INDIAN INSTITUTE OF TROPICAL METEOROLOGY

PASHAN, PUNE-411 008

Tender No. CE/IITM/works/Const. /Boundary wall/12-13/08

e-TENDER NOTICE

Director, Indian Institute of Tropical Meteorology, Dr. Homi Bhabha Road, Pashan, Pune-411 008 (India) invites sealed tenders (Part-I – Technical Bid, Part-II – Commercial Bid) in separate sealed covers from contractors registered in the approved list of contractors of PWD/CPWD/MES/Railways/P&T/Experienced industrial contractors and any other government department in appropriate class for following work

Name of the work: CONSTRUCTION OF BOUNDARY WALL AT IITM, PUNE.

Tender documents can be down loaded from e-procurement web site http://www.eprocure.gov.in or from Institute's web site http://www.tropmet.res.in and also can be obtained from the Civil wing of the Institute. The tender documents fee Rs.1000=00 (Rs.One thousand only) payable in the form of DD only drawn in favour of Director IITM Pune

Date of issue of tender documents:	**09.07.2012**
Pre-Bid Meeting	**16.07.2012 at 1100 hrs**
Last date of receipt of Tender at IITM, Pune:	**31.07.2012 at 1230 hrs**
Opening of Tenders (Technical Bids only):	**31.07.2012 at 1500 hrs**

The Institute reserves the right to reject any or all tenders without assigning any reasons thereof.

Civil Engineer
For Director
anupam@tropmet.res.in

TENDER FOR
CONSTRUCTION OF BOUNDARY WALL
AT
INDIAN INSTITUTE OF TROPICAL METEOROLOGY, COLONY CAMPUS, DR. HOMI BHABHA ROAD, PASHAN, PUNE-411008

(TECHNICAL BID)

INDIAN INSTITUTE OF TROPICAL METEOROLOGY,
DR.HOMI BHABA ROAD, PASHAN, PUNE-411008

INDIAN INSTITUTE OF TROPICAL METEOROLOGY PUNE 411 008
TERMS & CONDITIONS
ENQUIRY NO: **CE/IITM/works/Const. /Boundary wall/12-13/08**
Tender No. CE/IITM/works/Const. /Boundary wall/12-13/08
Sealed item rate tenders are invited from the Contractors registered in the approved list of PWD, MES, CPWD, Railways and P&T in appropriate class for carrying out the following work at Indian Institute of Tropical Meteorology, Pune-8

Sr.No.	Name of Work	EMD	Completion Period
1.	Construction of Boundary Wall at IITM, Pashan, pune-411008	Rs. 75000/- (Rupees Seventy Five Thousand Only)	6 months [including monsoon] from the date of issue of LOI

1) Contractors shall produce banker's solvency certificate or revenue solvency certificate for value of Rs. Twenty lakhs obtained not earlier than three months from last date.

2) On production of definite proof of valid contractor license / enlistment certificate with the CPWD, State PWD & MES, Railway, issued by the respective enlistment authority of the concerned department for the amount not less than estimated value of the work.

3) Satisfactorily completed 3 similar works each costing Rs. fifteen lakhs or completed two similar works of each costing Rs. twenty lakhs or completed one similar work costing Rs. forty lakhs, during the last five years.

4) Should not have incurred any loss in more than two year during the last three year ending 31st March 2012.

5) Technical evaluation committee of IITM may also visit the Bidder's completed site if required.Baed on IITM committee report bidders are subject to be qualified/disqualified.

6) The Tenderers are requested to give detailed sealed tender in their own forms in two Bids i.e.

Part – I Technical Bid

1) The contractor is required to show proof of his latest valid **registration certificate** (**original**) with above bodies for the prescribed amount.
2) The contractor is required to show proof of his latest Income **Tax clearance certificate.**
3) The contractor should produce a list of works in hand, and completed during the last 3 years.
4) Company prifile and related information as specified in tender.
5) Copy of PRE-BID M.O.M duly signed and stamped.
6) Complete tender document duly signed and stamped.

Part - II Commercial Bid

1) Only price bid duly filled signed and stamped..

Both the sealed bids should be sent in another sealed envelope addressed to the Director, Indian Institute of Tropical Meteorology, Dr. Homi Bhabha Road, IITM Post, Pashan, Pune – 411 008, INDIA so as to reach on or before **31/07/2012 up to 12.30hrs.**

7) A sum of Rs. 1000/- (Non – Refundable) for the cost of tender documents DD drawn in favour of Director, IITM.
8) You have to submit two separate bids in two separate envelopes and you may keep both the bid envelopes in an envelope for sending to us.
9) Another envelope will contain only the financial bid.
10) The main envelope, which will contain both the bids, should be super scribed with our tender enquiry No. **CE/IITM/works/12-13/08** due on **31/07/2012 up to 12.30hrs.**
11) The technical bids will be opened on **31/07/2012** at **1500 hrs** in the presence of tenderers who wish to be present & the financial bids of only those bidders will be opened whose technical bid is found suitable by us.
12) The Date and Time of opening for Part-II (Commercial Bid) will be intimated only to pre-qualified and technically acceptable Tenderers.
Last Date and Time for receipt of Tenders: **Upto 12.30 hrs. on 31/07/2012**
Date and Time of opening of Tenders: **At 15:00 hrs. on 31/07/2012**
13) This tender is not transferable.
14) Cost of the items should be mentioned clearly in the Commercial Offer (Part-II) only.
15) Tenders received through Fax / E-mail / Telegraphic / Telex will not be considered.
16) Tenders addressed to the Director, Indian Institute of Tropical Meteorology, Pune 411008 are to be submitted under two bids system. Super scribed with Tender No. **CE/IITM/works/12-13/08** for **Construction of BoundaryWall** at IITM, Pune.
17) The tenders must be clearly written or typed without any cancellations / corrections or overwriting.
a) Tenders, which are submitted without following the Two-Bid Offer System, will summarily be rejected.
b) Unsigned Tenders will also be rejected.
c) Part and incomplete tenders are liable to be rejected.
18) The tenders will be received in the Institute till **31/07/2012** up to **12.30 hrs** and shall be opened on 31/07/2012 at **1500 hrs** (Technical Bids) in presence of the tenderers or their authorized agents who wish to be present.
19) IITM will not be responsible:
a) For delayed / late quotations submitted / sent by Post / Courier etc.

b) For submission / delivery of quotations at wrong places other than the Office of Director, IITM, Pune,

20) **Bid Validity:** The tender / quotation / offer submitted by the firm should be valid for a minimum period of **One hundred twenty (120) days** from the date of opening the tender.

21) The Tenderer's conditions printed on the tender or otherwise sent along with the tender shall not be binding on IITM.

22) **Delivery Period**: As time is the essence of the contract, **period of completion work Six months from the date of issue of LOI including monsoon** should be strictly adhered to.

23) The Tenderer is required to furnish the Permanent Account Number (PAN) and Service Tax no. if any allotted by the Income Tax Department. If registered with the National Small Industries Corporation, the registration number, purpose of registration and the validity period of registration' etc. should also be provided in Technical Bid.

24) A copy of latest Income Tax Clearance Certificate from Income Tax Department (INDIA) for in Technical Bid.

25) **PAYMENT**:

a) No advance can be paid.

b) Payment will be made in RA bills not less than **15 lakhs** each.

c) Performance security **5%** of order value in the form of BG/DD in favour of Dircetor IITM, drawn on Nationalized Bank which will be refunded on completion and handing over of the completed work site to the Institue.

d) 5% security deposit will be recovered & retained from each running bill which will be refunded after defect liability period of 12 months.

26) The contractor shall inspect the site before quoting their rates.

27) The prices quoted should be inclusive of all taxes and duties etc.

28) IITM will not provide any accommodation/transportation for the Engineers/Representatives.

29) **DEFECT LIABILITY PERIOD**: Defect liability period of the work will be 12 months from the date of actual completion of work and taking over by the Institute.

30) No sub-contracting will be allowed.

31) Discount if any offered should be mentioned clearly in the commercial bid only.

32) a) The Earnest Money Deposit of **Rs.75, 000=00 (Rs. Seventy Five thousand only)** must be paid / sent along with your technical bid in the form of a Demand Draft, Banker's cheque or Bank Guarantee drawn on Nationalized Bank drawn in favour of **The Director, Indian Institute of Tropical Meteorology, Pune payable at Pune**, otherwise your technical & financial bids will not be considered at all.

b) The Earnest Money of the unsuccessful bidder whose technical bid has not been found suitable will be returned issue of LOI to successful biders.

c) Though EMD has to be submitted by Demand Draft or Bank Guarantee, we prefer to have Bank Guarantee for easy return to the bidders once a decision is taken by IITM.

d) Tenders not accompanied with Demand Draft / Bank Guarantee towards "Earnest Money Deposit" and tender fee will summarily be rejected.

33) If the work is not completed by scheduled time or if you leave work in half complete stage, the liquidated damages will be charged or deducted 1.0% per week and the maximum to 10% of value of work order.

