TENDER ID: MUM202506007

STATE BANK OF INDIA

GLOBAL MARKETS,
14TH FLOOR, CORPORATE CENTRE,
NARIMAN POINT,
MUMBAI 400021.

PART – A: TECHNICAL BID

INVITATION OF E-TENDERS

FOR

PROPOSED INTERIOR WORKS AT 1ST TO 4TH FLOORS OF LHO, MUMBAI METRO BUILDING LOCATED AT BANDRA KURLA COMPLEX, MUMBAI 400051

TENDER SUBMITTED BY:

NAME : _____

ADDRESS : _____

_____

DATE : _____

EMAIL: : _____

ARCHITECT:

M/S WORKSPHERE VENTURES (INDIA) PVT LTD,
407 - 414, Exim Link, Mulund Goregaon Link Road,
Nahur West, Mumbai 400078
Contact Number: 9321899033
E-mail: swapnil@workspherearchitects.com

CLIENT:

THE DEPUTY GENERAL MANAGER (OPS)
State Bank of India, Global Markets,
14th Floor, Corporate Centre, Nariman Point, Mumbai-400021.
Tel: 022 2274 2296
E-mail: operations.gmu@sbi.co.in

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NOTICE INVITING TENDERS

TENDER ID: MUM202506007

TENDER FOR: PROPOSED INTERIOR WORKS AT 1ST TO 4TH FLOORS OF LHO, MUMBAI METRO BUILDING LOCATEDAT BANDRA KURLA COMPLEX, MUMBAI

SBI, Global markets, Corporate Centre, Mumbai invites E-tenders for captioned work from firms / contractors of repute satisfying the set eligibility criteria in two bid system for the following work who are only entitled to quote for this tender.

Details of the tenders are as under:

Sr.No.	Particulars	Details
1	Name of work	Tender for Proposed Interior works at 1st to 4thfloors of LHO, Mumbai Metro Building at Bandra Kurla Complex, Mumbai.
2	Nature of Work	Interior furnishing, Supply and installation of furniture, fixtures, furnishing items, electrical, data cabling, HVAC and fire fighting systems, etc.
3	Estimated Cost put to Bid	**Rs. 35,98,57,147.00**(Rupees:- **Thirty-five crores ninety eight lakhs fifty seven thousand one hundred and forty seven only.)** Interior & Furniture Works: Rs. 23,32,65,544.00 Electrical Works: - Rs. 5,78,36,445.00 HVAC Works: - Rs. 4,77,31,573 IT/ Data Cabling Works: - Rs. 2,10,23,585
4	Time allowed for completion	**03 months (Including monsoon and public holidays)**
5	Earnest Money Deposit	**Rs.36,00,000/- (Rupees Thirty SixLakhOnly)** by means of Demand Draft / Pay Order (Valid for a period of 90 Days from the last date of submission of the tender) from any scheduled Nationalized Bank drawn in favor of Deputy General Manager (Ops), State Bank of India and payable at Mumbai.
6	Initial Security Deposit (ISD)	2% of contract amount (EMD will be returned on receipt of ISD). The successful bidder(s) shall be responsible to deposit Initial security deposit @ 2% of the Contract Value by way of demand draft in favor of Deputy General Manager (Ops), State Bank of India and payable at Mumbai within 10 days from the date of receipt of "Work Order" from SBI/Architects. The SBI may consider accepting ISD in the form of Bank Guarantee issued by any Scheduled Bank in the format supplied/approved by the SBI within its sole discretion but the same cannot be considered as a right of the bidder.
7	Additional security Deposit	In case L-1 bidder quotes abnormally low rates (i.e.10% or more, below estimated cost put to tender), the bank may ask such bidder to deposit Additional Security deposit (ASD)/Additional performance Guarantee (APG) shall be applicable if the bid price is below 10 % of the estimated cost put to tender. The amount of such ASD/ APG shall be the difference between 90 % of estimated cost put to tender and the quoted price,for due fulfillment of contract. Such ASD

