and held in position by criss crossing GI wire etc. complete as per directions of Engineer-in-Charge.

11.0 Ceiling

As per CPWD specification.

12.0 Railing

Providing and fixing stainless steel railing by using SS tube of dia 50mm dia, 12mm dia, 35mm dia of SS 304 as per design and as per direction of Engineer-in-charge complete including all fittings and fixtures etc.

13.0 Piping Materials

It is proposed that all external piping for cold and Hot water system shall be through CPVC only both internal & external piping from hot water generator on the roof up to final delivery point.

The piping system shall consist of CPVC SDR 11.0 schedule 80 from 65 mm to 150 mm for hot water supply including all CPVC plain & brass threaded fittings. The jointing of pipes and fittings shall be with one step CPVC solvent. The sizes and makes are specified in the Schedule of Quantities.

For any internal works, the CPVC pipes / copper pipes / galvanized iron pipes and fittings shall be embedded in the wall chase or run on the floor/ceiling unless otherwise specified. No unsightly exposed runs shall be permitted

13.1 CPVC Pipes & Fittings

The pipes shall be CPVC (Chlorinated Poly Vinyl Chloride) material for hot & cold water supply piping system with pipes as per CTs SDR -11 at a working pressure of 320 PSI at 23 deg C and 80 PSI at 82 deg.C, using solvent welded CPVC fittings i.e. Tees, Elbows, Couples, Unions, Reducers, Brushing etc. including transition fittings (connection between CPVC & Metal pipes / GI) i.e. Brass adapters (both Male & Female threaded and all conforming to ASTM D-2846 with only CPVC solvent cement conforming to ASTM F-493, with clamps / structural metal supports as required /directed at site including cutting chases & fitting the same with cement concrete / cement mortar as required, including painting of the exposed pipes with one coat of desired shade of enamel paint. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to the satisfaction of manufacturer & Project Manager. Pipes from 65 mm to 150 mm dia shall be Schedule 40 for CWS & Schedule 80 for HWS / HWR.

13.2 Joining Pipes & Fittings

Cutting:

Pipes shall be cut either with a wheel type plastic pipe cutting or hacksaw blade and care shall be taken to make a square cut which provides optimal bonding area within a joint.

Deburring / Beveling:

Burrs and fittings should be removed from the outside and inside of pipe with a pocket knife or file otherwise burrs and fittings may prevent proper contact between pipe and fittings during assembly.

Fitting preparation:

A clean dry rag/cloth should be used to wipe dirt and moisture from the fitting sockets and tubing end. The tubing should make contact with the socket wall 1/3 or 2/3 of the way into the fitting socket.

Solvent Cement Application:

Only CPVC solvent cement conforming to ASTM-F493 should be used for joining pipe with fittings. An even coat of solvent cement should be applied on the pipe end and a thin coat inside the fitting socket, otherwise too much of cement solvent can cause clogged water ways.

Assembly:

After applying the solvent cement on both pipe and fitting socket, pipe should be inserted into the fitting socket within 30 seconds, and rotating the pipe ¼ to ½ turn while inserting so as to ensure even distribution of solvent cement with the joint. The assembled system should be held for 10 seconds (approximately) in order to allow the joint to set up. An even bead of cement should be evident around the joint and if this bead is not continuous remake the joint to avoid potential leaks.

Set & Cure times:

Solvent cement set and cure times shall be strictly adhered to as per the below mentioned table.

Minimum Cure prior to pressure testing at 150 PSI

Ambient Temperature during Core period	Pipe Size	
	½ " - 1"	1.¼" - 2"
Above 15 deg. C	1 Hr	2 Hrs
4-15 deg.C	2 Hrs	4 Hrs
Below 4 deg C	4 Hrs	8 Hrs

Special care shall be exercised when assembling flow guard systems in extremely low temperature (below 4°C) or extremely high temperature (above 45°C) In extremely hot temperatures, make sure that both surfaces to be joined are till wet with cement solvent when putting them together.

Testing

Once an installation is completed and cored as per above mentioned recommendations, the system should be hydrostatically pressure tested at 150 psi (10 Bar) for one hour. During pressure testing, the system should be fitted with water and if a leak is found, the joint should be cut out and replacing the same with new one by using couplers.

i. Transition of Flow guard CPVC to Metals

When making a transition connection to metal threads, special Brass / plastic transition fitting (Male and female adapters) should be used. Plastic threaded connections should not be over torque Hard tight puts one half turn should be adequate.

ii. Threaded Sealants

Teflon tape shall be used to make threaded connections leak proof.

iii. Solvent Cement

Only CPVC solvent cement conforming to ASTM F 493 should be used for joining pipe with fittings and valves. Flow guard CPVC cement solvent has a minimum

self life of 1 year. Aged cement solvent will often change color or being to thicken and become gelatinous or jelly like and when this happens, the cement should not be used. The cement solvent should be used within 30 days after opening the company's seal and tightly close the seal after using in order to avoid its freezing. The freezed cement solvent should be discarded immediately and fresh one should be used. The CPVC solvent cement usage should be adhered to as given in table.

Diameter of pipe in inch (flow guard)	½"	¾"	1"	¼"	1½"	2"
Approx. nos. of joints which can be mode per liter of solvent cement.	200 Nos	180 Nos	150 Nos	130 Nos	100 Nos	70 Nos

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 20 between
.....S/o(hereinafter called the GUARANTOR of
the one part) and the BoG (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 after the expiry of
maintenance period prescribed in the contract.

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 thereunder, 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 BoG 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 BoG 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 20 between
.....S/o(hereinafter called the GUARANTOR of
the one part) and the BoG (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 affect 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 after the expiry of maintenance period prescribed in the contract.

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 thereunder, 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 BoG 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 BoG 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.

The agreement made this..... day of 20 between
.....S/o(hereinafter called the GUARANTOR of
the one part) and the BoG (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 affect 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 after the expiry of maintenance period prescribed in the
contract.

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 BoG 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 BoG BY..... in the presence of: -

1. 2.

LIST OF APPROVED MAKES FOR CIVIL WORKS I /C WATER SUPPLY AND SANITARY WORKS		
S. No.	Material	Approved make
1	(i) Ordinary Portland/Portland Pozzolona Cement (Grey) (43 Grade)	ACC, Ultratech, Vikram, Shree Cement, Ambuja, JayPee Cement, Century Cement & J.K. Cement.
	(ii) White Cement	Birla White , J. K. White
2	Reinforcement Steel & Structural Steel	SAIL, Tata Steel Ltd., RINL, Jindal Steel & Power Ltd. and JSW Steel Ltd.
3	Water Proofing Compounds, Plasticizer, Super Plasticizer, Grouts, Polymers, Polyexpanse, Other construction	Chowgule Koster, Fosroc, Sika, Huntsman (Ciba Geigy), Sunanda Specialty Coating, Shivalik Agro Poly Product Ltd.(Water proofing liner).
4	Veneered Particle Board	Kitply, Action TESA, Anchor, Euro, Green.
5	Laminated Particle Board/ Laminates	Kitply, Action TESA, Anchor, Euro, Greenlam, Century Ply.
6	Flush door shutters	Kutty Flushdoor, Kitply Industries (Swastik), Century, Tata Marine, Anchor.
7	False Ceiling- Gypsum	Saint Gobain, Lafarage, Vans Gypsum.
8	Plywood/ Veneer	Anchor, Tata Marine, Euro, Green, Century
9	Melamine Polish	Asian Paints Melamine Gold, Wudfin of Pidilite, Timbertone of ICI Dulux.
10	Multipurpose Locks, C/b Locks.	Godrej, Harison or equivalent
11	Aluminium - Windows, Glazing and Partitions.	Jindal, Indalco, Hindalco.
12	Float Glass, Frosted Glass	Saint Gobain, Asahi, Pilkington, Viracon

13	Stainless Steel Railing, Accessories etc	As per approval of Engineer-in-charge
14	Vitrified Tiles	Kajaria, NITCO, H&R Johnson, RAK Ceramics
15	Tile Adhesive	CICO, Pidilite, Ferrous
16	Dash / Anchoring Fasteners	HILTI , Fischer or approved equivalent
17	Nuts / Bolts & Screws	GKW, Atul, Kundan, Priya
18	Wall putty	Birla wall care, JK White or approved equivalent
19	Exterior Paint / Acrylic Based (Weather Proof)	Berger – (Weathercoat long life), ICI (Dulux Weathershield Max), Asian Paints (Apex Ultima), Kansai Nerolac.
20	Emulsion Paints	ICI (Dulux Gloss), Nerolac, Asian Paints
21	Wood Primer	ICI, Nerolac, Asian Paints
22	Synthetic Enamel Paint	Asian, ICI, Kansai Nerolac
23	Epoxy Paint	Asian, ICI, Kansai Nerolac
24	G.I. / M.S. Pipe	Tata, Jindal (Hisar), Parkash Steel Tubes
25	G.I. Fittings	Unik, KS, AMCO, AVR, Zoloto
26	Vitreous China Sanitary ware,WC pan	Jaquar, Hindware, Duravit, Cera
27	Stainless Steel Sink (Out of Salem	Neelkanth, Niralli, Jyna
28	Float Valve	IVC, Leader, Prayag, Kalsi Pump Pvt. Ltd., Dhawan Sanitary Udyog (Prima)
29	UPVC pipe and Fittings	Prince, Supreme, Astral.
30	CP Fittings and accessories	JAQUAR, ESS ESS, Nova, Marc
31	C.I. Manhole covers & Frames	NECO, RAJ Iron Foundary Agra, BIC
32	Gun metal Valves, globes	Leader, Zoloto, Kilburn, CIM Valves, Sant, ANNAPURANA

33	Brass stop & Bib Cock	Zoloto, Sant, L&K, Leader, JAINKO, Kalsi Pump Pvt. Ltd., Dhawan Sanitary (PRIMA)
34	PVC Pipe & Fittings	Supreme, AKG, Finolex, Prince, Kisan, SFMC, Diplast
35	Polyethylene water storage tank	SINTEX, VECTUS, FRONTIER, KAVARI
Sanitary Installations, Internal Electrical Installations CP Fittings & Accessories		
36	kitchen sink mixer	Jaquar Model No.FLR CHR 5309N GA or equivalent model of CZAR Novaa or MARC
37	Soap dispenser of with metallic bottle	Jaguar ACN-1135N or equivalent model of CZAR Novaa or ESS ESS
38	Soap dish	Jaquar Model No.ACN1177N or equivalent model of Novaa or ESS ESS

Note: - The Superintending Engineer, IIT Mandi reserves the right to add or delete any materials and Brands in the list of approved materials/brands.

TABLE OF MILE STONE (S)

Name of work: Construction of Animal House near Badminton Court at Kamand Campus of IIT Mandi.

Time Period allowed for Completion of Work: - 120 Days.

Sl. No.	Milestone Programme	Time Allotted (From date of start)	Amount to be withheld in case of non-achievement of milestone.
1	1/4 th of the tender amount	30 Days	1%
2	1/2 of the tender amount	60 Days	1%
3	3/4 th of the tender amount	90 Days	1%
4	Full work	120 Days	1%

INTEGRITY PACT

To

.....,
.....,
.....