34) Extra Item:

The rate of extra items shall be worked out in accordance with the following rulesa. The rates for the extra items shall be derived from the rate of an appropriate item of the similar class for which the rate has already been accepted, where same can be directly derived. b. The contractor shall be bound to carry out any extra items of work as per site requirement. The rate for extra items shall be derived from the rate already quoted. Where the items are not specified in the BOQ the rate shall be worked out at cost of material+labour+10% overheads, wastage and transportation & profit. c. Wherever applicable the basic rate difference in materials (mentioned in tender) shall be payable plus-minus without any profits, overheads etc., on said rate difference. d. Variation and Non- Tendered items, if any, shall be carried out under specific written instruction by architects and prior sanction by the Institute. Sanction for all extra items shall be sought by the contractor within seven days from the occurrence of such necessity.

35) Corrupt or Fraudulent Practices.

A) IITM requires that the bidders/contractors under this tender observe the highest standards of ethics during the procurement and execution of such contracts. In pursuance of this policy, IITM:

i) Defines for the purposes of this provision, the terms set forth as follows:

a) "Corrupt practice" means the offering, giving, receiving or soliciting of anything of value to influence the action of the public official in the procurement process or in contract execution; and

b) "Fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or a execution of a contract to the detriment of IITM, and includes collusive practice among bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive IITM of the benefits of the free and open competition;

ii) Will reject a proposal for award if it determines that the Bidder recommended for award has engaged in corrupt of fraudulent practices in competing for the contract in question;

B) IITM will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded a contract if it at any time determines that the firm has engaged in corrupt and fraudulent practices in competing for, or in executing, a contract.

36) Conditional Offers will not be considered.

37) All disputes are subject to exclusive jurisdiction of Competent Court and Forum in Pune, India only.

38) The Director, Indian Institute of Tropical Meteorology, Pune 411 008, India reserves the right to accept any tender in full or in part or to reject the lowest or any or all tenders without assigning any reason.

39) The Director, Indian Institute of Tropical Meteorology, Pune will be the final authority to decide the appropriate action and it will be binding on the Vendor.

Summary of Forms
(To be filled in by the contracting firm)

1) i) Name of the Contractor : _____

ii) Postal Address : _____

_____

iii) Telephone No. : _____

iv) Fax No. : _____

v) Mobile No. : _____

vi) Email Address : _____

2) Please mention status

i) Proprietary firm …….. : Yes / No*

ii) Partnership firm …….. : Yes / No*

iii) Pvt. Ltd. Co. ……. : Yes / No*

iv) Public Ltd. Co. ……. : Yes / No*

v) Co. Op. Society) ……. : Yes / No*

(* - Strike out whichever is not applicable)

3) a) Registration Class of Contractor :

b) Validity of Registration :

c) Authority issuing the registration Certificate (Copy of registration Certificate to be enclosed as Annexure I)

4) i) Mention the names of Partners or Directors :1)----------

2) ----------

5) Annual turnover of the firm for last 3 years as Certified by the Chartered Accountant vide Form F. : 2009-2010 Rs. ……

2010-2011 Rs. ……

Minimum required turnover per year 2011-2012 Rs. ……

Shall be more than **Rs. 40 lakhs** for any one of the year.

6) a) Whether the contractor is having valid VAT & Service Tax Registrations : Yes/No

b) If so whether the certified copy of Such registration is enclosed (As Annexure II) : Yes/No

7) a) Whether the contractor is having plant, machinery and equipments as per requirement of project : Yes/No

b) If yes, whether information in form “A” with documentary evidence is furnished. : Yes/No

8) Whether the information in respect of trained and qualified staff is furnished in form B with documentary evidence. : Yes/No

9) a) Whether the contractor has executed a single work of similar nature having cost of work more than **Rs. 40 lakhs** (**Rs. forty lakhs only)**. : Yes/No

b) If Yes, whether the information of such work in form "C" is furnished. : Yes/No

c) Whether the certificates from concerned authorities in 'E' form are enclosed (Work value should be more than the amount as mentioned under Sr. No. 9) : Yes/No

10) Whether the list of works in hand is enclosed in form "D" : Yes/No

11) Whether the amount of balance Works vide col. No.5 of Form "D" : Yes/No is mentioned.
Quote the amount of balance work. : Rs._____

12) State…..

a) In how many cases the notice under penalty / Liquidated damages clauses of the tender was issued to the applicant during last 3 years. : Nos/Nil

b) In how many cases the work was rescind during last three years. : Nos/Nil

c) If the work is rescind, the reasons for the same shall be mentioned : _____
with documentary proof. _____

d) In how many cases compensation was recovered for slow progress : _____

13) Whether financial information in form "F" is furnished duly signed : Yes/No by Chartered Accountant

14) Quote the bid capacity calculated as Per formula prescribed for the Purpose. (Shall not be less : Rs._____ lakhs than the cost put to tender)

15) Quote the Net worth to long term Liabilities : _____
(shall not be less than 20%)

16) Quote the Net profit to capital investment : _____
(should not be less than 5%)

17) Whether the list of machinery owned by the tenderer which will be used for the work is enclosed in form “A” : Yes/No

18) Whether the list of technical personnel of the tender likely to be deployed for each project is enclosed in form “B” : Yes/No

19) Whether the details of works of similar or allied type and magnitude carried out by tendered is enclosed in form “C” : Yes/No

20) Whether the details of other works tendered for and in hand on the date of submission of this application is enclosed in Form “D” : Yes/No

21) Whether the details of certificate in respect of completion of work by tenderer enclosed in form “E” : Yes/No

22) Whether the details of financial statement enclosed in form “F”: Yes/No

The information given above and in the enclosed forms, annexure is true to the best of my knowledge and belief and I am fully responsible for its correctness.

Signature of Contractor

Date: _____

The Director,
IITM

FORM - A

LIST OF MACHINERY OWNED BY THE TENDERER
WHICH WILL BE USED FOR THIS WORK.

NAME OF TENDERER: _____

Sr. No.	Name of Machineries and Equipments required for execution of work	No. of Machineries, equipments required for the work.	No. of Machineries, equipments owned by Tenderer	No. of Machineries equipments separable for this work
(1)	(2)	(3)	(4)	(5)

Sufficient proof in support of the machinery owned by tenderer as mentioned under **Sr. No. ____ to ____** be produced. Tenderer should produce documentary evidence like statement of fixed assets attached with balance sheet, RTO registration etc, for having owned the machinery as on date not earlier than 6 months of the date of submitting the pre-qualification form. The Xerox copy of the documents shall be readable and attested by Gazetted officer. If the tenderer does own the said machinery he shall not be pre-qualified.

If the information found false and misleading, he shall not be pre qualified.

Note: The rent agreement for hiring the machinery shall not be accepted.

The Director,

IITM

Tenderer

FORM B

Sheet No.

LIST OF TECHNICAL PERSONNEL OF THE TENDERER LIKELY TO BE APPOINTED ON THIS WORK

NAME OF WORK :

Sr. No.	**Name of Persons**	**Designation / holding the post in the firm.**	**Status in the firm**	**Academic Qualification & experience**	**Remarks & any other points.**
1.	2.	3.	4.	5.	6.

NOTE :-

1) Continuation sheet shall be used if required.

2) The contractor should produce either a copy of form No. 24 of annual return of I. T. Authority for schedule of employees attached to the latest annual report or such other proof like extract of employment tax register, to the satisfaction of tender inviting authority.

Contractor

The Director,

IITM

FORM 'C'

Sheet No.

DETAILS OF WORKS OF SIMILAR OR ALLIED TYPE AND MAGNITUDE CARRIED OUT BY TENDERER

NAME OF TENDERER. :

Sr.No.	*Name of work*	*Name of Organisation and place of work*	*Tender cost*	*Stipulated date of completion*	*Actual Date of completion*	*Principal features in brief.*
1.	*2.*	*3.*	*4.*	*5.*	*6.*	*7.*
		TOTAL				

NOTE :-

1) The contractor should have completed at least a single work of similar nature as mentioned under Sr. No. 9

(Only one or two works which contractor claimed to be the best and fulfil the norms and willing to produce the experience Certificate in form 'E' shall only be mentioned.)

Contractor **The Director, IITM**

FORM 'D'

Sheet No.

DETAILS OF OTHER WORKS TENDERED FOR AND IN HAND ON THE DATE OF SUBMISSION OF THIS APPLICATION

NAME OF TENDERER. :

Sr. No	Name of work	Name of organization and place of work	Work in hand			Works tendered For			REMARKS
			Tendered cost	Cost of remaining work	Anticipated date of completion	Estimated cost.	Date when decision is Expected.	Stipulated period for completion.	
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
		TOTAL			TOTAL				

NOTE :- The continuation sheet may be used if required.

Contractor **The Director, IITM**

FORM – 'E'

CERTIFICATE IN RESPECT OF COMPLETION OF WORK BY CONTRACTOR.