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		could be in the form of FDR / Bank's guarantee in the Bank's name as per format approved by the Bank. On successful completion of work ASD will be returned to the contractor. In case contractor fails to complete the work in time or as per tender specification or leave the job incomplete, the bank will be at liberty to recover the dues from ASD or to forfeit such ASD as the case may be within its sole discretion.
8	Date of availability of tender documents on Service Provider's website	
	(a) **Online Technical Bid**	**26.06.2025 to 16.07.2025** Available at M/s e-Procurement Technologies Ltd., our Service Provider's portal https://etender.sbi/SBI
	(b) **Online Price Bid**	**26.06.2025 to 16.07.2025** Available at M/s e-Procurement Technologies Ltd., our Service Provider's portal https://etender.sbi/SBI
	(c) Last date and time for receipt of written queries for clarification from bidders for Pre-bid meeting.	**02.07.2025 at 05.00 PM** **(Bid Queries to be sent to operations.gmu@sbi.co.inonly)** Note: The intended bidders, along with queries have to mail the details of authorized representative viz name, mobile no., e-mail id along with authorization letter from the bidder.
	(d) Date of **Pre-bid meeting and address** of Pre-bid meeting	**At 11:00 AM on 04.07.2025** Office of The Deputy General Manager (Ops), Global Markets, State Bank of India, 14th Floor, Corporate Centre, Nariman point, Mumbai. (Max. Two representatives per bidder will be allowed to participate). Pre-Bid queries, if any, will be posted on Bank's website by **07.07.2025.** (Only written queries submitted by the bidders till stipulated date and time will be discussed and clarified in the meeting).
9	Last date & time for submission of submission of online bid, original EMD, copy of receipt of deposition of original EMD and other documents as specified in the bid document	**16.07.2025 by 02:00 PM** Note: It is sole responsibility of the bidder to ensure submission of their EMD with tender document by stipulated date and time at specified address failing which they will be disqualified.
10	Address for submission of EMD	The Deputy General Manager (Ops), Global Markets, State Bank of India, 14th Floor, Corporate Centre, Nariman point, Mumbai.
11	Last date & time for submission of Online Technical & Price bid	**16.07.2025 by 02:00 PM**at Service Provider's portal https://etender.sbi/SBI
12	Date and Time of opening of Online Technical Bid	**16.07.2025 by 04:00 PM**
13	Date and Time of opening of Online Price Bid	To be intimated to qualified contractors on their provided email-IDs after scrutiny / approval of technical bids

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14	Defects Liability period	One year from the date of virtual completion of work / Fi handing over of the site, whichever is later.
15	Liquidated Damages	0.50% per week subject to max. 5% of contract amount for delay in completion of work.
16	Validity of offer	90 days from the date of opening of Price-bid
17	Value of Interim Certificate	**Rs. 360.00 Lacs** (**Rs. Three Crore Sixty Lacs Only**) No advance on materials / plant / machinery or mobilization advance shall be paid under any circumstances
18	**Submission of Technical Bid**	1. Contractors shall download the entire Technical Bid to get acquainted with the terms and conditions and **shall upload compulsorily the required documents of the Technical Bid** without fail in the e-tendering portal after putting the signature and seal. Failing to upload as stated above, the tender will be rejected. 2. However, **L1 Tenderer** should submit the whole technical bid spirally bound securely and in serial order containing all pages duly signed with company seal and date to this Office within 15 days of receipt of confirmation. Failure to submit the hardcopy of Technical Bid may render the bidder disqualifies.
19	**Note:-**	1.The make of materials should be chosen strictly from the preferred makes as given in the tender. 2.Any clarifications sought after opening of the tenders will not be entertained at any cost. 3. Bidder should visit the website till last date of submission for changes/ corrigendum, if any. 4. Bank reserves the right to cancel or postpone the tenders at any stage without assigning any reason. 5.Claims for revision of the Quoted price by any bidder after the tender will not be entertained.
20	**e-Tender Service Provider Contact persons:** Primary Contact Numbers: - M:- 9081000427, 9904407997 . 1. Jaymeet Rathod: 079-68136829, jaymeet.rathod@eptl.in 2. Vinayak Khambe: 079-68136835, vinayak.k@eptl.in 3 Nadeem Mansuri: 079-68136853, nadeem@eptl.in, 4. Nandan Valera: 079-68136843, nandan.v@eptl.in 5. Hemangi Patel: 079-68136852, hemangi@eptl.in 4 Kanchan Kumari: 079-68136820, kanchan.k@eptl.in 5 Deepak Narekar: 079-68136863, deepak@eptl.in 6 Anshul Juneja: 079-68136840, anshul.juneja@eptl.in 7. Salina Motani: 079-68136831, salina.motani@eptl.in 10. Devang Patel: 079-68136859, devang@eptl.in	

21. The intending bidder must read the tender terms and conditions carefully. He should only submit his bid if he considers himself eligible and he is in possession of all the documents required. No conditions other than mentioned in the tender will be considered, and if given they will have to be withdrawn before opening of the price-bid.

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22. This information and instructions for bidders posted on website shall form part of bid document.

23. The bid document consisting of plans, specifications, schedule of quantities of various types of items to be executed and the set of terms & conditions of the contract to be complied with and other necessary documents can be seen and downloaded from website **http://etender.sbi/SBI/ or www.bank.sbi** free of cost.