Sub: NIT No. for the work of Construction of Animal House near Badminton Court at Kamand Campus of IIT Mandi.

Dear Sir,

It is here by declared that IIT Mandi is committed to follow the principle of transparency, equity and competitiveness in public procurement. The subject Notice Inviting Tender (NIT) is an invitation to offer made on the condition that the Bidder will sign the integrity Agreement, which is an integral part of tender/bid documents, failing which the tenderer/bidder will stand disqualified from the tendering process and the bid of the bidder would be summarily rejected.

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

Yours faithfully

Superintending Engineer,
IIT Mandi, Kamand campus,
Distt. Mandi (H.P.) Pin 175005

INTEGRITY PACT

To

Superintending Engineer,
IIT Mandi, Kamand campus,
Distt. Mandi (H.P.) Pin 175005

Sub: Submission of Tender for the work of Construction of Animal House near Badminton Court at Kamand Campus of IIT Mandi.

Dear Sir,

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

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

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

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

Yours faithfully

(Duly authorized signatory of the
Bidder)

To be signed by the bidder and same signatory competent / authorized to sign the relevant contract on behalf of IIT Mandi.

INTEGRITY AGREEMENT

This Integrity Agreement is made at on this day of 20.....

BETWEEN

BoG represented through Superintending Engineer, IIT Mandi, Kamand campus, Distt. Mandi (H.P.) hereinafter referred as 'Principal/Owner', which expression shall unless repugnant to the meaning or context hereof include its successors and permitted assigns)

AND

..... (Name and Address of the Individual/ firm/ Company) through (Hereinafter referred to as the (Details of duly authorized signatory) "Bidder/Contractor" and which expression shall unless repugnant to the meaning or context hereof include its successors and permitted assigns)

Preamble

WHEREAS the Principal / Owner has floated the Tender (hereinafter referred to as "Tender/Bid") and intends to award, under laid down organizational procedure, contract for "Construction of Animal House near Badminton Court at Kamand Campus of IIT Mandi." (Name of work) hereinafter referred to as the "Contract".

AND WHEREAS the Principal/Owner values full compliance with all relevant laws of the land, rules, regulations, economic use of resources and of fairness/transparency in its relation with its Bidder(s) and Contractor(s). AND WHEREAS to meet the purpose aforesaid both the parties have agreed to enter into this Integrity Agreement (hereinafter referred to as "Integrity Pact" or "Pact"), the terms and conditions of which shall also be read as integral part and parcel of the Tender/Bid documents and Contract between the parties.

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

Article 1: Commitment of the Principal/Owner

- 1) The Principal/Owner commits itself to take all measures necessary to prevent corruption and to observe the following principles:
 - (a) No employee of the Principal/Owner, personally or through any of his/her family members, will in connection with the Tender, or the execution of the Contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.
 - (b) The Principal/Owner will, during the Tender process, treat all Bidder(s) with equity and reason. The Principal/Owner will, in particular, before and during the Tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential / additional information through which the Bidder(s) could obtain an advantage in relation to the Tender process or the Contract execution.
 - (c) The Principal/Owner shall endeavour to exclude from the Tender process any person, whose conduct in the past has been of biased nature.
- 2) If the Principal/Owner obtains information on the conduct of any of its employees which is a criminal offence under the Indian Penal code (IPC)/Prevention of Corruption Act, 1988

(PC Act) or is in violation of the principles herein mentioned or if there be a substantive suspicion in this regard, the Principal/Owner will inform the Chief Vigilance Officer and in addition can also initiate disciplinary actions as per its internal laid down policies and procedures.

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

- 1) It is required that each Bidder/Contractor (including their respective officers, employees and agents) adhere to the highest ethical standards and report to the Government / Department all suspected acts of fraud or corruption or Coercion or Collusion of which it has knowledge or becomes aware, during the tendering process and throughout the negotiation or award of a contract.
- 2) The Bidder(s)/Contractor(s) commits himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the Tender process and during the Contract execution:
 - a) The Bidder(s)/Contractor(s) will not, directly or through any other person or firm, offer, promise or give to any of the Principal/Owner's employees involved in the Tender process or execution of the Contract or to any third person any material or other benefit which he/she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the Tender process or during the execution of the Contract.
 - b) The Bidder(s)/Contractor(s) will not enter with other Bidder(s) into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to cartelize in the bidding process.
 - c) The Bidder(s)/Contractor(s) will not commit any offence under the relevant IPC/PC

Act. Further the

Bidder(s)/Contract(s) will not use improperly, (for the purpose of competition or personal gain), or pass on to others, any information or documents provided by the Principal/Owner as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

d) The Bidder(s)/Contractor(s) of foreign origin shall disclose the names and addresses of agents/

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

e) The Bidder(s)/Contractor(s) will, when presenting his bid, disclose any and all payments he has made, is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the Contract.

- 3) The Bidder(s)/Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.
- 4) The Bidder(s)/Contractor(s) will not, directly or through any other person or firm indulge in fraudulent practice means a willful misrepresentation or omission of facts or submission of fake/forged documents in order to induce public official to act in

reliance thereof, with the purpose of obtaining unjust advantage by or causing damage to justified interest of others and/or to influence the procurement process to the detriment of the Government interests.

- 5) The Bidder(s)/Contractor(s) will not, directly or through any other person or firm use Coercive Practices (means the act of obtaining something, compelling an action or influencing a decision through intimidation, threat or the use of force directly or indirectly, where potential or actual injury may befall upon a person, his/ her reputation or property to influence their participation in the tendering process).

Article 3: Consequences of Breach

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

- 1) If the Bidder(s)/Contractor(s), either before award or during execution of Contract has committed a transgression through a violation of Article 2 above or in any other form, such as to put his reliability or credibility in question, the Principal/Owner after giving 14 days notice to the contractor shall have powers to disqualify the Bidder(s)/Contractor(s) from the Tender process or terminate/determine the Contract, if already executed or exclude the Bidder/Contractor from future contract award processes. The imposition and duration of the exclusion will be determined by the severity of transgression and determined by the Principal/Owner. Such exclusion may be forever or for a limited period as decided by the Principal/Owner.
- 2) Forfeiture of EMD/Performance Guarantee/Security Deposit: If the Principal/Owner has disqualified the Bidder(s) from the Tender process prior to the award of the Contract or terminated/determined the Contract or has accrued the right to terminate/determine the Contract according to Article 3(1), the Principal/Owner apart from exercising any legal rights that may have accrued to the Principal/Owner, may in its considered opinion forfeit the entire amount of Earnest Money Deposit, Performance Guarantee and Security Deposit of the Bidder/Contractor.
- 3) Criminal Liability: If the Principal/Owner obtains knowledge of conduct of a Bidder or Contractor, or of an employee or a representative or an associate of a Bidder or Contractor which constitutes corruption within the meaning of IPC Act, or if the Principal/Owner has substantive suspicion in this regard, the Principal/Owner will inform the same to law enforcing agencies for further investigation.

Article 4: Previous Transgression

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

by him and has installed a suitable corruption prevention system, the Principal/Owner may, at its own discretion, revoke the exclusion prematurely.

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

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

Article 6- Duration of the Pact

This Pact begins when both the parties have legally signed it. It expires for the Contractor/Vendor 12 months after the completion of work under the contract or till the continuation of defect liability period, whichever is more and for all other bidders, till the Contract has been awarded. If any claim is made/lodged during the time, the same shall be binding and continue to be valid despite the lapse of this Pacts as specified above, unless it is discharged/determined by the Competent Authority, IIT Mandi.

Article 7- Other Provisions

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

Article 8- LEGAL AND PRIOR RIGHTS

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

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

.....
(For and on behalf of Principal/Owner)

.....
...
(For and on behalf of Bidder/Contractor)

WITNESSES:

1.
(signature, name and address)

2.
(signature, name and address)

Place:

Dated :

Indian Institute of Technology Mandi

Name of work: Construction of Animal House near Badminton Court at Kamand Campus of IIT Mandi.

PART C

INDIAN INSTITUTE OF TECHNOLOGY MANDI
O/o Superintending Engineer, IIT Mandi, Kamand campus

INDIAN INSTITUTE OF TECHNOLOGY MANDI

O/o Superintending Engineer, IIT Mandi, Kamand campus

Name of Work: Construction of Animal House near Badminton Court at Kamand Campus of IIT Mandi.

INDEX – PART-C (ELECTRICAL)

Sl. No.	Description	Sheet No.
1	Schedule A to F	76-80
2	Special Conditions (Electrical)	81-82
3	Terms & Conditions for Internal Electrical Work	83-91
4	Memorandum of Understanding	92-93
5	Willingness Certificate	94
6	Integrity Pact	95-101
7	List of approved makes	102-103.

It is certified that this document PART-C (ELECTRICAL) containing page No. 74-103.

-sd-
Superintending Engineer,
IIT Mandi, Kamand campus

SCHEDULES

SCHEDULE 'A'

Schedule of quantities (Enclosed) As per Part-D Sheet Nos. 127 to 133 (Elect. Works)

SCHEDULE 'B'

Schedule of materials to be issued to the contractor.

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

-----NIL-----

SCHEDULE 'C'

Tools and plants to be hired to the contractor.

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

_____ NIL _____

SCHEDULE 'D'

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

_____ NIL _____

SCHEDULE 'E'

_____ NIL _____

SCHEDULE 'F'

Reference to General Conditions of contract.

Name of work: Construction of Animal House near Badminton Court at Kamand Campus of IIT Mandi.

Estimated cost of work:

(i) For civil component	Rs 29,34,022/-
(ii) For Electrical component	Rs 9,26,930/-
Total	Rs 38,60,952/-

Performance Guarantee:

5% of Tendered Value.

AE(C)

76 AE(E)

SE

Correction.. Nil Deletion.. Nil Insertion.. Nil Overwriting.. Nil

Security Deposit : 5% of Tendered Value.

General Rules & Directions:

Officer inviting tender Superintending Engineer
IIT Mandi, Kamand campus

Maximum percentage for quantity of items of work to be executed beyond which rates are to be determined in accordance with Clauses 12.2 & 12.3 see under Clause 12

Definitions:

2(v) Engineer-in-Charge Superintending Engineer
IIT Mandi, Kamand campus

2(viii) Accepting Authority Superintending Engineer
IIT Mandi, Kamand campus

2(x) Percentage on cost of materials and labour to cover all overheads and profits 15%
2(xi) Standard schedule of Rates DSR 2014.

2(xii) Department IIT Mandi

9(ii) Standard CPWD contract form CPWD Form 8 as per
General conditions of
contract for CPWD works
amended upto date

Clause 1

- i) Time allowed for Submission of performance guarantee from the date of issue of letter of acceptance 15 Days.
- ii) Maximum allowable extension with late fees 1 to 15 Days.
@0.1% per day of performance
Guarantee amount beyond the period provided in (i) above.