1. Name of contractor. : _____

2. Name of work. : _____

3. Estimated cost put to tender. : Rs. _____

_____

4. Period stipulated in tender : _____

for completion of work.

5. Date of work order. : _____

6. Actual Date of completion. : _____

7. If time over-run, the reasons : _____

for the same.

8. Final cost of work completed. : _____

i) Has he started the work promptly

after issue of work order? : YES / No

ii) Has he maintained the progress:

of work as per agreement? : YES / No

iii) Quality of work : Excellent / Good / Satisfactory.

iv) Compensation / Penalty levied **if any, with reasons.** _____

_____

_____

9. **Any other information about the overall performance of the contractor, the authority may like to mention.** : _____

Certified that the information given above is based on the facts and figures recorded in this office through various documents and is true to the best of my knowledge and belief.

Signature and seal of Officer issuing the Certificate.

Outward No. _____

Dated : _____

NOTE :- **1) For works costing Rs. 1.00 Crore and above certificate issued by the S. E. or duly countersigned by the SE/CE shall be accepted.**

Contractor

The Director,

IITM

FORM – 'F'

FINANCIAL STATEMENT

1. Name of Contractor : _____ (In case of Joint Venture / _____ Consortium, the name of the _____ Consortium firm).

2. Summary of Assets & Liabilities : on the basis of the audited financial statement of the last three financial years. (Attach copies of the audited financial statements of the last three financial years)

		Year 2009-2010 (Rs. In Lakhs)	**Year 2010-2011 (Rs. In Lakhs)**	**Year 2011-2012 (Rs. In Lakhs)**
A)	Authorized capital			
B)	Issued capital			
C)	Paid up Capital /Partners / Proprietor Capital.			
D)	Reserves & Surplus.			
E)	Long term liabilities.			
F)	Current liabilities & Provisions.			
G)	**TOTAL (C + D + E + F)**			
H)	Net Tangible Fixed Assets.			
I)	Intangible Assets.			
J)	Long term investment			
K)	Current Assets, loans & Advances.			
L)	**TOTAL (H + I + J + K)**			
M)	Quick Assets i.e cash & equivalent, short term investment and current receivables.			
N)	Net profit after interest and depreciation.			

		Year 2009-2010 (Rs. In Lakhs)	Year 2010-2011 (Rs. In Lakhs)	Year 2011-2012 (Rs. In Lakhs)
P)	Turn over in terms of value of Civil / Electrical Engineering works executed during each Year as reflected in the Profit &Loss Account.			
3)	**RATIOS :**			
i)	Net worth to long term Liabilities (O:E)			
ii)	Current Ratio (K:F)			
iii)	Quick Ratio (M:F)			
iv)	% of net profit to capital invested i.e. (N x 100)/(C + D)			
4)	**Net Profit before Taxation**			
a)	Current Period.			
b)	During the last financial year.			
c)	During each of the Four previous Financial years.			
	Certified that the facts and figures given above have been verified from the audited balance sheet at the end of the respective year and the profit and loss accounts for the respective year, are true to the best of our knowledge and belief. Seal Signature of the Chartered Accountant.			

Contractor

The Director,
IITM

	Detail Calculations for all the Ratios should be submitted on separate Annexure.		
5.	Applicants financial arrangements (Mention amount in Rupees)	**:**	Rs.
a)	Own Resource	**:**	Rs.
b)	Bank Credit.	**:**	Rs.
c)	Others (Specify)	**:**	Rs.
6.	Certificate of financial soundness from bankers of applicants together with their full address.	**:**	
7.	Credit Facilities :	**:**	
a)	Name / Address of Nationalized Bank providing credit line.	**:**	
b)	Total Amount of credit line (Attach certificate from the bank)	**:**	
8.	Approximate value of works in hand.	**:**	
9.	Bid capacity i.e. (Ax N x2) – B where - (shall not be less than the cost put to tender)	**:**	
A	Maximum of the updated values of Civil & Plumbing works executed in one of the Preceding 3 years. The updating of the Value of work should be done at 10% per annum (compounded) by multiplying the Values with applicable factor i.e. 1.10, 1.21, Or 1.331 as the case may be.		
B	Value of existing commitment and works (on going or to be completed in the period stipulated for completion of the work in the present tender) i.e. from _____ to _____		
N	Number of years prescribed for completion of the work for which tenders are invited. = ____ Year.		

Contractor

The Director,
IITM

A. Special Conditions of Contract

1. LABOUR :

The Contractor shall, unless otherwise provided in the Contract, make his own arrangements for the engagement of all staff and labour, local or other, and for their payment, housing, feeding and transport.
The Contractor shall, if required by the Employer, deliver to the Employer a return in detail, in such form and at such intervals as the
Employer may prescribe, showing the staff and the numbers of the several classes of labour from time to time employed by the Contractor on the Site and such other information as the Employer may require.

2. COMPLIANCE WITH LABOUR REGULATIONS :

During continuance of the contract, the Contractor and his sub contractors shall abide at all times by all existing labour enactments and rules made there under, regulations, notifications and bye laws of the State or Central Government or local authority and any other labour law (including rules), regulations, bye laws that may be passed or notification that may be issued under any labour law in future either by the State or
the Central Government or the local authority. Salient features of some of the major labour laws that are applicable to construction industry are given below. The Contractor shall keep the Employer indemnified in case any action is taken against the Employer by the competent authority on account of contravention of any of the provisions of any Act or rules made there under, regulations or notifications including amendments. If the Employer is caused to pay or reimburse, such amounts as may be necessary to cause or observe, or for non-observance of the provisions stipulated in the notifications/bye laws/Acts/Rules/regulations including amendments, if any, on the part of the Contractor, the Architect/Employer shall have the right to deduct any money due to the Contractor including his amount of performance security. The
Architect/Employer shall also have right to recover from the Contractor any sum required or estimated to be required for making good the loss or damage suffered by the Employer.

The employees of the Contractor and the Sub-Contractor in no case shall be treated as the employees of the Employer at any point of time.

a) Minimum Wages Act 1948: The Employer is supposed to pay not less than the Minimum Wages fixed by appropriate Government as per provisions of the Act if the employment is a scheduled employment.

b) Child Labour (Prohibition & Regulation) Act 1986: The Act prohibits employment of children below 14 years of age in certain occupations and

processes and provides for regulation of employment of children in all other occupations and processes. Employment of Child Labour is prohibited in Building and Construction Industry.

(i) ARBITRATION (GCC Clause 25.3)

If the decision of the Adjudicator as described in clause 25 is not acceptable, then the disputes can be referred to the Arbitrator.
The procedure for arbitration will be as follows:

25.3 (a) In case of Dispute or difference arising between the Employer and a domestic contractor relating to any matter arising out of or connected with this agreement, such disputes or difference shall be settled in accordance with the Arbitration and Conciliation Act, 1996. The arbitral tribunal shall consist of 3 arbitrators one each to be appointed by the Employer and the Contractor. The third Arbitrator shall be chosen by the two Arbitrators so appointed by the Parties and shall act as presiding arbitrator. In case of failure of the two arbitrators appointed by the parties to reach upon a consensus within a period of 30 days from the appointment of the arbitrator appointed subsequently, the Presiding Arbitrator shall be appointed by the * Indian Council of Arbitration/President of the Institution of Engineers (India)/The International Centre for Alternative Dispute Resolution (India).

(b) If one of the parties fails to appoint its arbitrator in pursuance of sub-clause above within 30 days after receipt of the notice of the appointment of its arbitrator by the other party, then the * Indian Council of Arbitration/President of the Institution of Engineers (India) shall appoint the arbitrator. A certified copy of the order of the *Indian Council of Arbitration /President of the Institution of Engineers (India), making such an appointment shall be furnished to each of the parties.

(c) Arbitration proceedings shall be held at **Pune,** India, and the language of the arbitration proceedings and that of all documents and communications between the parties shall be English.

(d) The decision of the majority of arbitrators shall be final and binding upon both parties. The cost and expenses of Arbitration proceedings will be paid as determined by the arbitral tribunal. However, the expenses incurred by each party in connection with the preparation, presentation, etc. of its proceedings as also the fees and expenses paid to the arbitrator appointed by such party or on its behalf shall be borne by each party itself.

- Performance under the contract shall continue during the arbitration proceedings and payments due to the contractor by the owners shall not be withheld, unless they are the subject matter of the arbitration proceedings.

1. PROTECTION OF ENVIRONMENT:

Add the following as GCC Clause 16.2:

The contractor shall take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to property of the public or others resulting from pollution, noise or other causes arising as a consequence of his methods of operation.

During continuance of the contract, the contractor and his sub-contractors shall abide at all times by all existing enactments on environmental protection and rules made there under, regulations, notifications and bye-laws of the State or Central Government, or local authorities and any other law, bye-law, regulations that may be passed or notification that may be issued in this respect in future by the State or Central Government or the local authority.