24. The intending bidder must have valid class-III digital signature certificate with encryption key (combo type) to perform any operations/transactions on the e-tendering portal / website and the bidder should download and install the eMsigner on their system as per instruction available on download section of https://etender.sbi/SBI/

25. On opening date, the bidder can login and see the bid opening process. After opening of bids he will receive the competitor bid sheets.

26. Bidder can upload documents in the form of **JPG** format and **PDF** format. Bidder should ensure that the document uploaded is legible and full documents page is properly scanned Certificate of Financial Turn Over: At the time of submission of bid contractor may upload Affidavit/Certificate from CA mentioning Financial Turnover of last 5 years or for the period as specified in the bid document and further details if required may be asked from the contractor after opening of technical bids. There is no need to upload entire voluminous balance sheet.

27. The Technical Bid shall be opened first on due date and time as mentioned above. The time and date of opening of financial bid of contractors qualifying the technical bid shall be communicated to them at a later date.

28. SBI reserves the right to reject any prospective application without assigning any reason thereof and to restrict the list of qualified bidders to any number deemed suitable by it, if too many bids are received satisfying the minimum laid down criteria.

29. SBI reserve their rights to accept or reject any or all the tenders, either in whole or in part without assigning any reason for doing so and any claim / correspondence shall be entertained in this regard.
30. Tenders received without EMD (in original) shall be summarily rejected and such tenders shall not be allowed to participate in the online price bidding process.

31. In case the date of opening of tenders is declared as a holiday, the tenders will be opened on the next working day at the same time.

32. The bid become not eligible if bidder does not upload scanned copies of all the documents stipulated in the bid document (including GST Registration and as stipulated in the bid documents).

33. For any clarifications regarding E-Tendering procedure, System requirements etc. please contact M/s E-Procurement Technologies Limited, Ahmedabad, whose address is mentioned in the NIT.

Yours Faithfully,

For M/s. Worksphere Ventures (India) Pvt Ltd, Mumbai
Ar. Padmapani Tilwe
Architect & Interior Designer

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MINIMUM ELIGIBILITY CRITERIA FOR PRE-QUALFICATION

The Firms / Contractors applying must fulfil each of the following criteria as interior decoration firm. The applications of the firms/contractors not fulfilling the following criteria will not be considered for pre-qualification.

The Companies / Firms that fulfill the criteria as given below shall be eligible:

a) i. The Company should be either a Partnership or a Public Limited Company or a Private Limited Company or Proprietorship firm registered under the Indian Companies Act 1956.

ii. The Company / Firm should have valid registration with Central/ State Govt. bodies / Public sector Undertakings, PSB's / Nationalized Banks / MES / Railway etc.

b) The firm / company should have an experience of minimum **07** years in relevant field i.e. Interior Renovation of Commercial buildings as on **31.03.2025**.

c) The firm / company should have registration with GST, PF, ESIC, PAN No. and Prof. Tax etc. (as applicable) submit the proof of the same.

d) The firm should have current and valid Electrical Contractor license issued by relevant Government Authorities.

e) The firm should produce acknowledgement and copy returns of IT for the last three years.

f) **Bidders / Contractors** who fulfill the following requirements shall be eligible to apply. Joint ventures are not accepted.

g) The bidder should have satisfactorily completed the works mentioned below during the last **7 (seven) years** ending on **31.03.2025:**

At least one similar project of minimum **Rs.28.80 Crores** each or two similar projects **of minimum Rs.18.00 Crores** each or three similar projects of minimum **Rs.14.40 Crores** each during **last 7 years ending on 31.03.2025**. These projects should be Interior renovation of **Commercial Building projects** and the value of work mentioned is excluding GST.

"Similar Works":- The definition of similar work shall mean completed Interior Renovation Works which should include Civil, Interior,Furniture, Plumbing & Sanitary, Waterproofing, HVAC,Eletrical,IT,CCTV works etc (all the components executed under single contract) executed for Commercial buildings for Central Govt. Dept./State Govt. Dept./ Semi Govt. Dept. / PSU / Public sector Banks / Reputed Private Sector Organisations listed on Stock Exchange/ NSE/ BSE during last 7 years as on 31.03.2025. Please refer brief description of work contained in this document. The work order and the completion certificate shall clearly indicate works completed pertaining to the above-mentioned services and as such the break-up thereof, which has to satisfy the minimum works qualifying criteria.

h) **Average Annual Financial Turnover:**
Bidder should have had Average Annual Financial Turnover of **Rs. 10.80 Crores** on interior renovation works during the last three years ending 31st March 2025. Scanned copy of Certificate from CA with Unique Document Identification Number (UDIN) to be uploaded, in support of claim.