Clause 2 Authority for fixing compensation under clause 2. Superintending Engineer, IIT Mandi

Clause 2A Whether clause 2A shall be applicable Yes

Clause 5 Number of days from the date of 22 Days

AE(C)

77 AE(E)

SE

issue of letter of acceptance for reckoning date of start

Mile stone (s) as per table given below: -	As per civil portion
Time allowed for execution of work :	120 days
Authority to Decide: Extension of time	Superintending Engineer, IIT Mandi
Rescheduling of mile stones	Dean (I&S)
Clause 6, 6A	Clause applicable – (6 or 6A) Clause 6
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. 10% of the awarded amount
	List of testing equipment to be Provided by the contractor at site lab N.A.
Clause 10 B(ii)	Whether clause 10-B(ii) shall be applicable No
Clause 10C	N.A.
Clause 10CA	Whether clause 10CA shall be Applicable. N.A. for Elect. component.
CLAUSE 10 CC	: N.A.
Electrical construction materials-expressed as percent of total value of work.	--

Component of labour-expressed as percent of total value of work.		': --
Component of P.O.L.-expressed as percent of total value of work.		': --
Clause 11 Specifications to be followed		CPWD General specifications for electrical works Part-I Internal 2013, Part-2 External amended up to date
Clause 12 12.2 & 12.3	Deviation limit beyond which clauses 12.2 & 12.3 shall apply for electrical work.	30% on individual items
12.5	Deviation limit beyond which clauses 12.2 and 12.3 shall apply for foundation work.	--
12.6	Type of work	'Original'
Clause 16	Competent Authority for deciding reduced rates.	Superintending Engineer
Clause 18	List of mandatory machinery, tools & plants to be deployed by the contractor at site.	N.A.

Clause 42

- | | |
|---|------|
| i) (a) Schedule/statement for determining theoretical quantity of cement & bitumen on the basis of Delhi Schedule of Rates 2007 printed by C.P.W.D. | N.A. |
| ii) Variations permissible on theoretical quantities. | |
| a) Cement for works with estimated cost put to tender not more than Rs.5 lakhs for works with estimated cost put to tender more than Rs.5 Lakhs. | N.A. |
| b) Bitumen for all works. | N.A. |
| c) Steel Reinforcement and structural steel sections for each diameter, section and category. | N.A. |
| d) All other materials. | N.A. |

SPECIAL CONDITIONS

The main lowest tenderer have to submit the following documents for association of electrical contractor at least 7 days prior to depositing performance guarantee: -

Eligibility criteria for associate contractors for components of Electrical works will detailed as below:

Sr. No.	Component of Elect. works	Estimated cost in Rs.	Eligibility
(a)	Providing E.I.	9,26,930/-	Central/State Govt. organization/Central Autonomous body/Central Public Sector undertaking enlisted contractor of appropriate Class in "Internal and External Electrical Installation" Category.

1. The applicant should submit the willingness from an eligible electrical contractors to get associated with the applicant for execution of the electrical component of works in wholesome manner and as per the conditions set out in the MOU to be entered into, between the one who is awarded the work and the associated eligible electrical contractor.
2. In support of the eligibility conditions of the proposed associated electrical contractor, copy of their registration documents, Electrical Contractor's License, Sales Tax Documents duly attested by the applicants (Main Contractor) shall be submitted to the Superintending Engineer, IIT Mandi, Kamand campus for deciding the eligibility within five days of receipt of the same. Each such electrical contractor will certify that they are not debarred as on the day of application for sale of tender.
3. The main contractor will submit MOU signed with eligible registered electrical contractor of Central/State Govt. organization/Central Autonomous body/Central Public Sector undertaking. The MOU in the enclosed form shall be signed by both the parties i.e. main contractor as 1st party and associated electrical contractor as 2nd party.
4. In the event of the concerned E&M agency not performing satisfactorily or failure of associate/sub-contractor to complete the E&M work, the main contractor on written directions of the department, shall remove the Associate/sub-contractor deployed on the work and shall submit name of new associate who fulfill the conditions mentioned in NIT to execute the leftover work without any loss of time or variation in cost to the department. Such associates shall also enter into tripartite Agreement/Contract along with the main tenderer and the departmental officer and shall meet all the guarantee for the equipments already supplied for which payment has been released by the Dept. in part. If any equipment supplied for the work, during the currency of the earlier Associate/sub-contractor and paid partly by the Deptt. ,becomes redundant /not in a position to be installed and commissioned and put to beneficial use due to change in agency for execution of E&M work, the main contractor shall be liable for replacement of the equipment(s) at no cost to Department. No change of Electrical Contractor will be allowed without prior approval of the Superintending Engineer, IIT Mandi, Kamand campus.
5. Superintending Engineer shall be the Engineer-in-charge as far as electrical works are concerned. Separate tender schedule abbreviated CPWD-8 and Special Conditions for Electrical Work are appended with this tender. It will be obligatory on the part of the contractor/tenderer to sign the tender documents for all the component parts. After award of the work, the contractor will have to execute separate agreement for electrical component of the work with Superintending Engineer, IIT Mandi, Kamand campus.

6. The main contractor shall be responsible and liable for proper and complete execution of the Electrical work and ensure coordination and completion of both civil and electrical work.
7. The associate or sub-contractor shall sign a tripartite Agreement/Contract along with the main tenderer and the departmental officer, for technical compliance of specification, guarantee etc.
8. The associate or sub contractor shall attend the inspection of the work by the Engineer-in-Charge of E&M works as and when required.

TERMS AND CONDITIONS FOR INTERNAL ELECTRICAL WORKS

GENERAL COMMERCIAL & TECHNICAL CONDITIONS

All the works shall be carried out as per CPWD General specification for Electrical Works, Part-I (Internal)-2013; as amended up to date and should also comply with relevant provisions of the Indian Electricity Rules and Acts as applicable and as amended up to date.

1.0 The contractor is advised to visit the site of work to have an idea of the execution of the work; failure to do so shall not absolve their responsibility to do the work as specified in agreement.

1.0 RATES, TAXES & DUTIES

The tender is for entering into item rate works contract. The rates shall be inclusive of all taxes, duties, levies, cess, packing, transportation, handling etc. but excluding Service tax.

Statutory deduction of works contract tax/VAT/sale tax/ cess as applicable as per rule shall be made at source from each running /final bill payment. A certificate of TDS shall be issued by the department to the contractor. No form "D" or 31/32 shall be issued by the department. The road permit shall be arranged by the tenderer at his own cost.

2.0 COMPLETENESS OF TENDER:

All sundry fittings, assemblies, accessories, hardware items, foundation bolts, termination lugs for electrical connections as required, and all other sundry items which are useful and necessary for proper assembly and efficient working of the various components of the work shall be deemed to have been included in the tender, whether such items are specifically mentioned in the tender documents or not.

3.0 WORKS TO BE DONE BY THE CONTRACTOR:

Unless and otherwise mentioned in the tender documents, the following works shall be done by the contractor, and therefore their cost shall be deemed to be included in their tendered cost: -

- (i) Foundations for equipments and components where required, including foundations bolts.
- (ii) Cutting and making good all damages caused during installation and restoring the same to their original finish.
- (iii) Sealing of all floor openings provided by him for pipes and cables, from fire safety point of view, after laying of the same.
- (iv) Painting at site of all exposed metal surfaces of the installation other than pre-painted items like fittings, fans, switchgear/distribution gear items, cubicle switchboard etc. Damages to finished surfaces of these items while handling and erection, shall however be rectified to the satisfaction of the Engineer-in-Charge.
- (v) Testing and commissioning of completed installation.
- (vi) Storage space for all equipments, components and materials for the work.
- (vii) Cutting of chases shall be done by chase cutting machine and hole through the walls/ slabs if required will be done by core cutting machine.

4.0 STORAGE AND CUSTODY OF MATERIALS:

The contractor has to make his own arrangement for the storage of the material at site & necessary watch and ward of the electrical installation during the execution of work till the same is handed over to the department. No extra payment will be made on this account. The storage space shall however be arranged by the department at site, if available.

The main contractor shall arrange for proper storage of the electrical fans and fittings at site and that double lock system shall be arranged for the fans and fittings after receipt at site until the time they are taken for installation. The contractor shall however be responsible for proper storage and safe custody of the same till their installation and handing over to the department.

5.0 ELECTRIC POWER SUPPLY AND WATER SUPPLY:

Power and water supply will be arranged by the contractor at the site for installation purpose.

However, for testing purpose after complete installation of the electrical items, electricity supply will be made available free of cost to the contractor. Contractor will take due care to ensure safety of electrical installation during execution of work.

6.0 TOOLS FOR HANDLING AND ERECTING:

All tools and tackles required for handling of equipments and materials at site of work as well as for their assembly and erection and also necessary test instruments shall be the responsibility of the contractor.

7.0 PAYMENT TERMS:

Payment shall be made as per the relevant clauses of form PWD 7/8 forming part of the tender documents.

8.0 CO-ORDINATION WITH OTHER AGENCIES:

The contractor shall co-ordinate with all other agencies involved in the building work so that the building work is not hampered due to delay in his work. Recessed conduit and other works, which directly affect the progress of building work, should be given priority.

8.1 CARE OF BUILDINGS:

Care shall be taken by the contractor to avoid damage to the building during execution of his part of the work. He shall be responsible for repairing all damages and restoring the same to their original finish at his cost. He shall also remove, at his costs, all unwanted and waste materials arising out of his work, from the site.

9.0 STRUCTURAL ALTERATIONS TO BUILDINGS:

- (i) No structural member in the building shall be damaged/altered, without prior approval from the competent authority through the Engineer-in-charge.
- (ii) Structural provisions like openings, cutouts, if any, provided by the department for the work, shall be used. Where these required modifications, or fresh

provisions are required to be made, such contingent works shall be carried out by the contract at his cost.

- (iii) All such openings in floors provided by the department shall be closed by the contractor after installing the cables/conduits/rising mains etc. as the case may be, by any suitable means as approved by the Engineer-in-charge without any extra payment.
- (iv) All chases required in connection with the electrical works shall be provided and filled by the contractor at his own cost to the original architectural finish of the buildings.

10.0 ADDITION TO AN INSTALLATION:

Any addition, temporary or permanent, to the existing electrical installation shall not be made without a properly worked out scheme/design by a qualified Electrical Engineer to ensure that such addition does not lead to overloading, safety violation of the existing system.

11.0 WORK IN OCCUPIED BUILDINGS:

- (i) When work is executed in occupied buildings, there would be minimum of inconvenience to the occupants. The work shall be programmed in consultation with the Engineer-in-charge and the occupying department. If so required, the work may have to be done even before and after the office hours.
- (ii) The contractor shall be responsible to abide by the regulations or restrictions set in regard to entry into, and movement within the premises.
- (ii) The contractor shall not tamper with any of the existing installations including their switching operations or connections there to without specific approval from the Engineer-in-charge.

12.0 DRAWINGS:

- (i) The work shall be carried out in accordance with the drawings and the tender documents and also in accordance with modification thereto from time to time as approved by the Engineer-in-charge.
- (ii) All wiring diagrams shall be deemed to be 'Drawings' within the meaning of the term as used in Clause 11 of the conditions of contract (PWD 7 or PWD 8). They shall indicate the main switch board, the distribution boards (with circuit numbers controlled by them), the runs of various mains and sub mains and the position of all points with their controls.
- (iii) All circuits shall be indicated and numbered in the wiring diagram and the points shall be given the same number as the circuit to which they are electrically connected.
- (iv) After award of the work, the firm will be required to submit the drawings for the proposed work including layout plan, conduit routes etc. Work will be carried out as per the approved drawings.