Salient features of some of the major laws that are applicable are given below:
The Water (Prevention and Control of Pollution) Act, 1974, This provides for the prevention and control of water pollution and the maintaining and restoring of wholesomeness of water. 'Pollution' means such contamination of water or such alteration of the physical, chemical or biological properties of water or such discharge of any sewage or trade effluent or of any other liquid, gaseous or solid substance into water (whether directly or indirectly) as may, or is likely to, create a nuisance or render such water harmful or injurious to public health or safety, or to domestic, commercial, industrial, agricultural or other legitimate uses, or to the life and health of animals or plants or of aquatic organisms.

The Air (Prevention and Control of Pollution) Act, 1981, This provides for prevention, control and abatement of air pollution. 'Air Pollution' means the presence in the atmosphere of any 'air pollutant', which means any solid, liquid or gaseous substance (including noise) present in the atmosphere in such concentration as may be or tend to be injurious to human beings or other living creatures or plants or property or environment.

The Environment (Protection) Act, 1986, this provides for the protection and improvement of environment and for matters connected therewith, and the prevention of hazards to human beings, other living creatures, plants and property. 'Environment' includes water, air and land and the inter-relationship which exists among and between water, air and land, and human beings, other living creatures, plants, micro-organism and property.

The Public Liability Insurance Act, 1991, this provides for public liability insurance for the purpose of providing immediate relief to the persons affected by accident occurring while handling hazardous substances and for matters connected herewith or incidental thereto. Hazardous substance means any substance or preparation which is defined as hazardous substance under the Environment (Protection) Act 1986, and exceeding such quantity as may be specified by notification by the Central Government.

2) Supply of materials:

a) The successful Bidder should make his own arrangement to obtain / import all materials required for the work.

b) The Work shall be carried out using high quality materials and products from good source and reputed manufacturer respectively. The tenderer / contractor shall furnish the details of sources and manufacturers of materials and products, which they intend to use in the Work if their tender is acceptable.

c) Quality assurance should be strictly adhered to. All materials are subject to inspection and approval of the Employer/Architect before use in the Work. All Work carried out and materials supplied shall conform to relevant latest Indian Standard Specification.

d) The Contractor shall furnish the Employer for approval adequate samples of all materials to be used in Work and to permit tests and examinations thereof. All materials used in the Work shall be strictly as per approved samples and
approved make.

e) All mock ups / finishes / quality shall be approved by Employer.

f) All materials which are rejected shall be forthwith removed from the site.

3) Water & Power:

- The rate quoted by the Contractor shall include expenditure for providing all the

The Contractor should arrange acceptable quality water from outside by tankers; the Employer shall not be liable to pay any charges in connection therewith including charges for periodic testing of the water of such sources for its suitability before use on works.

- The rate quoted in the tender shall also include electric consumption charges for power required for construction.All charges connected with installing, running and maintaining of the generators, including all statutory approvals shall be borne by the Contractor.

- The Contractor shall also be responsible to supply water and electricity.

- If no such facility is available at the site of work and if available and found inadequate, it shall be the responsibility of the Contractor to make his own arrangement for obtaining water and power at his cost.

6) Insurance:

The Contractor shall be responsible for any injury to persons, animals or things and for all structural damage to property which may arise from the operation or neglect of himself and or any nominated Direct Sub-Contractors, or Direct Sub-Contractors /Contractor's Employees and or third party whether such injury or damage arising from carelessness, accident or any other cause whatsoever, in any way connected with the execution of work.

The cover taken by the Contractor towards Third Party Liability shall be for a value of Rs. 5 Lakhs (Rupees Five Lakhs only) for a single event and there shall be no upper limit on the number of such events. The Bidders are expected to include all the charges towards taking all insurance cover, charges towards premia etc., in the quoted rates and no extras / claims shall be entertained on account of the Bidders' failure to comply with this requirement.

The Contractor shall take required insurance cover with an approved insurance company and deposit the policy with the Owner well before commencement of work

7) Joint Inspection

The Contractors'authorised representative/engineer should arrange joint inspection with owner at every stage of the work.

8) Fire Protection during Construction

Provide and keep in working order adequate fire-fighting equipment for emergency use.

10) Schedule of Quantities and Technical Specifications

In case of conflict between item description in —Bill of Quantities‖ and —Technical specifications‖ the following priority shall govern:
Bill of Quantities & Preamble
Technical Specifications
IS Code
Equivalent BS Codes
Other codes

Signature of Tenderer

With Date and Seal

TECHNICAL SPECIFICATIONS

TECHNICAL SPECIFICATIONS

1- GENERAL

1.1 ***(A) – Work***

All works shall be carried out with due diligence and specification laid hereunder. In case any item not covered by this specification, either C.P.W.D. or any other specification as directed by the Engineer in charge shall be followed. As and where necessary this specification shall be supplemented by C.P.W.D. specification.

1.1 ***(B) – Material specification***

1.2

All material shall conform to the latest edition of the Indian standard specification with all amendments issued thereof. For material not covered By Indian standard specification, C.P.W.D. specification shall followed. For such material covered by neither of the two any other specifications as directed by the engineer in charge, and after obtaining his written approval shall be followed.

1.2 ***Sampling and testing***

All material used in the works shall be subjected to inspection and test. Samples of all material proposed to be used in the works shall be submitted to the Engineer in charge for approval, before they are bought to the site. These samples shall be submitted 15 days in advance than required for works. After the sample is approved, the material shall be arranged and bought to site within a fortnight. Sample submitted to the Engineer in charge or his representative for their retention is to be kept in labeled box and suitably stored.

1.3 ***Storage of material***

All material to be used in the works shall be stored on racks, supports, in bins, under cover etc., as required to prevent deterioration or damage from any cause whatsoever to the entire satisfaction of the Engineer in charge.

Cement shall be stored in such quantities as can be consumed within a short time after receipt from the manufacturers. It shall be stored in such a manner to permit easy access for proper inspection and in a suitable weatherproof store to protect it from dampness and to minimize deterioration. Use of cement shall be on principle of first come, first used.

2. ***MATERIALS***

2.1 **Water**

Clean fresh water only shall be used for mixing all concrete, grout and mortar. This shall be free from any deleterious matter in solution or in suspension and be obtained from an approved source. Generally portable water is found to be suitable for the above work.

2.2 ***Lime***

Lime shall be stone lime and conform to the specification Building Limes-IS: 712 (latest edition). Lime putty may be prepared from hydrated lime or quick lime. Hydrated lime shall be mixed with water to form putty for preparation of lime cement and sand mortar, lime, cement and sand in specified proportions shall be mixed further. Minimum quantity of water shall be added to achieve working consistency.

Surplus mortar droppings from masonry if received on surface free from dirt may be mixed with fresh mortar if permitted by the Engineer- in charge of site who may direct additions of additional cement without any extra payment.

2.3 ***Grading of Aggregate***

Coarse aggregate shall be as per IS: 383 (latest edition) consisting of hard, strong and durable pieces of crushed stone and shall be free from organic or clay coating and other impurities like disintegrated stone, soft flaky particles etc.

Aggregates other than confirming to the provision of specifications may be used if permitted by Engineer-in-charge.

Washing of aggregates by approved means shall be carried out, if directed by the Engineer-in-charge. Grading of coarse aggregates shall confirm to IS:383 (latest edition) and shall be such as to produce dense concrete of the specified proportions and strength and of consistency that will work readily into position without segregation.

(a) Grading of Coarse Aggregate shall be as under :

I.S. Series	Percentage passing By weight for nominal size of			
Mm	40 mm	20 mm	16 mm	12.5 mm
75	100	-	-	-
37.5	95-100	100	-	-
19	30-70	95-100	100	100
16	-	-		-
11.2	-	-	-	90-100
9.5	10-35	25-35	30-70	40-85
4.75	0-5	0-10	0-10	0-10
2.36	-	-	-	-

(b) Fine aggregate : On the basis of particle size fine aggregate is graded into four zone which is shown below :

IS Sieve	Percentage passing for grading			
MM	Zone-1	Zone-2	Zone-3	Zone-4
9.50	100	100	100	100
4.75	90-100	90-100	95-100	95-100
2.36	60-95	75-100	85-100	95-100
1.18	30-70	55-90	75-100	90-10
600 micron	15-34	35-59	60-79	80-100
300 micron	5-20	8-30	12-40	15-50
150 micron	0-10	0-10	0-10	0-15

Fine aggregate shall be coarse sand, fine sand stone dust or marble dust fly ash and surkhi and shushkhi Use of sand shall not be allowed unless otherwise specified.

(a) Grading of coarse sand shall fall within the limit of grading zone1, 2, 3, 4, of table above.

(b) Grading of fine sand shall fall within the limit of grading zone 4 of table above.

(c) Grading of stone dust shall fall within the limit of grading zone1, 2, 3, of table above.

(d) Grading of marble dust shall fall within the limit of grading zone 4 of table above.