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i) **Profit/Loss:**

Bidder should not have incurred any loss (profit after tax should be positive) in more than two years during the last five years ending 31st March 2025. (Standalone financial statement), duly audited and certified by the Chartered Accountant.

j) **Solvency Certificate:**

Bidder should submit a Solvency Certificate from a Scheduled Commercial Bank for Rs.**10.80 Crores**issued after 1st April, 2025 *as per* ***Form-B*** *of this tender document.*

NOTE:-

1. Only works executed in India shall be considered for similar work.

2. Qualified similar works shall be physically inspected by the SBI Officials/ Project Architect to ascertain the completion, performance on Quality of works for finalizing the technical bids.

3. If private work is shown in support of eligibility criteria, certified copy of Tax deducted at source (TDS) Certificate Form 16A and 26A shall be submitted along with the experience certificate and TDS amount shall tally with the actual amount of work done. Otherwise, the amount that tally with TDS shall only be considered for eligibility.

4. Work of specialized E&M services if executed under a separate contract may be considered for the purpose of assessing the technical competency only without adding its monetary value for determining the eligibility criteria.

5. Components of work executed other than those included in definition of similar work shallbe deducted while calculating the cost of similar work.. The bidder shall submit abstract of cost of work along with supporting documents and certificate issued by the experience issuing authority in support of this.

6. Completion of work for the purpose of considering experience shall mean completion of entire work in contract and not completion of some portion of the contract even though some portion may be satisfying the magnitude and physical attributes of similar work.

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APPLICATION FORM

Pre-Qualification of Contractors / Firms for Proposed Interior works at 1st to 4th floors of LHO, Mumbai Metro Building at Bandra Kurla Complex, Mumbai

(Please read the Application Documents carefully before filling-up)
(Please strike-off which is not applicable)

1	Name of the Contractor / Firm	
2a	Full Postal Address of Contractor / Firm	
2b	Telephone & Mobile No.	
2c	Email ID	
3	Main Activities of Contractor / Firm (Please use additional sheet, if required)	
4	Year of establishment of Contractor/ Firm (Enclose certified copies of relevant documents)	
5	Constitution of Firm (Enclose certified copies of relevant documents)	Sole Proprietorship / LLP / Partnership/ Private Ltd. / Public Ltd. / Any other (Please specify)
6	Name of the Proprietor / Partners / Directors of the Organization / Firm.	1. 2. 3.
7a	Details of Authorized Signatory (i)Name of Authorized Signatory	
	(ii) Phone No.	
	(iii) Mobile No.	
	(iv) Email-ID	
7b	Mode of Authorization of Authorized signatory (Enclose certified copies of relevant documents as)	Resolution / Partnership Deed / Registered Power of Attorney /Proprietor/any other (please specify)

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8	Whether registered with the registrar of companies / Registrar of firms. If so, mention number and dates. (Enclose certified copies of relevant documents)	
9a	PAN No. (Income tax) (Enclose certified copies of relevant documents)	
9b	GST No. (Enclose certified copies of relevant documents)	
9c	PF Registration No. (Enclose certified copies of relevant document**s)**	
9d	ESIC Registration No. (Enclose certified copies of relevant documents as)	
10	If Registered in the Panel of other Organizations such as CPWD, PWD, MES, Banks etc. Mention Name of Organization, Registration No. & Date and Category(Enclose certified copies of relevant documents)	
11 a	Banker's Details: (Enclose certified copies of Cancelled Cheque) (i) Banker's Name	
	(ii) Full Postal Address of Branch	
	(iii) Telephone No.	
	(iv) Account No.	
	(v) Type of Account	
11 b	Solvency Limit (Enclose certified copies of relevant document**s)**	
12 a	Yearly turnover of the Firm during the last 03 financial years (Enclose copy of Affidavit / Certificate from Chartered Accountant mentioning turnover of last 03 financial years)	F.Y. 2024-25: F.Y. 2023-24: F.Y. 2022-23: Average :
12 b	Profit & Loss Statement of the last 03 financial years (Enclose self- certified one page summarized balance sheet (audited) and one page of summarized Profit & Loss Account for the last 03 years collectively**)**	F.Y. 2024-25: F.Y. 2023-24: F.Y. 2022-23:

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13	Whether last three years IT returns filed (Please enclose certified copies of the IT Returns of 2022-23, 2023-24 and 2024-25) (Enclose certified copies of relevant documents Certificates)	Yes / No
14	Details of similar works executed & completed. (Enclose certified copies of Work Completion Certificates)	Please fill up enclosed **Annexure-I** & enclose copies of Work Order & Work Completion Certificates)
15	Details of similar works on hand.	Please fill up enclosed **Annexure-II**
16	Please attach certified copies of Performance Report of at least 3 works referred to in Annexure-I	Attach Performance Reports duly filled- in & signed by the Competent Authority of the Client as per **Annexure-III**
17	Any other relevant information	Fill and attach as **Annexure-IV**
18	Name, Address, Email and Contact Nos. of at least 3 persons who are in position and competent to report about the quality and performance of your Firm. (These 3 persons should have been associated with any 3 completed similar works mentioned in Annexure-I).	
19	Details (including status) of all the disputes (including Litigation, Arbitration, Mediation etc.) pertaining to interior renovation Contracts between Applicant's Firm and Clients during the last 07 years (i.e. from 31.03.2018) (Please use additional sheet, if required)	
20	Details of all delisting / debarring / blacklisting / de-paneling etc. of the Applicant Firm by any Organization / Client during the last 07 years (i.e. from 31.03.2018)	
21	Details (Name, Designation, PF No.) of near relatives working in State Bank of India. (for definition of near relatives please refer Instructions, Terms and Conditions)	

(**Note:- All Enclosures must be self-certified by Authorised Signatory)**

1. I/We have read and understood all the contents of these Application Documents and are acceptable to us.I/We also certify that my/our firm fulfils the ELIGIBILITY CRITERIA for this work.

2. I/We hereby confirm and certify that the information given above are correct and true and the Annexures / Enclosures etc. enclosed herewith are genuine.

3. I/We are authorized to sign and submit the Application Documents for pre- qualification.

4. I/We understand and agree that if at any stage it is found/ noticed by the Bank that any information provided by us is untrue / incorrect, partly or fully and / or concealed in these Application Documents and / or also in case of receipt of any adverse/ unsatisfactory report from previous or present clients/ Bankers, the Bank on its own discretion may reject application at any stage and/or may de-list us from PQ/Empanelment List and/or may take any other appropriate action.

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5. I/We also understand and agree that partly / wrongly filled application and / or applications not on prescribed proforma and / or applications not accompanying relevant Documents / Enclosures / Annexures and Application Documents not signed by the Authorised Signatory and / or received after the due date and time are liable to be summarily rejected by the Bank at its own discretion.

6. I/We understand and agree that this is merely an application/ and does not entitle us to be necessarily pre-qualified by the Bank and/or invite us for participation intender process and Bank reserves the right to reject all and / or any application without assigning any reason thereof.

(Signature of Authorised Signatory) **(Seal of the Firm)**

Name: ……

Designation in Firm:……

Place: ……

Date ……

(Please ensure to enclose all annexures / enclosures / relevant documents etc with application documents before submitting)

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Annexure –'I'

COMPLETED WORKS

DETAILS OF ELIGIBLE SIMILAR NATURE OF WORKS COMPLETED DURING THE LAST SEVEN YEARS ENDING 31ST MARCH 2025.

Important - (Please mention all Amounts **without GST**)

S.No.	Particulars	Similar work - 1	Similar work – 2
1	Name of Work/Project		
2	Site Address		
3	Name of Client /Organization		
4	Name		
	Designation		
	Contact No.		
	Email Id		
	Address of Officer i/c of Client to whom reference can be made		
5 A	Estimated Cost as per Tender floated / issued	Rs. Crores	Rs. Crores
5 B	Contract Cost	Rs. Crores	Rs. Crores
6	Completion Cost	Rs. Crores	Rs. Crores
7	**Completion Cost of Interior works with Civil, Electrical, HVAC, Furniture etc.**		
8	No. of Floors		
9	Total Built up Area	Sq.Mt.	Sq.Mt.
10	Total Carpet Area	Sq.Mt.	Sq.Mt.
11 A	Date of Start of Work as per Contract / Work Order		
11 B	Actual Date of Start of Work		

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12 A	Scheduled date of Completion of work as per Contract		
12 B	Actual Date of Completion of Work		
13 A	Stipulated Period of Completion as per Contract (Months)		
13 B	Actual Time taken in Completion (in Months)		
14	Number of Authorized Extension granted by Client		
15	Reasons of Delay		
16	Penalty / LD Amount		
17	Details of Dispute / Litigation, if any		
18	Any other relevant information, if the applicant wants to furnish.		

Additional Sheets on the same format may be used, if required.

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Annexure –'II'

WORKS IN HAND

DETAILS OF ELIGIBLE SIMILAR NATURE OF WORKS IN HAND DURING THE LAST SEVEN YEARS ENDING 31ST MARCH 2025.