13.0 CONFORMITY TO IE ACT, IE RULES, AND STANDARDS:

13.1 All electrical works shall be carried out in accordance with the provisions of Indian Electricity Act, 1910 and Indian Electricity Rules, 1956 amended up to date (Date of call of tender unless specified otherwise). List of rules of particular importance to

electrical installations under these General Specifications is given in Appendix C for reference.

14.0 GENERAL REQUIREMENTS OF COMPONENTS:

14.1 QUALITY OF MATERIAL: All materials and equipments supplied by the contractor shall be new. They shall be of such design, size and materials as to satisfactorily function under the rated conditions of operation and to withstand the environmental conditions at site.

15.0 INSPECTION OF MATERIALS AND EQUIPMENTS:

15.1 Materials and equipments to be used in the work shall be inspected by the departmental officers. Such inspection will be of following categories:

- (i) Inspection of materials / equipments to be witnessed at the Manufacturer's premises in accordance with relevant BIS /Agreement Inspection Procedure.
- (ii) To receive materials at site with Manufacturer's Test Certificate(s)
- (iii) To inspect materials at the authorized dealer's godowns to ensure delivery of genuine materials at site.
- (iv) To receive materials after physical inspection at site.

15.2 Adequate care to ensure that only tested and genuine materials of proper quality are used in work shall be ensured by firm. The firm shall ensure that:

- (i) Material will be ordered & delivered at site only with the prior approval of the department to ensure timely delivery.
- (ii) As and when the order is placed for the fittings/ fixtures, cables, switchgears, poles, rising main, other main items etc, its copy shall be endorsed to the Engineer-in-charge.
- (iii) The contractor will submit makes & brands of electrical fittings & fans, exhaust fans, MCB's & DB's, switches & sockets, wires & cables, conduits and switchgears, rising mains, poles , outdoor fittings etc. out of preferred make list as per tender documents for approval of Engineer-In-Charge whose decision will be final in the matter.
- (iv) The firm will be required to procure material like electrical fittings & fans, exhaust fans, MCB's & DB's, switches & sockets, wires & cables, conduits and switchgears, rising mains, poles , outdoor fittings etc. directly from the manufacturer/ authorized dealers to ensure genuineness & quality and as per the approved makes only. Proof in this regard shall be submitted by the contractor if required by the department.
- (v) Inspection at factory or at godown, as required, shall be arranged by the firm for a mutually agreed date.
- (vi) Delivery of material shall be taken up only with the consent of department, after clearance of the material.
- (vii) Department shall reserve the right to waive inspection in lieu of suitable test certificate, at its discretion.

15.3 Similarly, for fabricated equipments, the contractor will first submit dimensional detailed drawings for approval before fabrication is taken up in the factory. Suitable stage inspection at factory also will be made to ensure proper use of materials, workmanship and quality control.

16.0 RATINGS OF COMPONENTS:

- 16.1 All components in a wiring installation shall be of appropriate ratings of voltage, current and frequency, as required at the respective sections of the electrical installations in which they are used.
- 16.2 All conductors, switches and accessories shall be of such size as to be capable of carrying the maximum current, which will normally flow through them, without their respective ratings being exceeded.

17.0 CONFORMITY TO STANDARDS:

- 17.1 All components shall conform to relevant Indian Standard Specifications wherever existing. Materials with ISI certification mark shall be preferred.
- 17.2 Relevant Indian Standards including amendments or revisions thereof up to the date of tender acceptance shall be applicable in the respective contracts for respective items, firm to ensure its compliance.

18.0 INTERCHANGEABILITY:

Similar parts of all switches, lamp holders, distribution fuse boards, Switch gears, ceiling roses, brackets, pendants, fans and all other fittings of the same type shall be interchangeable in each installation.

19.0 WORKMANSHIP:

- 19.1 Good workmanship is an essential requirement to be complied with. The entire work of manufacture/fabrication, assembly and installation shall conform to sound engineering practice.
- 19.2 Proper supervision/skilled workmen: The contractor shall be a licensed electrical contractor of appropriate class suitable for execution of the electrical work. He shall engage suitably skilled/licensed workmen of various categories for execution of work supervised by supervisors / Engineer of appropriate qualification and experience to ensure proper execution of work. They will carry out instruction of Engineer-in-charge and other senior officers of the Department during the progress of work.
- 19.3 Use of quality materials: Only quality materials of reputed make as specified in the tender will be used in work.
- 19.4 Fabrication in reputed workshop: Switch boards and LT panels shall be fabricated in a factory/workshop having modern facilities like quality fabrication, seven tank process, powder/epoxy paint plant, proper testing facilities, manned by qualified technical personnel. These shall be as per make / item approved.

20.0 TESTING:

All testes prescribed in this General Specification, to be done before, during and after installation, shall be carried out, and the test results shall be submitted to the Engineer-in-charge in prescribed Performa, forming part of the Completion Certificate.

21.0 COMMISSIONING ON COMPLETION:

After the work is completed, it shall be ensured that the installation is tested and commissioned.

22.0 COMPLETION PLAN AND COMPLETION CERTIFICATE:

- 22.1 For all works completion certificate after completion of work as given in Appendix –E of CPWD Specification shall be submitted to the Engineer-in-charge.

- 22.2 Completion plan drawn to a suitable scale in tracing cloth with ink indicating the following, along with three blue print copies of the same shall also be submitted.
- (i) General layout of the building.
 - (ii) Locations of main switchboard and distribution boards, indicating the circuit numbers controlled by them.
 - (iii) Position of all points and their controls.
 - (iv) Types of fittings, viz. fluorescent, pendants, brackets, bulk head, fans, exhaust fans etc.
 - (v) Name of work, job number, tender reference, actual date of completion, names of Division/ Sub-division and name of the firm who executed the work with their signature.

23.0 GUARANTEE

The installation will be handed over to the department after necessary testing and commissioning. The installation will be guaranteed against any defective design/workmanship. Similarly, the materials supplied by the contractor will be guaranteed against any manufacturing defect, inferior quality. The guarantee period will be for a period of 12 months from the date of handing over to the department. Installation/ equipments or components thereof shall be rectified/ repaired to the satisfaction of the Engineer-in-charge.

24.0 TECHNICAL SPECIFICATION

- 24.1 All repairs & patch work shall be neatly carried out to match with the original finish & all damages caused to the building installation during the execution of work shall have to be made good by the contractor immediately at his own cost to the entire satisfaction of Engineer-in-charge. In case contractor fails to comply with the instructions of the Engineer-in-charge, Engineer-in-charge shall be at liberty to get the work done by any other agency and recover such amount as paid to the other agency from the bill(s) of the contractor. Contractor shall have no claim, whatsoever, on the extent of such amount.
- 24.2 Wherever ceiling roses are not required to be provided in the light/fan/exhaust fan points, due to site conditions, the contractor shall use suitable three pin connectors for which nothing extra shall be paid. Wiring shall be carried out with FR wires.
- 24.3 Contractor shall provide polythene/PVC plastic cover for all MDB's/SDB's/DB's to protect them from rust/damages, during execution of work till the work is actually completed and handed over to the department.
- 24.4 The loose wire boxes/cable end boxes (adaptor boxes) shall be provided on the various electrical boards to facilitate the termination of the wiring in the various mountings. The boxes shall be of the same make as the DB's as far as possible. Wherever the company made cable end boxes are not available they shall be neatly fabricated with 16 SWG CRCA sheet steel, duly powder coated, dust & vermin proof and the front cover of MS sheet shall be with rubber gasket suitably screwed or with 3mm thick phenolic laminated sheet of Hylam/Formica instead of MS sheet, as desired by the Engineer-in-charge. The length of such boxes shall be same/or more as the width of the electrical switchboard. Such loose wire boxes are deemed included in the scope of the work and no extra payment shall be made for them.
- 24.5 All debris/malba resulting due to electrical work shall be removed on daily basis and completion of the work shall only be accepted after the site has been cleaned of all

- melba. In case, contractor fails to comply, the same shall be got removed by the other agency and the payment so made shall be recovered from the bill(s) of the contractor.
- 24.6 The contractor shall have to make arrangements, at his own risk and cost, for transportation of materials from the point of issue of stores to site of work, if any.
- 24.7 Makes of all items that are not covered in the schedule of work/additional specifications shall be got approved from the Engineer-in-charge and shall conform to relevant Indian Standard as applicable.
- 24.8 The contractor shall ensure that the staff employed by him for execution of the electrical work, possess the valid electrical license issued by competent authority. Consequences arising due to the default of the contractor in not complying with the above condition shall be the responsibility of the contractor.
- 24.9 Copper lugs shall be provided for terminating copper/aluminium/GI earth wire to all switchboards for which nothing extra shall be paid. All multi-stranded/ stranded wires shall be terminated through copper lugs.
- 24.10 All concealed work and earthing shall be done in the presence of the Engineer-in-charge or his authorized representative.
- 24.11 The schematic diagram/dimensional drawings of the various electrical cubical panels shall be got approved from the Engineer-in-charge before fabrication and shall comply with CPWD specifications and Indian Electricity Rules. The panels shall conform to IS: 8623/1993. All panels shall be powder coated inside out, in shade approved by the Engineer-in-charge, if any.
- 24.12 All floor-mounted panels if any shall be mounted on 75mmX75mmX6mm thick M.S. channel on all the sides. It shall have a continuous earth bus of the same size and material as the main phase running continuously along the length of the panel extending on either side for earth connection.
- 24.13 The doors of all cubicle panels shall be hinged type including those of bus bar chambers and cable alleys. The locking shall be with chrome plated metal key locks. All doors shall be earthed with copper conductor wire as approved by the Engineer-in-charge.
- 24.14 The work shall be carried out according to drawing approved by the Engineer-in-charge. The layout once approved can only be changed by the Engineer-in-charge as per requirement at site. It shall be the responsibility of the contractor to plan the layout and get the approval from the Engineer-in-charge before laying the conduits etc.
- 24.15 The MCB should be of the same make as that of MCB DB's and having a minimum breaking capacity of 10 KA. Contractor shall obtain approval of the Engineer-in-charge before procurement of MCB DB's.
- 24.16 All model of modular accessories required for the work shall be got approved from the Engineer-in-charge from among the approved makes. The base plate shall be preferably in sheet steel or otherwise in unbreakable polycarbonate. The cover plates shall be screw less type in shade approved by the Engineer-in-charge.
- 24.17 Contractor shall have to check the Site Order Book for any instructions of the Engineer-in-charge or his authorized representative and sign the site order book. He shall be bound to ensure compliance with the instructions recorded therein.
- 25.0 The MCCB's shall be compatible for reliable protection and accurate measurement. The rated Service breaking capacity (kArms) shall be 100% of Ultimate breaking capacity (kArms). All MCCB's shall be current limiting type with features as per relevant IS codes and CPWD specification. The MCCB shall be of thermal release type."