2.4 ***Scaffolding***

Scaffolding shall consist of ballies necessary battens and planks of approved quality. All the scaffolding members before erection shall be checked for their strength and fitness. It shall be tied up properly and rigidly. Steel scaffolding, if available, may be used. Where scaffolding is necessary it shall be erected on double supports. Holes shall not be made in walls for supports. Planks shall be fixed and tied together in case of finishing works such as plastering, painting and distempering no part of the scaffolding shall touch the structure. Where ladders are used, gunny bags shall be tied up at the end to protect any damage to work by sliding etc.

2.5 ***TOR Steel***

Steel shall comply with the Indian Standards Specifications IS: 226 latest editions for construction work. The surface shall be free from rust. All steel shall be TATA's or other Indian manufacturer. Untested steel shall not be used unless otherwise specified.

A Cement

One of the type of cement given below as specified shall be used Portland cement latest edition 53 grade conforming to is 12269 latest editions. Rapid hardening Portland cement conforming to IS 8041 (latest edition) any other brand of specified shall conform to relevant Indian Standard specification (ISS).

2.6 ***Steel Frames***

Steel frames shall be manufactured out of steel conforming to the relevant standard specifications and shall have oxidized fittings. The size & section shall be as specified or shown on the drawings. They shall have all necessary accessories such as eyes, lugs and hinges etc. as per drawings and Engineer

In charge's instructions. The welding of joints shall be full size and grinned neat.

2.7 ***Oil Paint and primers***

These shall be ready mixed Jonson & Nicholson, Shalimar Goodlac, Nerolac ,I.C.I or other approved brand and in sealed tins and shall be of the quality approved by the Engineer in charge & shall conform to the relevant I.S.S. (latest edition)

2.8 **Cement paint a*nd primers***

These shall be either water bound or oil bond as specified in the schedule of quantities. These shall be in powder form of Jenson and Nicholson, Shalimar or other approved brand in sealed drums and package as directed by Engineer-In-charge. These shall be of approved brand such as Snowcem Exterior Paint or equivalent as directed by the Engineer in charge.

Specifications for Works

3.0 <u>EARTHWORK IN EXCAVATION</u>:

3.1 The excavation shall be done strictly according to the dimensions shown in the plans or as directed. If Contractors excavates beyond what is stipulated in the drawings or as directed at site, the additional quantity of earth work shall not be taken into account for payment. In case, the Contractor excavates trenches and foundations width less than minimum specified, actual measurement of excavated trench will be taken for payment. The excavation will be carried out in all sorts of soils up to a depth as shown in the drawings and will be disposed- off as directed by Engineer-in-Charge within the lead of 1000 Meters.

3.2 Rates shall be inclusive of refilling the trench, foundation etc., with excavated earth with in the lead of 1000 meters.

3.3 Payment shall be made on cubic meter basis of the permissible excavation done.

4.0 <u>CENTERING SHUTTERING FOR R.C.C. WORKS</u>:

4.1 Form-work shall be strong enough to withstand dead and live load and forces caused by ramming / vibration of concrete and other incidental loads, likely to be imposed upon it during and after casting of concrete. Shuttering shall either be of wooden plank 30 mm minimum thickness or steel plate with stiffened edges. The shuttering shall be supported at bottoms by props of vertical sal ballies properly cross braced together so as to make the form work rigid. The shuttering shall have a smooth and even surface and joints shall not permit leakage of cement grout. The timber planks shall be

accurately sawn and planed on one side. The surface of shuttering that would come in contact with concrete shall be covered with a thin sheet of polythene paper rolls, after removing all rubbish such as chippings, shavings, saw dust etc. from the shuttering.

Alternatively application of raw linseed oil or soap solution to the surface of the shuttering may be allowed at the discretion of the Engineer-in-Charge / Site Engineer. Sufficient camber shall be provided to the shuttering so as to offset subsequent deflection after pouring of concrete on it.

4.2 A minimum camber of 4 mm per meter length of beam and 1/50th of length of cantilever / projected member shall be provided as directed by the Engineer-in-Charge / Site Engineer. Minimum period that shall elapse after the concrete is laid, before removal of centering and shuttering shall be as per provisions of IS: 456. The completed form work shall be inspected and approved by the Engineer-in-Charge / Site Engineer before reinforcement bars are placed in position.

4.3 Payment shall be made for form work, centering shuttering etc. on Sqm basis. The length and breadth shall be measured in cms correct to two places of decimal and area shall be worked out in Sqm. No deductions from the shuttering due to openings / obstructions shall be made, if the area of such openings / obstructions does not exceed 0.10 Sqm. Nothing extra shall be paid for forming such openings. Rates quoted shall be inclusive of cost of form works, centering shuttering, labor, materials and removal of form work etc. complete as described above.

5.0 MEASUREMENT:

5.1 Payment will be made on cubic meter basis on the volume of work done calculated on actual measurement of length, height and thickness. Any extra work over the specified dimensions shall be ignored. No extra payment will be made for cutting bricks, if required, either for openings or for rounding or for insertion at the time of construction of small fixtures in wall such as angles, joists, distribution boards, small size pipes, etc. No deduction will made for volumes occupied by such fixtures. No deduction shall be made for openings up to 0.1 square meter, cement concrete blocks for holdfasts/ holding down bolts. In calculating area of opening, any separate lintel or sills shall be included with the size of opening but end portions of lintel shall be excluded.

6.0 DAMP PROOF COURSE:

6.1 Proportions

One part of Portland cement, 2 parts of coarse sand, 4 parts graded stone

20mm down size mixed with water proofing compound CICO or approved water proofing compound @ 1 kg/bag of cement shall be used. The compound shall be mixed with the cement in the proportion specified by the manufacturer or as directed by the Engineer-in-charge.

6.2 Mixing

As per specification for cement concrete, compound will be first mixed dry with cement.

6.3 Laying

D.P.C. shall consist of 40mm thick or as specified cement concrete. The edges shall be finished smooth. Plank shuttering for edges must be used. The top surface shall be double checkered and cured by pounding for seven days. The item shall include formwork, finishing, leveling etc. all complete.

7.0 CEMENT CONCRETE (PLAIN & REINFORCED)

7.1 Mixing

All proportions shall be by volume or by weight as directed by Engineer-in-charge. Mixing shall be done in mechanical mixer. The cement and aggregate shall be thoroughly mixed together and the required quantity of the water shall be added to mixer only when all the cement and aggregate constituting one batch are in the drum. The concrete shall be mixed till the mixture is of uniform color. Mixing in a drum shall be continued for at least 2 minute after adding water. When in special cases hand mixing is allowed by the Engineer-in-charge. Measured quantity of coarse sand shall be spread evenly on a pucca watertight platform. Required quantity of cement shall be dumped on the sand and distributed evenly and mixed intimately with spade till mixing is of even color throughout. Measured quantity of coarse aggregate shall be spread on top of cement and sand mixture and mixing done by shoveling and turning till the coarse aggregate gets evenly distributed in the cement sand mixture. ¾ quantity of water required should be added in a hollow made in the middle of the pile with spade. The whole mixture is turn over again and again and remaining quantity of water added gradually. Mixing shall be continued till the mixture is of uniform color and consistency. Only such quantity of concrete shall be mixed which can be consumed in half an hour. In case of hand mixing 10% extra cement shall be added. No extra payment for cement thus added shall be made to the contractor.

7.2 Placing of Concrete

Concrete shall be conveyed and placed in final position in such a manner as to

prevent segregation and loss of any of the ingredients. The maximum height of drop and the method of placing concrete shall be approved by the Engineer-in-charge. The interval between adding water to dry ingredients and completion of placing of concrete shall not exceed 30 minutes and the concrete shall not be distributed once the setting of cement has commenced. The rate of placement of concrete shall be such that no cold joint is formed and fresh concrete is placed always against green concrete which is still plastic and workable.

7.3 **Protection**

Newly placed concrete shall be protected by approved means from frost, sun, dust, storms, rains and hot spells etc. Concrete placed below the ground shall be protected from falling earth. Ground having deleterious salts shall be kept free from contact with concrete at least for three days or otherwise directed thereafter.

Approved measure shall also be taken to protect immature concrete from damage by debris, excessive loading, vibration, abrasion, floating due to sub soil water and other influences that may impair the strength and durability of the concrete. This shall apply to all item of cement concrete such as foundations, sub grade, flooring, damp proofing and all other R.C.C. and P.C.C. items.