Important - (Please mention all Amounts **without GST**)

S.No.	Particulars	Similar work - 1	Similar work – 2
1	Name of Work/Project		
2	Site Address		
3	Name of Client/ Organization		
4	Name		
	Designation		
	Contact No.		
	Email Id		
	Address of Officer i/c of Client to whom reference can be made		
5 A	Estimated Cost as per Tender floated / issued	Rs. Crores	Rs. Crores
5 B	Contract Cost / Value	Rs. Crores	Rs. Crores
6	No. of Floors		
7	Total Built up Area	Sq.Mt.	Sq.Mt.
8	Total Carpet Area	Sq.Mt.	Sq.Mt.
9	Date of Start at site		
10	Present Status of Work / Progress at Site		

Additional Sheets on the same format may be used, if required.

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Annexure –'III'

PERFORMANCE REPORT

(Should be on letterhead of the client and should be signed and stamped by the client)

Important - (Please mention all Amounts **without GST**)

S.No.	Particulars	Details
1	Name of Work	
2	Location	
3	Estimated Cost	Rs.
4	Tendered Cost	Rs.
5	Actual Completion Cost	Rs.
6	Date of Start	
7 A	Stipulated Date of Completion	
7 B	Actual Date of Completion	
8	Any Liquidated Damages / Penalty / Levy decided, if Yes, Amount	Yes / No Rs.
9	Performance Report	Outstanding / Very Good / Good / Average / Poor
(i)	Quality of Work	Outstanding / Very Good / Good / Average / Poor
(ii)	Timely Execution	Outstanding / Very Good / Good / Average / Poor
(iii)	Integrity as regard to Working	Outstanding / Very Good / Good / Average / Poor
(iv)	Ease in settling Extra Items	Outstanding / Very Good / Good / Average / Poor
(v)	Resourcefulness	Outstanding / Very Good / Good / Average / Poor
(vi)	Technical Proficiency	Outstanding / Very Good / Good / Average / Poor
(vii)	Litigation	Yes / No
(viii)	General Behavior / Conduct	Outstanding / Very Good / Good / Average / Poor
10	Additional Information / Re-marks	

Additional Sheets on the same format may be used, if required.

(Signature of Officer/Engineer Incharge) (Seal of the Client)
(Not below Ex. Engineer or Equivalent of the Client)

Designation: Date:

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Annexure –'III-A'

ASSESSEMENT OF QUALITY

FORMAT OF THE ASSESSEMENT OF QUALITY FOR COMPLETED AS WELL AS ON GOING WORKS (WOULD BE ASSESSED BY THE BANK ALONG WITH THE CONSULTANTS DURING THE STAGE OF PRE-QUALIFICATION / INSPECTION OF THE WORKS OF THE BIDDERS AS A PART OF THE DUE-DILIGENCE FOR ASSESSING THEIR CAPABILITIES)

Name of work:

Date of Inspection:

Date of submission of report:

(A) General Observation & Operational Aspects		**Yes/No**
1	Availability of approval from local bodies in case of Interior Works of Private Buildings	
2	Availability of approved Fire NOC & other necessary permissions	
3	Availability of As-built drawings with the Vendor	
4	Whether Line & level Maintained	
5	Quality of Shop drawings prepared by Contractors	
6	Any Structural defects/distress observed. If yes give details	
7	Whether safety measures/safety assurance plan adopted at site as per CPWD Safety Code and or govt. guidelines are adequate or not	
8	Whether the Welfare facilities provided to labour as per Govt. guidelines are adequate or not (documented proof to be m available)	
9	Whether AHU getting automatically switched off and fire damps closed in case of fire signal?	
10	Whether thimbles used for termination of wires in DBs, EBDs & Panels?	
(B) Quality of Work		**Mark Assessed**
1	Quality of plaster/finishing	
2	Quality of False Ceiling	
3	Quality of Flooring	
4	Quality of Wall Finishing	
5	Quality of junctions and terminations of various materials	
6	Quality of Stone Work	
7	Quality of Wood Work	
8	Quality of Steel Work/ Aluminium Work	
9	Quality of Plumbing and Sanitary Installation	
10	Quality of Workmanship	
11	Quality of Waterproofing	
12	If cladding done, observation on efficiency/Quality of cladding / Brick work	
13	Quality of internal electrification work	
14	Quality of DBs, EBDs &Panels	
15	Quality of E&M equipment's, panels & feeder pillar	

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16	Quality of fire alarm system/firefighting system	
17	Quality of Air Conditioning work	
18	Quality of Sub-station/electrical panel room based on complete live diagram, capacitor panel, power factor, insulating Mat, cleanliness,Cable termination, earthing pits, earthing of transformer/DG sets	
19	Any Other aspect (To be elaborated)	