- 25.1 MCCB's shall be used with terminal spreaders and all terminals shall be shrouded to avoid direct contact.
- 25.2 Mechanical Castle key interlock shall be provided among the incomer MCCB's, wherever, as applicable, two different incomer sources are provided in the panel as per the directions of the Engineer in charge. The same is deemed included in the scope of work.
- 25.3 All measuring and indicating instruments shall be protected through fuses/ MCB's and isolating switches.
- 25.4 General arrangement drawing of the switchboard shall be got approved from the Engineer-in-Charge before commencement of manufacturing.
- 25.5 For the items like LT panels, feeder pillars and accessories, etc, the firm shall arrange for inspection in the factory and provide for all facilities for testing. The cost of the visit of Engineer-in-Charge or his representative shall be borne by department. However, firm will be responsible for arranging the inspections as required.
- 25.6 Conduit layout as per switching arrangement shall be prepared by contractor and got approved from the Engineer-in-Charge before slab casting.
- 25.7 To facilitate drawing of wires 16/18 SWG G.I fish wire shall be provided along with laying of recessed conduit for which no extra payment shall be made to contractor.
- 25.8 Conduit and termination to SDB and main board adapter box i/c connection wires to MCB,s inter connection between SDB and main board etc shall be included in the tendered rates and nothing extra shall be paid for the same.
- 25.9 The contractor shall provide junction boxes / looping boxes of required sizes and such boxes shall be measured as part of conduit / batten wiring without any extra payment.
- 25.10 Only brass screws along with brass washers will be used for fixing Phenolic laminated sheet covers and at other places aluminum alloy/ brass / cadmium plated screws will be used.
- 25.11 M.S. dash fastner shall be used for installation of fittings and fixtures in ceiling and for providing suspenders for the angle support, conducting, cable tray etc. for which nothing extra shall be paid
- 25.12 All CI/metal boxes & junction boxes should be cleaned properly and painted from inside before wiring & fixing the accessories.
- 25.13 In wiring items like point wiring / wiring for light and power plug /circuit wiring / sub main wiring, the item includes the cost of conduit also.
- 26.0 CONDITIONS FOR ASSOCIATING ELECTRICAL CONTRACTOR
- 26.1 The main lowest tenderer have to submit the following documents for association of electrical contractor who is enlisted in appropriate class of electrical works in Central/State Govt. organization/Central Autonomous body/Central Public Sector, prior to depositing performance guarantee.
- 26.2 The applicant should submit the willingness from an eligible electrical contractors to get associated with the applicant for execution of the electrical component of works in wholesome manner and as per the conditions set out in the MOU to be entered into, between the one who is awarded the work and the associated eligible electrical contractor.
- 26.3 In support of the eligibility conditions of the proposed associated electrical contractor, copy of their registration documents, Electrical Contractor's License, Sales Tax Documents duly attested by the applicants (Main Contractor) shall be submitted to the

SE, IIT Mandi. The electrical contractor will certify that they are not debarred as on the day of application for sale of tender.

- 26.4 The main contractor will submit MOU signed with eligible registered electrical contractor of Central/State Govt. organization/Central Autonomous body/Central Public Sector. The MOU in the enclosed form shall be signed by both the parties i.e. main contractor as 1st party and associated electrical contractor as 2nd party.
- 26.5 In the event of the concerned E&M agency not performing satisfactorily or failure of associate/ sub-contractor to complete the E&M work, the main contractor on the written direction of the department, shall remove the Associate/sub-contractor deployed on the work and shall submit name of new associate who fulfill the conditions mentioned in NIT to execute the leftover work without any loss of time or variation in cost to the department in this regard, and shall meet all the guarantee for the equipments already supplied for which payment has been released by the Deptt. in part. If any equipment supplied for the work, during the currency of the earlier Associate/sub-contractor and paid partly by the Deptt. ,becomes redundant /not in a position to be installed and commissioned and put to beneficial use due to change in agency for execution of E&M work, the main contractor shall be liable for replacement of the equipment(s) at no cost to Department. No change of Electrical Contractor will be allowed without prior approval of the Superintending Engineer.
- 26.6 The main contractor shall be responsible and liable for proper and complete execution of the Electrical work and ensure coordination and completion of both civil and electrical work.
- 26.7 The associate or sub contractor shall attend the inspection of the work by the Engineer-in-Charge of E&M works as and when required.

MEMORANDUM OF UNDERSTANDING [M.O.U] BETWEEN

1]M/S [Name of the firm with full address]

Enlistment Status

Valid Upto:

[Henceforth called the main contractor]

And

2]M/S [Name of the firm with full address]

Enlistment Status

Valid Upto:

[Henceforth, called Associated Electrical Contractor or Electrical Contractor]

For the execution of Electrical Work "Construction of Animal House near Badminton Court at Kamand Campus of IIT Mandi."

We state that M.O.U between us will be treated as an agreement and has legality as per Indian Contract Act [amended upto 14.05.2013] and the department [IIT Mandi] can enforce all the terms and conditions of the agreement for execution of the above work. Both of us shall be responsible for the execution of work as per the agreement to the extent this MOU allows. Both the parties shall be paid consequent to the execution as per agreement to the extent this MOU permits. In case of any dispute, either of us will go for mediation by the Superintending Engineer, IIT Mandi. Any of us may appeal against the mediation to the Dean(I&S) IIT Mandi. His decision shall be final and binding on both of us.

We have agreed as under:

1] The electrical contractor will execute all electrical works in the wholesome manner as per terms and conditions of the agreement. .

2] The electrical contractor shall be liable for disciplinary action if he fails to discharge the action[s] and other legal action as per agreement

3 All the machinery and equipments, tools and tackles required for execution of the electrical works, as per agreement, shall be the responsibility of the electrical contractor.

4] The site staff required for the electrical work shall be arranged by the electrical contractor as per terms and conditions of the agreement.

5] Site order book maintained for the said work shall be signed by the main contractor as well as by the Engineer of the Associated Contractor and by Associated Contractor himself.

6] All the correspondence regarding execution of the electrical work shall be done by the Department with the Associated Contractor with a copy to the main contractor. In case of non-compliance of the provisions of agreement, the main contractor, as well as the associated contractor shall be responsible. The action under clauses 2 and 3 shall be initiated and taken against the main contractor.

SIGNATURE OF MAIN CONTRACTOR

Date:
Place

SIGNATURE OF ASSOCIATED
ELECTRICAL CONTRACTOR.

Date
Place:

COUNTERSIGNED

Superintending Engineer, IIT Mandi,
Kamand campus

WILLINGNESS CERTIFICATE

Name of work:-“Construction of Animal House near Badminton Court at Kamand Campus of IIT Mandi.”

I hereby give my willingness to work as electrical contractor for the above mentioned work.

I will execute the work as per specifications and conditions for the agreement and as per direction of the Engineer-in-Charge. Also I will employ full time technically qualified supervisor for the works. I will attend inspection of officers of the department as and when required.

Dated:

Signature of the Electrical Contractor

INTEGRITY PACT

To,

.....,
.....,
.....

Sub: NIT No. _____ for the work Construction of Animal House near Badminton Court at Kamand Campus of IIT Mandi.

Dear Sir,

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

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

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

Yours faithfully

Superintending Engineer,
IIT Mandi

To,

Superintending Engineer,
IIT Mandi, Kamand campus
Distt. Mandi (H.P.)

Sub: Submission of Tender for the work of "Construction of Animal House near Badminton Court at Kamand Campus of IIT Mandi.

Dear Sir,

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

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

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

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

Yours faithfully

(Duly authorized signatory of the Bidder)

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

INTEGRITY AGREEMENT

This Integrity Agreement is made at on this day of 20.....

BETWEEN

President of India represented through Superintending Engineer, IIT Mandi (Hereinafter referred as the

'Principal/Owner', which expression shall unless repugnant to the meaning or context hereof include its successors and permitted assigns)

AND

.....
(Name and Address of the Individual/firm/Company)

through (Hereinafter referred to as the
(Details of duly authorized signatory)

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

Preamble

WHEREAS the Principal / Owner has floated the Tender (hereinafter referred to as "Tender/Bid") and intends to award, under laid down organizational procedure, contract for "Construction of Animal House near Badminton Court at Kamand Campus of IIT Mandi." hereinafter referred to as the "Contract".

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

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

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

Article 1: Commitment of the Principal/Owner

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

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

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

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

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

Article 3: Consequences of Breach

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

- 1) If the Bidder(s)/Contractor(s), either before award or during execution of Contract has committed a transgression through a violation of Article 2 above or in any other form, such as to put his reliability or credibility in question, the Principal/Owner after giving 14 days notice to the contractor shall have powers to disqualify the Bidder(s)/Contractor(s) from the Tender process or terminate/determine the Contract, if already executed or exclude the Bidder/Contractor from future contract award processes. The imposition and duration of the exclusion will be determined by the severity of transgression and determined by the Principal/Owner. Such exclusion may be forever or for a limited period as decided by the Principal/Owner.
- 2) Forfeiture of EMD/Performance Guarantee/Security Deposit: If the Principal/Owner has disqualified the Bidder(s) from the Tender process prior to the award of the Contract or terminated/determined the Contract or has accrued the right to terminate/determine the Contract according to Article 3(1), the Principal/Owner apart from exercising any legal rights that may have accrued to the Principal/Owner, may in its considered opinion forfeit the entire amount of Earnest Money Deposit, Performance Guarantee and Security Deposit of the Bidder/Contractor.
- 3) Criminal Liability: If the Principal/Owner obtains knowledge of conduct of a Bidder or Contractor, or of an employee or a representative or an associate of a Bidder or Contractor which constitutes corruption within the meaning of IPC Act, or if the Principal/Owner has substantive suspicion in this regard, the Principal/Owner will inform the same to law enforcing agencies for further investigation.

Article 4: Previous Transgression

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

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

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

Article 6- Duration of the Pact

This Pact begins when both the parties have legally signed it. It expires for the Contractor/Vendor 12 months after the completion of work under the contract or till the continuation of defect liability period, whichever is more and for all other bidders, till the Contract has been awarded.

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

Article 7- Other Provisions

- 1) This Pact is subject to Indian Law, place of performance and jurisdiction is the Head quarters of the Division of the Principal/Owner, who has floated the Tender.
- 2) Changes and supplements need to be made in writing. Side agreements have not been made.
- 3) If the Contractor is a partnership or a consortium, this Pact must be signed by all the partners or by one or more partner holding power of attorney signed by all partners and consortium members. In case of a Company, the Pact must be signed by a representative duly authorized by board resolution.

- 4) Should one or several provisions of this Pact turn out to be invalid; the remainder of this Pact remains valid. In this case, the parties will strive to come to an agreement to their original intentions.
- 5) It is agreed term and condition that any dispute or difference arising between the parties with regard to the terms of this Integrity Agreement / Pact, any action taken by the Owner/Principal in accordance with this Integrity Agreement/ Pact or interpretation thereof shall not be subject to arbitration.

Article 8- LEGAL AND PRIOR RIGHTS

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

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

.....
 (For and on behalf of Principal/Owner)

.....
 (For and on behalf of Bidder/Contractor)

WITNESSES:

1.
 (signature, name and address)

2.
 (signature, name and address)

Place:

Dated :

SECTION-I

LIST OF APPROVED MAKES OF MATERIALS / ELECTRICAL ITEMS

Name of Work: - "Construction of Animal House near Badminton Court at Kamand Campus of IIT Mandi.