7.4 Following tests shall be done on concrete in field or lab,as the case may be.

a) Slump Test (Field Test)

The consistency of the mix shall be controlled by 'slump test' of the wet mix as per IS specification. The test shall be carried out at least twice aday, once at start of concreting and the other near the end of concreting. Quantity of water to be used for such mix shall be such that the concrete is of adequate workability for the placing condition of the concrete and can properly be compacted with the means specified. Generally quantity of water to be used for each mix of 50 kg cement shall not be more than 34 liters for 1:3:6 mix, 30 liters for 1:2:4 mix, 30 liters for 1:1/2:3 mix and 25 liters for 1:1:2 mix. In case of vibrated concrete the quantity of water may be reached to avoid segregation. The quantity of water shall be regulated by carrying out regular stump test at intervals as mentioned above. The slump and workability for different kinds of work shall be as under:

Slump and workability for different kinds of works

	Placing Conditions	Degree of Workability	Value of Workability

1.	Concreting of shallow sections with vibration	Very low	0.75 to 0.80 compaction of factor
2.	Concreting of lightly reinforced section with vibration	Low	Slump up to 22mm 10.5 seconds vee bee time or 0.80 to 0.85 compacting factor
3.	Concreting of lightly reinforced section without vibration or heavily reinforced section with vibration	Medium	25-75 mm slump for 20mm aggregate.
4.	Concrete of heavily reinforced section without vibration	High	75-125 mm slump for 20mm aggregate

b) Test of material and (lab test)

Upon the signing of the contract, the contractor shall provide and deliver to the engineer-in-charge, at his own expense samples of the sand and coarse aggregate he proposes to use. Such samples shall be in sufficient quantity to enable tests to be carried out on the individual materials and for the making and testing of concrete cubes if required by the engineer-in-charge. All expenses of testing shall be borne by the contractor.
Six preliminary test cubes 150 x 150 x 150 mm shall be made in the laboratory for prescribed mix three for testing at seven days and three at twenty eight days. The mean strength of set of three cubes shall not be less than the following:

Strength requirement of cement concrete (IS 456)

Grade of concrete	Compressive strength	
	After 7 Days	After 28 days
M (10) 1:3:6	07 N/mm^2	10 N/mm^2
M (15) 1:2:4	10 N/mm^2	15 N/mm^2
M (20) 1:1.5:3	13.5 N/mm^2	20 N/mm^2
M (25) 1:1:2	17 N/mm^2	25 N/mm^2

During the course of the work, test cubes shall be made from time to time as directed by the Engineer-in-charge from freshly mixed concrete taken from a batch prepared in the normal way for actual use in the works. The cubes shall be in sets of six numbers and tested in accordance with IS: 1999 (latest edition) and IS: 516 (latest edition).

Three cubes shall be tested at seven days and three at twenty-eight days. Test strength of each specimen should not vary +/- 15% of the average. The

concrete shall be deemed to comply with the strength requirements if the above test results meet the 'Acceptance Criteria' as per IS: 456 (latest edition).

In the event of a set of cubes failing to meet these strengths the engineer-in-charge may direct that any concrete represented by the cube be subjected to in-situ tests at the cost of the contractor. Depending on the result of such tests the Engineer may direct that the concrete be demolished and reconstructed at the expense of the contractor.

Workability testing shall be carried out in accordance with IS: 1199-1959. The results shall lie within the range upon which the accepted mix design is based. Testing shall be carried out at such frequency so that required workability ic constantly achieved.

Prior to the commencement of concreting, the contractor shall submit for approval of the engineer-in-charge details of his proposed arrangements for carrying out tests. The results of all tests shall be communicated to the engineer-in-charge as soon as possible. If the engineer so desires he may require that his representatives shall be present at any test.

Contractor shall maintain records in a register issued by engineer-in-charge duly certifying the number of pages in the register of all test results of cubes of concrete indicating location where the quantity of concrete to which the cube is related has been used. In case of test result of core, location from where core has been cut with the result shall be mentioned. An extract of such entries in the register shall be submitted to the engineer-in-charge.

In addition, a cement consumption & reinforcement steel record shall be maintained in the prescribed form in a register issued by the engineer-in-charge, certifying number of pages in the register by him.

c) *Tensile strength of concrete (Lab. Test)*

I. Flexural tests of beams (usually third point loading) for values of modulus of rupture.
II. Diametrical splitting of cylinder for tensile splitting strength.
III. Direct tensile tests using special shaped specimens or special gripping devices for direct tensile strength.

d) *Durability*

Concreting is to be done with care with low water/cement ratio, good compaction, careful curing, dry and graded aggregates, specified cement content so that concrete is almost impermeable and can resist weathering, chemical attack and abrasion.

7.5 ***Repairing and finishing of concrete***

All concrete surfaces either cast-in-situ or precast shall have even, clean finish, free from honeycombs, air bubbles, fins or blemishes. The joint marks

due to form work in concrete work exposed to view shall be rubbed out with carborundum stone and defects patched up with a paste of 1 part and 1 part cement and cured. The finishing shall be done to the satisfaction of the engineer-in-charge. Concrete surfaces to be subsequently plastered or where brick work is to be done it shall be raked as soon as the form is stripped off so that proper bond can develop.

7.6 *Curing and protection of concrete*

All fresh concrete shall be covered with a layer of hessian or similar absorbent material and kept constantly wet for a period of seven days or more from the date of placing of concrete as per directions of the engineer-in-charge. Curing may also be done by pounding. Steps shall be taken to protect immature concrete from damage by debris, excessive loading, vibration, abrasion, deleterious ground water, mixing with earth or foreign materials, floating etc. that may impair the strength durability of the concrete.

7.7 *Reinforcement*

All bars TMT for steel shall be cold bent by machines or by approved means. Bends, hooks and shapes shall confirm strictly to the dimension shown on drawings and unless otherwise mentioned, the bending dimensions shall confirm to IS: 2502. All binding shall be done by 16/18 gauge annealed soft iron wire. To ensure adequate cover steel bars shall be kept on small concrete cube or any suitable material as directed by engineer-in-charge. Sufficient number of chairs and hangers shall be used to keep the enforcement in position. Placing of reinforcement shall be completed well in advance of concreting. Before concreting, the reinforcement shall be inspected and approved for accuracy of placing, binding and cleanliness, by the engineer-in-charge. No placing of concrete shall be done before approval of reinforcement. Before reinforcement is covered contractor shall ensure that it is measured, checked by the component authority & properly recorded.

WORKMANSHIP
&
QUALITY STANDARDS

LIST OF I.S. CODE FOR THE REFERENCE

Materials used shall confirm to appropriate standards specified by the Indian standards institution/Bureau of Indian standards and unless other wise specified, these standards will form a part of these specifications in particular.

AEPPL herein clarifies that the IS codes mentioned in the technical specifications & in the list given below are for reference only.

The following or latest standards should be referred to-

AGGREGATES

IS: 383-1970 Coarse and find aggregate from natural sources for concrete
IS: 515-1959 natural and manufactured aggregates for use in mass concrete
IS; 1607-1960 Sand for plaster
IS: 2386 Methods of test for aggregate for concrete.
Part-I-1963 Particle size and shape.
Part-II-1963 Estimation of deleterious materials and organic impurities.
Part-III-1963 Specific gravity, density, voids, absorption and bulking.
Part-IV-1963 Mechanical properties.
Part-V-1963 Soundness.
Part-VI-1963 Measuring mortar making properties of fine aggregates.
Part-VII-1963 Alkali aggregate reactivity.
Part-VIII-1963 Pétrographiqueexaminateur.

CEMENT:

IS: 8112-1976 High strength ordinary Portland cement.

CONCRETE:

IS: 516-1959 Methods of tests for strength of concrete.
IS: 1199-1959 Methods of sampling and analysis of concrete.

REINFORCEMENT CONCRETE:

IS: 456-1978 Code of practice for plain and reinforcement concrete for general building Construction.
IS: 432 Mild steel and medium tensile steel bars and
IS: 1786-1985 High strength Deformed steel bars and wires for concrete reinforcement.

STRUCTURAL STEEL:

IS: 2062-1992 Steel for general structural purpose.

MISCELLANEOUS:

IS: 1020-1963 Conversion tables for ordinary use.

APPROVED MAKES

LIST OF APPROVED MAKES/SUPPLIERS

AS PER BOQ

BLANK BOQ: ONLY FOR REFERENCE

Note:

(1) Bidders shall comply the BOQ and signed & stamped on each page. This will be part of technical bid.

(2) Bidders shall submit all tender drawings duly signed and stamped along with Technical Bid.

Reference for BOQ for Construction of* boundary wall *at Indian Institute of Tropical Meteorology (IITM), Pune.