Annexure –IV

OTHER RELEVANT INFORMATION

Details of Technical Staff with Firm / Contractor				
A	Name of Manager / Engineer / Supervisor	Qualification	With Firm for how many years	Total Experience in Years
1				
2				
3				
4				
5				
6				
7				
8				
9				
Details of own Equipment etc with Firm / Contractors (Mixer / Batching Plant / Testing Equipment's / Shuttering / Centering etc.				
B	Name of Equipment	Unit (Nos / Sq. Mt. etc)	Quantity	Specifications / Quality
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

(Please Use additional sheets on same Format, if Required)

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FORM 'A'
FINANCIAL INFORMATION

I. Financial Analysis: Details to be furnished duly supported by figures in balance sheet / profit & loss account for the **last five years duly certified and audited by the Chartered Accountant, as submitted by the applicant to the Income Tax Department (Copies to be attached):**

(Amounts - Rupees in Lakhs)

Sr. No.	Particulars	Financial Year				
		2020-21	2021-22	2022-23	2023-24	2024-25
i	Gross annual Turnover on interior renovation works					
ii.	Profit/Loss (standalone financial statement and consolidated financial statement both).					

II. Financial arrangements for carrying out the proposed work.

Signature of Chartered Accountant with Seal

Signature of Bidder(S)

Signature & Seal of Contractor

FORM 'B'

FORM OF BANKERS' / SOLVENCY CERTIFICATE OF RECENT DATE I.E. ISSUED ATFER 1ST APRIL 2025 FROM A SCHEDULED COMMERCIAL BANK

To,
The Deputy General Manager (Ops),
Global Markets,
State Bank of India, Corporate Centre,
14th Floor, State bank Bhawan,
Nariman Point, Mumbai-400 021.

No.: Date:

SOLVENCY CERTIFICATE

This is to certify that, to the best of our knowledge and information, M/s / Sri……..……., a customer of our bank, has been maintaining Savings Bank / Current Account bearing number……with our ……. ……. Branch, since …….. (Month and Year). We understand from the customer that the certificate is for the purpose of Tender with your organisation. We further certify that M/s / Shri / Smt. ……...is solvent to the extent of INR …… (Rupees……...only).

This certificate issued by the Bank on the specific request of the customer and should be regarded as without any guarantee or liability, financial or otherwise, on the part of the Bank or its officials.

(Signature)
For the Bank

Note:
1. Bankers 'certificate should be original on the letter head of the Issuing Bank duly sealed in cover and addressed to enlistment authority.

2. In case of partnership firm, certificate to include names of all partners as recorded with the Bank.

FORM 'C'

To,
The Deputy General Manager (Ops),
Global Markets,
State Bank of India, Corporate Centre,
14th Floor, State bank Bhawan,
Nariman Point, Mumbai-400 021

Subject: Submission of bids for the work of Proposed Interior Works at 1st To 4th Floors of LHO Mumbai Metro Building at Bandra Kurla Complex, Mumbai-51.

Sir,

Having examined details given in press Notice and bid document for the above work, I/we hereby submit the relevant information:

"It is to certify that as per the audited balance sheet and profit & loss account during the financial year_____, the Net-worth of M/s _____ (Name & Registered address of the individual / firm / company), as on 31st March 2025 is Rs._____ after considering all liabilities. It is further certified that the Net-worth of the company has not eroded by more than 30% in the last three year ending on 31st March 2025."

(Signature of the Chartered Accountant)

Name of the Chartered Accountant

Membership no of ICAI

Date & Seal

FORM "D"

PROFORMA OF AFFIDAVIT FOR EXECUTION OF SIMILAR WORKS

I/We undertake and confirm that eligible similar works(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 bidding in State Bank of India in future forever. Also, if such a violation comes to the notice of State bank of India before date of start of work, the Deputy General Manager (Ops) shall be free to forfeit the entire amount of Earnest Money Deposit / Performance Guarantee.