Sr. No.	Product	Make
1	MCB DBs	<ul style="list-style-type: none">• Legrand• C&S• Havells
2	MCBs/RCCBs	<ul style="list-style-type: none">• Legrand• C&S• Havells•
3	MCCBs	<ul style="list-style-type: none">• Legrand• C&S• Havells•
4	Wires	<ul style="list-style-type: none">• Grandlay• Finolex• Havells
5	Thimbles	<ul style="list-style-type: none">• Johnson• Dowells.
6	LT Cables	<ul style="list-style-type: none">• KEI• Havells• Gloster
7	PVC Conduits & accessories	<ul style="list-style-type: none">• Precision• BEC• AKG
8	Switches / Sockets / Regulators etc. (Modular)	<ul style="list-style-type: none">• Legrand (Mosaic)• Wipro (North West)• Crabtree (Havells) Athenes
9	Modular Box / Modular Plate	<ul style="list-style-type: none">• Legrand (Mosaic)• Wipro (North West)• Crabtree (Havells) Athenes
10	Ceiling fan/Exhaust fan	<ul style="list-style-type: none">• Havells• Bajaj• Usha

Sr. No.	Product	Make
15	18 Watt Led Fixture	<ul style="list-style-type: none"> • Havells • Philips • Wipro
16	4 X 14 Watt Recessed Mounted Luminaires	<ul style="list-style-type: none"> • Bajaj • Philips • Wipro
17	4' 36 watt Tube fixture with UV Lamp	<ul style="list-style-type: none"> • Havells • Bajaj • Philips
18	4' 28 Watt LED Pendent Luminaires	<ul style="list-style-type: none"> • Bajaj • Wipro • Philips
19	Five pin socket and Plug	<ul style="list-style-type: none"> • Legrand • C&S • Havells
20	Bus Bar Chamber	<ul style="list-style-type: none"> • Havells • Legrand • C&S
21	MCB Protected Socket	<ul style="list-style-type: none"> • Havells • North West • C&S
22	Air Shower	<ul style="list-style-type: none"> • Axenic Systems • Mitzvah • Euronics •
23	Air Curtain	<ul style="list-style-type: none"> • Axenic Systems • Mitzvah • Euronics
24	All other items not covered above	<ul style="list-style-type: none"> • As per approval of the Engineer-in-charge

Note:- The Superintending Engineer, IIT Mandi reserves the right to add or delete any materials and Brands in the list of approved materials/brands.

Indian Institute of Technology Mandi

Name of work: Construction of Animal House near Badminton Court at Kamand Campus of IIT Mandi.

PART D

O/o Superintending Engineer, IIT Mandi, Kamand campus

Indian Institute of Technology Mandi

Name of work: Construction of Animal House near Badminton Court at Kamand Campus of IIT Mandi.

INDEX – PART-D (SCHEDULE OF QUANTITIES)

Sl. No.	Description	Sheet No.
1	Schedule of Quantity (Civil)	106-117
2	Schedule of Quantity (Electrical)	118-121

It is certified that this document PART-D (Schedule of Quantity) containing page no. 104-121.

-sd-

Superintending Engineer,
IIT Mandi, Kamand campus,
Distt. Mandi (H.P.) Pin 175005
(For and on behalf of BoG)

AE(C)

105 AE(E)

SE

Correction.. Nil Deletion.. Nil Insertion.. Nil Overwriting.. Nil

Schedule of quantity (Civil)					
Construction of Animal House near Badminton Court at Kamand Campus of IIT Mandi.					
Item No	Description of Item	Qty	Unit	Rate	Amount
1	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, lift upto 1.5 m, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m all kinds of soil as per entire satisfaction and direction of Engineer-in-charge.	120.00	Cum		
2	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means over areas (exceeding 30cm in depth. 1.5 m in width as well as 10 sqm on plan) including disposal of excavated earth, lead upto 50m and lift upto 1.5m, disposed earth to be levelled and neatly dressed all kinds of soil as per entire satisfaction and direction of Engineer-in-charge.	106.83	Cum		
3	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level 1:5:10 (1 cement : 5 coarse sand : 10 graded stone aggregate 40 mm nominal size) as per entire satisfaction and direction of Engineer-in-charge including carriage of material in all lead and lift.	18.49	Cum		
4	P/L Hard stone for soling Hand packet under floor including carriage of material with in all lead & lift as per entire satisfaction and direction of Engineer - in - charge.	11.85	Cum		
5	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m as per entire satisfaction and direction of Engineer - in - charge.	67.72	Cum		
6	Making plinth protection 50 mm thick of cement concrete 1:3:6 (1 cement: 3 coarse sand : 6 graded stone aggregate 20 mm nominal size) over 75mm thick bed of dry brick ballast 40 mm nominal size, well	48.80	sqm		

	rammed and consolidated and grouted with fine sand, including finishing the top smooth as per entire satisfaction and direction of Engineer - in - charge.				
7	Providing and laying in position specified grade of reinforced cement concrete, excluding the cost of centering, shuttering, finishing and reinforcement - All work up to plinth level 1:1.5:3 (1 cement : 1.5 coarse sand (zone-III): 3 graded stone aggregate 20 mm nominal size) as per entire satisfaction and direction of Engineer in charge.	28.87	cum		
8	Centering and shuttering including strutting, propping etc. and removal of form for all heights : Foundations, footings, bases of columns, etc. for mass concrete as per entire satisfaction and direction of Engineer in charge.	65.15	Sqm		
9	Centering and shuttering including strutting, propping etc. and removal of form for all heights : Lintels, beams, plinth beams, girders, bressumers and cantilevers as per entire satisfaction and direction of Engineer in charge.	160.97	Sqm		
10	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete upto plinth level Thermo-Mechanically Treated bars of grade Fe-500D or more as per entire satisfaction and direction of Engineer-in-charge including carriage of material in all lead and lift.	5052.25	Kg		
11	Providing and laying vitrified floor tiles in different sizes (thickness to be specified by the manufacturer) with water absorption less than 0.08% and conforming to IS: 15622, of approved make, in all colours and shades, laid on 20mm thick cement mortar 1:4 (1 cement : 4 coarse sand), jointing with grey cement slurry @ 3.3kg/sqm including grouting the joints with white cement and matching pigments etc., complete. Size of Tile 600x600 mm as per entire satisfaction and direction of Engineer in charge.	74.53	Sqm		
12	Providing and laying Vitrified tiles in different sizes (thickness to be specified by manufacturer), with water absorption less than 0.08 % and conforming to I.S. 15622, of approved make, in all colours & shade, in skirting, riser of steps, over 12 mm thick bed of cement mortar 1:3 (1 cement: 3 coarse	12.36	Sqm		

	sand), jointing with grey cement slurry @ 3.3kg/sqm including grouting the joint with white cement & matching pigments etc. Size of Tile 600x600 mm as per entire satisfaction and direction of Engineer in charge.				
13	25 mm wooden planking, tongued and grooved in flooring, including fixing with iron screws complete with Second class teak wood as per entire satisfaction and direction of Engineer in charge.	23.67	Sqm		
14	Cement concrete flooring 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate) finished with a floating coat of neat cement, including cement slurry, but excluding the cost of nosing of steps etc. complete.40 mm thick with 20 mm nominal size stone aggregate as per entire satisfaction and direction of Engineer - in - charge.	23.67	Sqm		
15	Providing and fixing 2nd class teak wood plain lining tongued and grooved, including wooden plugs complete with necessary screws and priming coat on unexposed surface 25 mm thick as per entire satisfaction and direction of Engineer - in - charge.	91.26	Sqm		
16	Providing and fixing up to floor five level machine moulded precast cement concrete solid block as per IS :2185 Part-I-including hoisting and setting in position with cement mortar 1:3 (1 cement : 3 coarse sand), cost of required centering, shuttering complete 1: 7: 2 {1 cement : 7(3.15 coarse sand:3.85 Crushed Stone Dust): 2 graded stone aggregate 10mm nominal size} as per entire satisfaction and direction of Engineer-in-charge.	36.68	cum		
17	Reinforced cement concrete work in walls (any thickness), including attached pilasters, buttresses, plinth and string courses, fillets, columns, pillars, piers, abutments, posts and struts etc. above plinth level up to floor five level, excluding cost of centering, shuttering, finishing and reinforcement 1:1.5:3 (1 cement : 1.5 coarse sand(zone-III) : 3 graded stone aggregate 20 mm nominal size) as per entire satisfaction and direction of Engineer-in-charge.	7.09	cum		
18	Reinforced cement concrete work in beams, suspended floors, roofs having slope up to 15° landings, balconies, shelves, chajjas, lintels, bands, plain window sills, staircases and spiral stair cases above plinth level up to floor five level, excluding the cost of	30.51	cum		

	centering, shuttering, finishing and reinforcement, with 1:1.5:3 (1 cement : 1.5 coarse sand (zone-III) : 3 graded stone aggregate 20 mm nominal size) as per entire satisfaction and direction of Engineer-in-charge.				
19	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete above plinth level Thermo-Mechanically Treated bars of grade Fe-500 D or more as per entire satisfaction and direction of Engineer-in-charge.	4780.75	Kg		
20	Centering and shuttering including strutting, propping etc. and removal of form for all heights Columns, Pillars, Piers, Abutments, Posts and Struts as per entire satisfaction and direction of Engineer-in-charge.	78.75	Sqm		
21	Centering and shuttering including strutting, propping etc. and removal of form for all heights Suspended floors, roofs, landings, balconies and access platform as per entire satisfaction and direction of Engineer-in-charge.	118.57	Sqm		
22	Centering and shuttering including strutting, propping etc. and removal of form for all heights Edges of slabs and breaks in floors and walls Under 20 cm wide as per entire satisfaction and direction of Engineer-in-charge. as per entire satisfaction and direction of Engineer-in-charge.	47.56	Mtr		
23	12 mm cement plaster of mix 1:6 (1 cement: 6 coarse sand) as per entire satisfaction and direction of Engineer-in-charge.	552.46	Sqm		
24	6 mm cement plaster of mix 1:3 (1 cement : 3 fine sand) as per entire satisfaction and direction of Engineer-in-charge.	141.33	Sqm		
25	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete as per entire satisfaction and direction of Engineer-in-charge.	596.77	Sqm		
26	Painting with silicon & acrylic emulsion based water thinnable sealer of approved brand and manufacture on wet or patchy portion of plastered surfaces Two coats as per entire satisfaction and direction of Engineer-in-charge.	280.44	Sqm		
27	Finishing walls with Acrylic Smooth exterior paint of required shade New work (Two or more coat applied @ 1.67 ltr/10 sqm over and	175.00	sqm		