Sr. No.	Item Description	Qty.	Unit	Rate	Amount (Rs)
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.	600	cu.m		
a	Ordinary rock	150	cu.m		
b	Hard rock	120	cu.m		
2	Providing and laying cement concrete in retaining walls, return walls, walls (any thickness) including attached pilasters, columns, piers, abutments, pillars, posts, struts, buttresses, string or lacing courses, parapets, coping, bed blocks, anchor blocks, plain window sills, fillets, sunken floor,etc., up to floor five level, excluding the cost of centering, shuttering and finishing : 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size)	133	cu.m		
3	Random rubble masonry with hard stone in foundation and plinth including levelling up with cement concrete 1:6:12 (1 cement : 6 coarse sand : 12 graded stone aggregate 20 mm nominal size) upto plinth level with : 7.1.1 Cement mortar 1:6 (1 cement : 6 coarse sand)				
	a) In foundation	322.04			
	b) In R/R above ground level	134.46			

4	M-15 grade plain cement concrete (cement content considered@ 240 kg/cum) for fixing pole.	18	cu.m		
5	Plastering on top face & side wall at junction of angle of 450mm &100mm width along the wall. 15 mm cement plaster on rough side of single or half brick wall of mix 1:4 (1 cement: 4 coarse sand).	433	sq.m		
6	Pointing on stone work with cement mortar 1:3 (1 cement : 3 fine sand) : Flush/ Ruled pointing	600	sq.m		
7	Providing and laying cement concrete in retaining walls, return walls,walls (any thickness) including attached plasters, columns, piers,abutments, pillars, posts, struts, buttresses, string or lacing courses,parapets, coping, bed blocks, anchor blocks, plain window sills, fillets,sunken floor,etc., up to floor five level, excluding the cost of centering,shuttering and finishing	30	cum		
8	Providing and fixing M.S. angle 50x50x6 mm to act as nosing with lugs of M.S. flat 10x6 mm, 10 cm long, forked at end 60cm apart (minimum three lugs to be provided), including necessary febrication (Cuting/welding) and applying a priming coat of approved primer and synthetic enamel on exposed surface etc. complete. (inc. stay support)	3858	kg		
9	Providing and fixing G.I. chain link fabric fencing of required width in mesh size 25x25 mm made of G.I. wire of dia 3 mm including strengthening with 2 mm dia wire or nuts, bolts and washers as required complete as per the direction of Engineer-in-charge.	1330	sq.m		

10	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete upto plinth level. Mild steel and Medium Tensile steel bars kilogram mm steel bar for doing R.C.C at coping as well as 6mm Round bar at bottom & top of the net for prvoiding lateral strength. 664 x 3 x 0.39 (8mm) + 664 x 2 x .22 (6mm) = 1088 (Mild steel round bar 12 mm dia and below quintal.	11	Quintal		
11	75mm dia PVC pipe for drain out, at appropiate section of boundary wall, towards slope. @ after each post.	180	rm		
12	EXTERIOR FINISHING 13.44 Finishing walls with water proofing cement paint of required shade : New work (Two or more coats applied @ 3.84 kg/10 sqm)	600	sq .m		
13	Demolishing stone rubble masonry manually/ by mechanical meansincluding stacking of serviceable material and disposal ofunserviceable material within 50 metres lead as per direction ofEngineer-in-charge.	80	cu.m		
14	Providing and fixing in position including febrication M.S febricated Wiket Gates with vertical channels 20x10x2 mm and braced with flat iron diagonals 20x5 mm size, with top and bottom rail of T-iron 40x40x6 mm, with 40 mm dia steel complete with bolts, nuts, locking arrangement, stoppers, handles, including applying a priming coat of approved steel primer and synthetic enamel paint. All as directed by Engineering-in-Charge.	425	kg		
	Total				

TENDER FOR CONSTRUCTION OF BOUNDARY WALL
INDIAN INSTITUTE OF TROPICAL METEOROLOGY,
PASHAN, PUNE-411008

Volume -II

(COMMERCIAL BID)

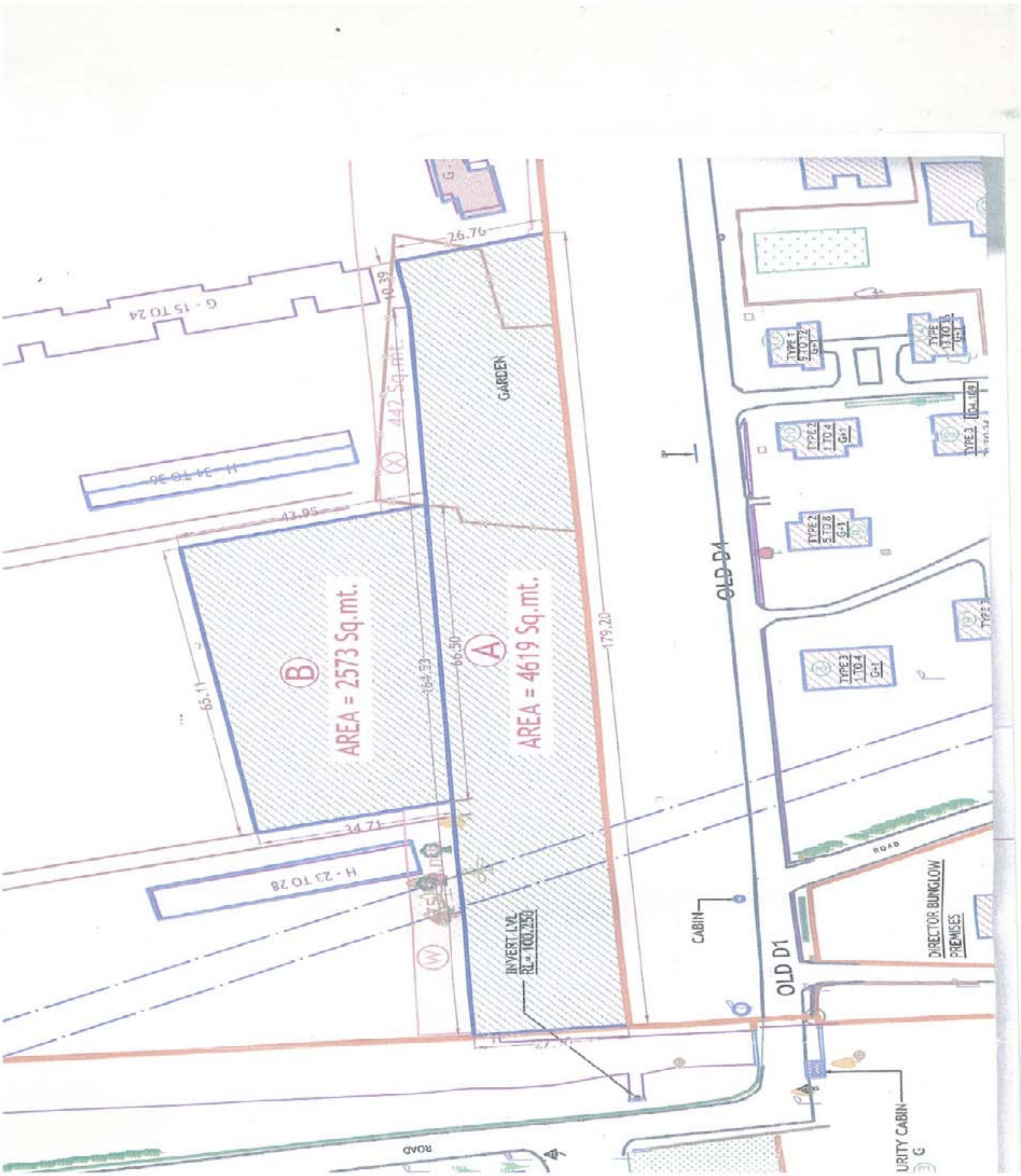
INDIAN INSTITUTE OF TROPICAL METEOROLOGY,
DR.HOMI BHABA ROAD, PASHAN, PUNE-411008

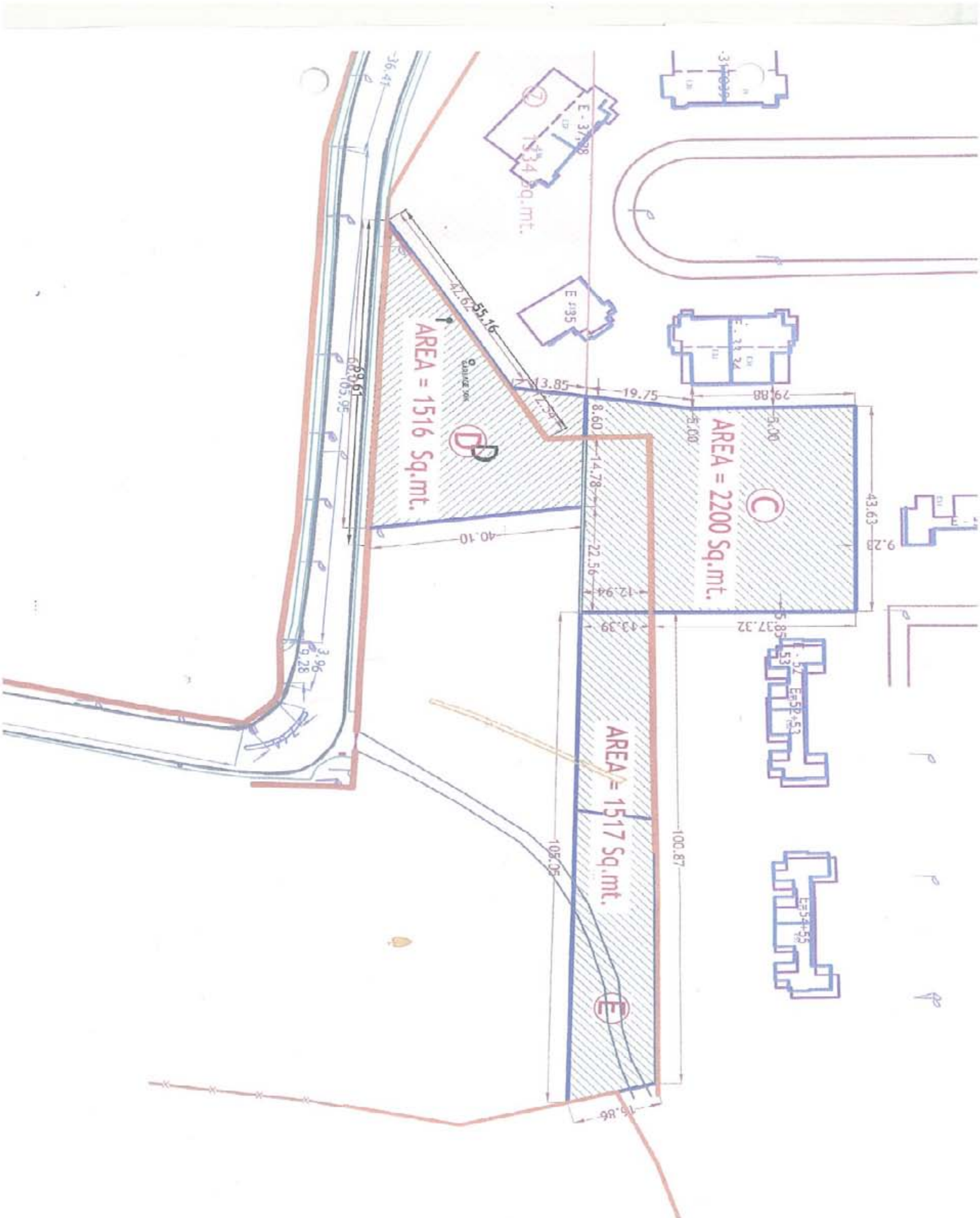
BOQ (Prcie Bid) for Construction of boundry wall at Indian Institute of Tropical Meteorology (IITM), Pune.

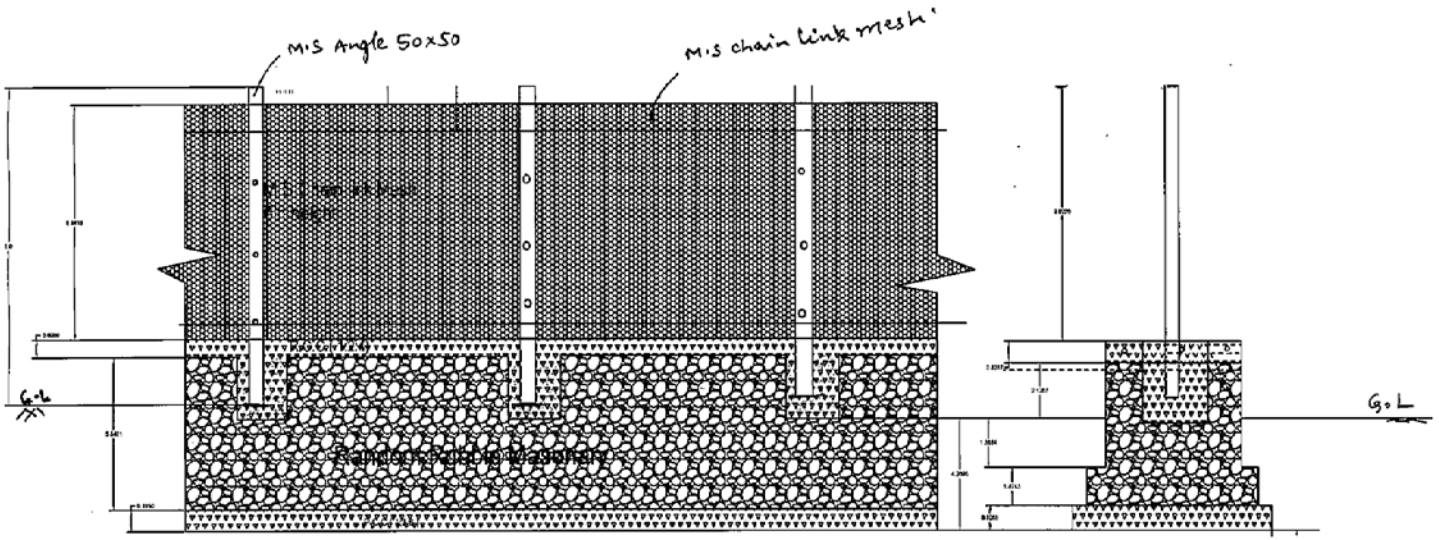
Sr. No.	Item Description	Qty.	Unit	Rate	Amount (Rs)
1	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, lift upto 1.5 m, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.	600	cu.m		
a	Ordinary rock	150	cu.m		
b	Hard rock	120	cu.m		
2	Providing and laying cement concrete in retaining walls, return walls, walls (any thickness) including attached pilasters, columns, piers, abutments, pillars, posts, struts, buttresses, string or lacing courses, parapets, coping, bed blocks, anchor blocks, plain window sills, fillets, sunken floor,etc., up to floor five level, excluding the cost of centering, shuttering and finishing : 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size)	133	cu.m		
3	Random rubble masonry with hard stone in foundation and plinth including levelling up with cement concrete 1:6:12 (1 cement : 6 coarse sand : 12 graded stone aggregate 20 mm nominal size) upto plinth level with : 7.1.1 Cement mortar 1:6 (1 cement : 6 coarse sand)				
	a) In foundation	322.04			
	b) In R/R above ground level	134.46			

4	M-15 grade plain cement concrete (cement content considered@ 240 kg/cum) for fixing pole.	18	cu.m		
5	Plastering on top face & side wall at junction of angle of 450mm &100mm width along the wall. 15 mm cement plaster on rough side of single or half brick wall of mix 1:4 (1 cement: 4 coarse sand).	433	sq.m		
6	Pointing on stone work with cement mortar 1:3 (1 cement : 3 fine sand) : Flush/ Ruled pointing	600	sq.m		
7	Providing and laying cement concrete in retaining walls, return walls,walls (any thickness) including attached plasters, columns, piers,abutments, pillars, posts, struts, buttresses, string or lacing courses,parapets, coping, bed blocks, anchor blocks, plain window sills, fillets,sunken floor,etc., up to floor five level, excluding the cost of centering,shuttering and finishing	30	cum		
8	Providing and fixing M.S. angle 50x50x6 mm to act as nosing with lugs of M.S. flat 10x5 mm, 10 cm long, forked at end 60cm apart (minimum three lugs to be provided), including necessary welding and applying a priming coat of approved primer and synthetic enamel on exposed surface etc. complete. (inc. stay support)	3858	kg		
9	Providing and fixing G.I. chain link fabric fencing of required width in mesh size 25x25 mm made of G.I. wire of dia 3 mm including strengthening with 2 mm dia wire or nuts, bolts and washers as required complete as per the direction of Engineer-in-charge.	1330	sq.m		

10	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete up to plinth level. Mild steel and Medium Tensile steel bars kilogram mm steel bar for doing R.C.C at coping as well as 6mm Round bar at bottom & top of the net for providing lateral strength. 664 x 3 x 0.39 (8mm) + 664 x 2 x .22 (6mm) = 1088 (Mild steel round bar 12 mm dia and below quintal.	11	Quintal		
11	75mm dia PVC pipe for drain out, at appropriate section of boundary wall, towards slope. @ after each post.	180	rm		
12	EXTERIOR FINISHING 13.44 Finishing walls with water proofing cement paint of required shade : New work (Two or more coats applied @ 3.84 kg/10 sqm)	600	sq .m		
13	Demolishing stone rubble masonry manually/ by mechanical meansincluding stacking of serviceable material and disposal ofunserviceable material within 50 metres lead as per direction ofEngineer-in-charge.	80	cu.m		
14	Providing and fixing in position including febrication M.S febricated Wiket Gates with vertical channels 20x10x2 mm and braced with flat iron diagonals 20x5 mm size, with top and bottom rail of T-iron 40x40x6 mm, with 40 mm dia steel complete with bolts, nuts, locking arrangement, stoppers, handles, including applying a priming coat of approved steel primer and synthetic enamel paint. All as directed by Engineering-in-Charge.	425	kg		
	Total				


AREA = 2573 Sq.mt.
AREA = 4619 Sq.mt.
442 Sq.mt.
GARDEN
OLD D4
OLD D1
CABIN
DIRECTOR BUNGLOW PREMISES
INVERT LVL RL = 100.250
ROAD
H - 34 TO 36
H - 23 TO 28
G - 15 TO 24
26.76
10.39
43.95
65.11
34.71
164.53
66.50
179.20


AREA = 1516 Sq.mt.
D
AREA = 2200 Sq.mt.
C
AREA = 1517 Sq.mt.
E
55.16
42.62
13.85
19.75
29.88
43.63
9.23
37.32
40.10
22.56
12.94
13.39
14.78
8.60
100.87
15.86



FRONT ELEVATION

C/S

CONSTRUCTION OF BOUNDARY AT IITM PUNE