	including priming coat of exterior primer applied @ 2.20 kg/10 sqm) as per entire satisfaction and direction of Engineer-in-charge.				
28	Polishing on wood work with ready mixed wax polish of approved brand and manufacture New work as per entire satisfaction and direction of Engineer-in-charge.	91.26	Sqm		
29	Extra for providing and placing in position 2 Nos 6mm dia. M.S. bars at every third course of half brick masonry/solid block masonry as per entire satisfaction and direction of Engineer-in-charge.	366.80	Sqm		
30	Extra for forming cavity 5 cm to 11.5 cm wide in cavity walls with necessary weep and vent holes including use of cores and cost of providing and fixing bitumastic coated M .S. ties 300 mm long of 25x3 mm section at not less than 3 ties per sqm as per approved design as per entire satisfaction and direction of Engineer-in-charge.	129.86	Sqm		
31	Providing & fixing Expandable Polystyrene (EPS) sheets of Density 16Kg/m ³ and size 1000X500X75 mm in between cavity of PCC block to the cavity face of the leading tier with a coat of bitumen of grade 85/25 @ 0.85 Kg/Sqm over a primer coat of water based bituminous primer @ 1.5 Kg/Sqm etc. complete as per directions of Engineer in charge.	291.23	Sqm		
32	Providing and fixing thermal insulation with Resin Bonded rock wool conforming to IS: 8183, having density 48 kg/m ³ , 50 mm thick, wrapped in 200 G Virgin Polythene Bags fixed to wall with screws, rawel plug & washers and held and in position by criss crossing GI wire etc. complete as per directions of Engineer-in-Charge.	86.34	Sqm		
33	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) non-decorative type, core of block board construction with frame of 1st class hard wood and well matched commercial 3 ply veneering with vertical grains or cross bands and face veneers on both faces of shutters 35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws as per entire satisfaction and direction of Engineer-in-charge.	27.60	Sqm		
34	Providing wood work in frames of doors, windows, clerestory windows and other frames, wrought framed and fixed in position	0.40	Cum		

	with hold fast lugs or with dash fasteners of required dia & length (hold fast lugs or dash fastener shall be paid for separately) Second class teak wood as per entire satisfaction and direction of Engineer-in-charge.				
35	Providing and fixing dash fastner/chemical fastner for frame work of required length as per entire satisfaction and direction of engineer- in- charge.	48.00	Each		
36	Providing and fixing chromium plated brass 100 mm Godrej lock with 6 levers with necessary screws etc. complete as per entire satisfaction and direction of Engineer-in-charge.	8.00	Each		
37	Providing and fixing stainless steel handles with screws etc. complete: 150mm as per entire satisfaction and direction of Engineer-in-charge.	32.00	Each		
38	Providing and fixing stainless steel tower bolts (barrel type) with necessary screws etc. complete: 200x10 mm as per entire satisfaction and direction of Engineer-in-charge.	16.00	Each		
39	Providing and fixing aluminium hanging floor door stopper, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour and shade, with necessary screws etc. complete Single rubber stopper as per entire satisfaction and direction of Engineer-in-charge.	18.00	Each		
40	Providing and fixing aluminium die cast body tubular type universal hydraulic door closer (having brand logo with ISI, IS : 3564, embossed on the body, door weight upto 35 kg and door width upto 700 mm), with necessary accessories and screws etc. complete as per entire satisfaction and direction of Engineer-in-charge.	18.00	Each		
41	Providing and placing on terrace (at all floor levels) polyethylene water storage tank, IS : 12701 marked, with cover and suitable locking arrangement and making necessary holes for inlet, outlet and overflow pipes but without fittings and the base support for tank Circular tank as per entire satisfaction and direction of Engineer-in-charge.	500.00	P/ltr		
42	Providing and fixing ball valve (brass) of approved quality, High or low pressure, with plastic floats complete 15 mm nominal bore as per entire satisfaction and direction of Engineer-in-charge.	1.00	Each		

43	Providing and fixing C.P. brass angle valve for basin mixer and geyser points of approved quality conforming to IS:8931 15mm nominal bore as per entire satisfaction and direction of Engineer-in-charge.	1.00	Each		
44	Providing and fixing brass stop cock of approved quality 15 mm nominal bore as per entire satisfaction and direction of Engineer-in-charge.	2.00	Each		
45	Providing and fixing brass stop cock of approved quality 20 mm nominal bore as per entire satisfaction and direction of Engineer-in-charge.	1.00	Each		
46	Providing and fixing G.I. pipes complete with G.I. fittings including trenching and refilling etc External work 20 mm dia nominal bore as per entire satisfaction and direction of Engineer-in-charge.	30.00	Mtr		
47	Providing and fixing G.I. pipes complete with G.I. fittings and clamps, i/c cutting and making good the walls etc Internal work - Exposed on wall 15 mm dia nominal bore as per entire satisfaction and direction of Engineer-in-charge.	10.00	Mtr		
48	Providing and fixing G.I. Union in G.I. pipe including cutting and threading the pipe and making long screws etc. complete (New work) 15 mm nominal bore as per entire satisfaction and direction of Engineer-in-charge.	2.00	Each		
49	Providing and fixing G.I. Union in G.I. pipe including cutting and threading the pipe and making long screws etc. complete (New work) 20 mm nominal bore as per entire satisfaction and direction of Engineer-in-charge.	2.00	Each		
50	Providing and fixing Stainless Steel A ISi 304 (18/8) kitchen sink as per IS: 13983 with C.I. brackets and stainless steel plug 40 mm, including painting of fittings and brackets, cutting and making good the walls wherever required Kitchen sink without drain board 610x510 mm bowl depth 200 mm as per entire satisfaction and direction of Engineer-in-charge.	1.00	Each		
51	Providing and fixing C.P. brass bib cock of approved quality conforming to IS:8931 15 mm nominal bore as per entire satisfaction and direction of Engineer-in-charge.	1.00	Each		
52	Providing and fixing P.V.C. waste pipe for sink or wash basin including P.V.C. waste fittings complete Semi rigid pipe 32 mm dia as per entire satisfaction and direction of Engineer-in-charge.	1.00	Each		

53	Providing and fixing unplasticised PVC connection pipe with brass unions 30 cm length 15 mm nominal bore as per entire satisfaction and direction of Engineer-in-charge.	1.00	Each		
54	Providing and fixing Floor Trap 75 mm inlet and outlet as per entire satisfaction and direction of Engineer-in-charge.	1.00	Each		
55	Providing and fixing Stainless steel Jalli as per entire satisfaction and direction of Engineer-in-charge.	1.00	Each		
56	Providing and fixing on wall face unplasticised - PVC moulded fittings/ accessories for unplasticised Rigid PVC rain water pipes conforming to IS : 13592 Type A, including jointing with seal ring conforming to IS : 5382, leaving 10 mm gap for thermal expansion Coupler 75 mm as per entire satisfaction and direction of Engineer-in-charge.	1.00	Each		
57	Providing and fixing on wall face unplasticised - PVC moulded fittings/ accessories for unplasticised Rigid PVC rain water pipes conforming to IS : 13592 Type A, including jointing with seal ring conforming to IS : 5382, leaving 10 mm gap for thermal expansion Bend 87.5° 75 mm bend as per entire satisfaction and direction of Engineer-in-charge.	2.00	Each		
58	Providing and fixing on wall face unplasticised Rigid PVC rain water pipes conforming to IS : 13592 Type A, including jointing with seal ring conforming to IS : 5382, leaving 10 mm gap for thermal expansion, (i) Single socketed pipes 75 mm diameter as per entire satisfaction and direction of Engineer-in-charge.	2.00	Mtr		
59	Providing and fixing aluminium work for doors, windows, ventilators and partitions with extruded built up standard tubular sections/ appropriate Z sections and other sections of approved make conforming to IS: 733 and IS: 1285, fixing with dash fasteners of required dia and size, including necessary filling up the gaps at junctions, i.e. at top, bottom and sides with required EPDM rubber/ neoprene gasket etc. Aluminium sections shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing / paneling, C.P. brass / stainless steel screws, all complete as per architectural	50.13	kg		

	drawings and the directions of Engineer-in-charge. (Glazing, paneling and dash fasteners to be paid for separately) For fixed portion Powder coated aluminium (minimum thickness of powder coating 50 micron) as per entire satisfaction and direction of Engineer-in-charge.				
60	Providing and fixing aluminium work for doors, windows, ventilators and partitions with extruded built up standard tubular sections/ appropriate Z sections and other sections of approved make conforming to IS: 733 and IS: 1285, fixing with dash fasteners of required dia and size, including necessary filling up the gaps at junctions, i.e. at top, bottom and sides with required EPDM rubber/ neoprene gasket etc. Aluminium sections shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing / paneling, C.P. brass / stainless steel screws, all complete as per architectural drawings and the directions of Engineer-in-charge. (Glazing, paneling and dash fasteners to be paid for separately) For shutters of doors, windows & ventilators including providing and fixing hinges/ pivots and making provision for fixing of fittings wherever required including the cost of EPDM rubber / neoprene gasket required (Fittings shall be paid for separately) Powder coated aluminium (minimum thickness of powder coating 50 micron) as per entire satisfaction and direction of Engineer-in-charge.	33.00	kg		
61	Providing and fixing aluminium handles, ISI marked, Powder coated aluminium (minimum thickness of powder coating 50 micron) as per IS : 1868) transparent or dyed to required colour or shade, with necessary screws etc. complete 200 mm as per entire satisfaction and direction of Engineer-in-charge.	2.00	Each		
62	Providing and fixing aluminium tower bolts, ISI marked, Powder coated aluminium (minimum thickness of powder coating 50 micron) as per IS : 1868) transparent or dyed to required colour or shade, with necessary screws etc. complete 150x10 mm as per entire satisfaction and direction of Engineer-in-charge.	2.00	Each		
63	Providing and fixing aluminium Sliding door bolts, ISI marked, Powder coated aluminium (minimum thickness of powder coating 50	1.00	each		

	micron) as per IS : 1868) transparent or dyed to required colour or shade, with necessary screws etc. complete : 200 x 16mm as per entire satisfaction and direction of Engineer-in-charge.				
64	Providing and fixing glazing in aluminium door, window, ventilator shutters and partitions etc. with EPDM rubber / neoprene gasket etc. complete as per the architectural drawings and the directions of Engineer-in-charge . (Cost of aluminium snap beading shall be paid in basic item) With float glass panes of 5.50 mm thickness as per entire satisfaction and direction of Engineer-in-charge.	3.60	Sqm		
65	Providing and fixing 12 mm thick prelaminated particle board flat pressed three layer or graded wood particle board conforming to IS: 12823 Grade I Type II, in panelling fixed in aluminum doors, windows shutters and partition frames with C.P. brass / stainless steel screws etc. complete as per architectural drawings and directions of Engineer-in-charge Pre-laminated particle board with decorative lamination on one side and balancing lamination on other side as per entire satisfaction and direction of Engineer-in-charge.	6.90	sqm		
66	Providing and fixing 100mm brass locks (best make of approved quality) for aluminium doors including necessary cutting and making good etc. complete as per entire satisfaction and direction of Engineer-in-charge.	1.00	Each		
67	Providing and fixing fall ceiling with 9mm thick Perforated as per Design Gypsum Board Ceiling Tile size 595x595 mm including two Coat of Synthetic enamel Paint of approved quantity on exposed face fixed to a grid made out of hot dipped galvanized steel section (galvanized @ 120 grams/sqm, both side inclusive) consisting of main "T" runner with suitably spaced joints to get required length and of size 24x38 mm made from 0.30 mm thick (minimum) sheet, spaced at 1200 mm center to center and cross "T" of size 24x25 mm made of 0.30 mm thick (minimum) sheet, 1200 mm long spaced between main "T" at 600 mm center to center to form a grid of 1200x600 mm and secondary cross "T" of length 600 mm and size 24x25 mm made of 0.30 mm thick (minimum) sheet to be interlocked at middle	23.67	sqm		

	of the 1200x600 mm panel to form grids of 600x600 mm and wall angle of size 24x24x0.3 mm all frame shall be fixed with 2mm G.I. wire with Roof/Slab and laying false ceiling tiles of approved texture in the grid including, required cutting/making, opening for services like diffusers, grills, light fittings, fixtures, smoke detectors etc. Main "T" runners to be fixed to ceiling with 12.5 mm dia and 50 mm long dash fasteners, all T-sections shall be pre-painted on exposed portion with polyester paint, all complete for all heights as per specifications, drawings and as per direction of the engineer in charge.				
68	Excavating trenches of required width for pipes, cables, etc including excavation for sockets, and dressing of sides, ramming of bottoms, depth upto 1.5 m, including getting out the excavated soil, and then returning the soil as required, in layers not exceeding 20 cm in depth, including consolidating each deposited layer by ramming, watering, etc. and disposing of surplus excavated soil as directed, within a lead of 50 m all kinds of soil Pipes, cables etc. exceeding 80 mm dia. but not exceeding 300 mm dia as per entire satisfaction and direction of Engineer-in-charge.	44.00	Mtr		
69	Providing and laying non-pressure NP2 class (light duty) R.C.C. pipes with collars jointed with stiff mixture of cement mortar in the proportion of 1:2 (1 cement : 2 fine sand) including testing of joints etc. complete 250 mm dia. R.C.C. pipe as per entire satisfaction and direction of Engineer-in-charge.	44.00	Mtr		
70	Constructing brick masonry chamber for underground C.I. inspection chamber and bends with bricks in cement mortar 1:4 (1 cement : 4 coarse sand) C.I. cover with frame (light duty) 455x610 mm internal dimensions, total weight of cover with frame to be not less than 38 kg (weight of cover 23 kg and weight of frame 15 kg), R.C.C. top slab with 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size), foundation concrete 1:5:10 (1 cement : 5 coarse sand (Zone III) : 10 graded stone aggregate 40 mm nominal size), inside plastering 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand), finished smooth with a floating coat of neat cement on walls and bed concrete etc. complete as per	4.00	each		

	standard design Inside dimensions 500x700 mm and 45 cm deep for pipe line with one or two inlets With common burnt clay F.P.S. (non modular) bricks of class designation 7.5 as per entire satisfaction and direction of Engineer - in - charge.				
71	P/L Hard stone for Boulder filling back side of Retaining wall including carriage of material with in all lead & lift as per entire satisfaction and direction of Engineer - in - charge.	18.36	Cum		
72	Coursed rubble masonry (second sort) with hard stone in foundation & plinth with Cement mortar 1:6 (1 cement : 6 coarse sand) as per entire satisfaction and direction of Engineer-in-charge.	33.66	Cum		
73	Providing and fixing on wall face unplasticised Rigid PVC rain water pipes conforming to IS : 13592 Type A, including jointing with seal ring conforming to IS : 5382, leaving 10 mm gap for thermal expansion, (i) Single socketed pipes 110mm mm diameter as per entire satisfaction and direction of Engineer-in-charge.	29.76	Mtr		

Schedule of quantity (Electrical)

Construction of Animal House near Badminton Court at Kamand Campus of IIT Mandi.

Item No	Description of Item	Qty	Unit	Rate	Amount
1	Wiring for light point/ fan point/ exhaust fan point/ call bell point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed medium class PVC conduit, with modular switch, modular plate, suitable GI box and earthing the point with 1.5 sq.mm. FRLS PVC insulated copper conductor single core cable etc as required.- Group B as per entire satisfaction and direction of engineer-in-charge.	28	Point		
2	Supplying and fixing two module stepped type electronic fan regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required as per entire satisfaction and direction of engineer-in-charge.	3	Each		
3	Wiring for circuit/ submain wiring along with earth wire with the 2 x 2.5 Sq. mm. + 1 x 2.5 Sq. mm of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required as per entire satisfaction and direction of engineer-in-charge.	80	Meter		
4	Supplying and drawing 3 x 4 Sq. mm. FRLS PVC insulated copper conductor single core cable in existing surface / recessed PVC / steel conduit or raceway as required as per entire satisfaction and direction of engineer-in-charge.	85	Meter		
5	Supplying and drawing 6 x 4 Sq. mm. FRLS PVC insulated copper conductor single core cable in existing surface / recessed PVC / steel conduit or raceway as required as per entire satisfaction and direction of engineer-in-charge.	25	Meter		
6	Supplying and drawing 9 x 4 Sq. mm. FRLS PVC insulated copper conductor single core cable in existing surface / recessed PVC / steel conduit or raceway as required as per entire satisfaction and direction of engineer-in-charge.	35	Meter		
7	Supplying and drawing 3 x 6 Sq. mm. FRLS PVC insulated copper conductor single core cable in existing surface / recessed PVC / steel conduit or raceway as required as per entire satisfaction and direction of engineer-in-charge.	20	Meter		
8	Supplying and drawing 5 x 6 Sq. mm. FRLS PVC insulated copper conductor single core cable in existing surface / recessed PVC / steel conduit or raceway as required as per entire satisfaction and direction of engineer-in-charge.	12	Meter		

9	Supplying and drawing 6 x 6 Sq. mm. FRLS PVC insulated copper conductor single core cable in existing surface / recessed PVC / steel conduit or raceway as required as per entire satisfaction and direction of engineer-in-charge.	12	Meter		
10	Supplying and fixing 5/6 amps modular switch on the existing modular plate & switch box including connections but excluding modular plate etc. as required as per entire satisfaction and direction of engineer-in-charge.	10	Each		
11	Supplying and fixing 3 pin 5/6 amp modular socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required as per entire satisfaction and direction of engineer-in-charge.	10	Each		
12	Supplying and fixing 15/16 amp modular switch on the existing modular plate & switch box including connections but excluding modular plate etc. as required as per entire satisfaction and direction of engineer-in-charge.	22	Each		
13	Supplying and fixing 6 pin 15/16 amp modular socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required. as per entire satisfaction and direction of engineer-in-charge.	22	Each		
14	Supplying and fixing 3 Module (100mm X 75mm), GI box alongwith modular base & cover plate for modular switches in recess etc as required as per entire satisfaction and direction of engineer-in-charge.	4	Each		
15	Supplying and fixing 6 Module (200mm X 75mm), GI box alongwith modular base & cover plate for modular as per entire satisfaction and direction of engineer-in-charge. switches in recess etc as required as per entire satisfaction and direction of engineer-in-charge.	6	Each		
16	Supplying and fixing 12 Module (200mm X 150mm), GI box alongwith modular base & cover plate for modular switches in recess etc as required as per entire satisfaction and direction of engineer-in-charge.	4	Each		
17	Supplying and fixing of medium class 25 mm PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required as per entire satisfaction and direction of engineer-in-charge.	180	Meter		
18	Supplying and fixing of medium class 32 mm PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required as per entire satisfaction and direction of engineer-in-charge.	55	Meter		
19	"Supplying and fixing 12 way (8 + 36), Double door, horizontal type three pole and neutral, sheet steel, MCB distribution board, 415 volts, on surface/ recess, complete with tinned copper bus bar, neutral bus bar,	1	Each		

	earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator) as per entire satisfaction and direction of engineer-in-charge.				
20	Supplying and fixing 5 amps to 32 amps rating, 240/415 volts, "c" curve, miniature circuit breaker suitable for inductive load of Single pole, in the existing MCB DB complete with connections, testing and commissioning etc. as required as per entire satisfaction and direction of engineer-in-charge.	19	Each		
21	Supplying and fixing 63 amps, four pole, (three phase and neutral), 415 volts, residual current circuit breaker (RCCB), having a sensitivity current upto 300 milliamperes in the existing MCB DB complete with connections, testing and commissioning etc. as required as per entire satisfaction and direction of engineer-in-charge.	1	Each		
22	Supplying and fixing 63 amps, four pole, 415 volts, MCB in the existing TPN Box complete with connections, testing and commissioning etc. as required as per entire satisfaction and direction of engineer-in-charge.	1	Each		
23	Supplying and fixing 40 amps, four pole, 415 volts, MCB in the existing TPN Box complete with connections, testing and commissioning etc. as required as per entire satisfaction and direction of engineer-in-charge.	1	Each		
24	Supplying, installation, testing and commissioning of decorative ultra slim LED lighting fixture with co extruded polycarbonate body, environmental friendly, energy efficient 18 watt LED 6000K luminaries Make:- Havells E-LITE LED GREEN -18W or equivalent as per entire satisfaction and direction of engineer-in-charge.	4	Each		
25	Supplying, installation, testing and commissioning of pre-wired, 4*14 Watt 595 mm X 595 mm, Recess mounted darklite T5 luminaire with tube rods as per entire satisfaction and direction of engineer-in-charge.	4	Each		
26	Supplying, installation, testing and commissioning of pre-wired, 4 feet 1x36W, extruded aluminium body, sleek & decorative strip type fixture with domestic electronic ballast and coloured engineering plastic endcaps suitable for T8FTL 36 Watt UV lamp Make :- Havells Electra Slim- 18W /36W or equivalent as per entire satisfaction and direction of engineer-in-charge.	9	Each		
27	Supplying, installation, testing and commissioning of Connect LED pendent luminaires with 2 no. suspension of 1.5 mtr environmental friendly, energy efficient 28 watt LED 4 feet Neutral white Make:- Bajaj BPTX28W LED4F NW or equivalent as per entire satisfaction and direction of engineer-in-charge.	6	Each		
28	Supplying and fixing 32 Amp 415 V 3P +N +E surface mounting Socket and plug, complete with connections,	1	Each		

	testing and commissioning etc. Legrand 5552 59, 5554 39 or equivalent as required as per entire satisfaction and direction of engineer-in-charge.				
29	Supply, installation, testing & commissioning of Energy saving 5 star rating ceiling fan 1200 mm sweep complete with required mounting bracket,/down rod of required size and length , connecting wires etc. Make:- Havells or equivalent as per specification as per entire satisfaction and direction of engineer-in-charge.	3	Each		
30	Supplying of 4 Core 16 Sq. mm of 1.1 KV copper conductors PVC insulated, galvanized steel wire/strip armoured Cables. Conforming to IS: 1554 Part-I armoured copper cables as per entire satisfaction and direction of engineer-in-charge.	5	Meter		
31	Providing and fixing 4.00 mm dia copper wire on surface or in recess for loop earthing as required as per entire satisfaction and direction of engineer-in-charge.	10	Meter		
32	Supplying and fixing 25 Amp MCB protected socket with sheet enclosure and necessary screws etc. as required Make: - Havells or equivalent as per entire satisfaction and direction of engineer-in-charge.	2	Each		
33	Supplying, installing , testing and commissioning of SS Air shower Size 1300 (W) X 1700 (D) X 2400 (H) Make:- Axenic or equivalent as per entire satisfaction and direction of engineer-in-charge.	1	Each		
34	Supplying, installing, testing and commissioning of SS Air Curtain of Size 4 Feet Make:- Axenic SS-304 or equivalent as per entire satisfaction and direction of engineer-in-charge.	1	Each		

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Superintending Engineer