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

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

Signature of Bidder(s) or an authorized

Officer of the firm with stamp

Signature of Notary with Seal

FORM "E"

PROFORMA OF AFFIDAVIT FOR NON - BLACK LISTING

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

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

Signature of Bidder(s) or an authorized

Officer of the firm with stamp

Signature of Notary with seal

FORM 'F'
STRUCTURE & ORGANIZATION

1	Name & Address of the bidder	
2	Telephone No. / Email id / Telex No./ Fax No.	
3	Legal status of the bidder (attach copies of original document defining the legal status) (a) An Individual (b) A proprietary firm (c) A firm in partnership (d) A limited company or Corporation	
4	Particulars of registration with various Government Bodies (attach attested photocopy).	
	Organization/Place of Registration	Registration No.
(i)		
(ii)		
(iii)		
5	Names and Titles of Directors & Officers with designation to be concerned with this work	
6	Designation of individuals authorized to act for the organization	
7	Has the bidder or any constituent partner in case of partnership firm, ever abandoned the awarded work before its completion? If so, give name of the project and reasons for abandonment.	
8	Has the bidder or any constituent partner in case of partnership firm/ Limited company /Joint venture, ever been convicted by the court of law? If so, give details	
9	In which field of Civil Engineering/ Construction/ Interiors, the bidder has specialization and interest?	
10	Any other information considered necessary but not included above	

Signature of bidder(s)

LETTER OF TRANSMITTAL
INFORMATION REGARDING ELIGIBILITY

From:
.....
.....
.....

To :
The Deputy General Manager (Ops),
Global Markets,
State Bank of India, Corporate Centre,
14th Floor, State bank Bhawan,
Nariman Point, Mumbai-400 021

Subject: Submission of bids for the work of "Proposed Interior Works at 1st to 4th Floors of LHO Mumbai Metro Building at Bandra Kurla Complex, Mumbai-51..

Sir,

Having examined details given in press Notice and bid document for the above work, I/we hereby submit the relevant information.

1. I/We hereby certify that all the statements made and information supplied in the enclosed forms A to E and accompanying statement are true and correct.
2. I / we have furnished all information and details necessary for eligibility and have no further pertinent information to supply.
3. I/ we submit the requisite certified Banker's certificate and authorize the **Deputy General Manager (Ops)** to approach the Bank issuing the Banker's certificate to confirm the correctness thereof. I/We also authorize **Deputy General Manager (Ops)** to approach individuals, employers, firms and corporation to verify our competence, work experience, and general reputation.
4. I/we submit the following certificates in support of our suitability, technical knowledge and capability for having successfully completed the following eligible similar works:

Name of Work	Certificate from

Certificate:

It is certified that the information given in the enclosed eligibility bid are correct. It is also certified that I/We shall be liable to be debarred, disqualified/ cancellation of enlistment in case any information furnished by me/us found to be incorrect.

Enclosures:

Date of submission: Seal & Signature of bidder(s)

Date:- ……/……/……

LETTER OF UNDERTAKING

The Deputy General Manager (Ops),
Global Markets,
State Bank of India, Corporate Centre,
14th Floor, State bank Bhawan,
Nariman Point, Mumbai-400 021

Dear Sir,

Having examined the drawings, specification, design and schedule of quantities relating to the works specified in the memorandum hereinafter set out and having visited and examined the site of the works specified in the said memorandum and having acquired the requisite information relating thereto as affecting the tender, I/We hereby offer to execute the works specified in the said memorandum at the rates mentioned in the attached Schedule of Quantities and in accordance in all respects with the specifications, design, drawings and instructions in writing referred to in conditions of tender, the Articles of Agreement, Special Conditions, Schedule of Quantities and Conditions of Contract and with such materials as are provided for by, and in all other respects in accordance with such conditions so far as they may be applicable.

MEMORANDUM

(a)	Description of work	Tender for Proposed Interior Works at 1st to 4th Floors of LHO Mumbai Metro Building at Bandra Kurla Complex, Mumbai-51
(b)	Earnest Money	**Rs 36,00,000/- (Rupees Thirty Six Lakhs Only)** by means of Demand Draft / Pay Order (Valid for a period of 90 Days from the last date of submission of the tender) from any scheduled Nationalized Bank drawn in favour of Deputy General Manager (Ops), State Bank of India payable at Mumbai.
(c)	Time allowed for completion of the Works	**03 months (Including monsoon and public holidays).**

1) Should this tender be accepted, I/we hereby agree to abide by and fulfill the terms and provisions of the said conditions of contract annexed hereto so far as may be applicable or in default thereof to forfeit and pay to SBI, the amount mentioned in the said contract.

2) I / We have deposited a sum of **Rs 36,00,000/- (Rupees Thirty SixLakhs Only)**as Earnest Money with SBI which amount is not to bear any interest. Should I / We fail to execute the Contract when called upon to do so, I / we do hereby agree that this sum shall be forfeited by me/us to SBI.

3) I/ We have read and understood various clauses of this tender and hereby submit our specific undertaking and concurrence in terms of the relevant clause of "Instruction to tenderer" to ***Additional Security deposit*** *(ASD)/*Additional performance Guarantee (APG) shall be applicable if the bid price is **below 10 % of the estimated cost put to tender**. The amount of such ASD/ APG shall be the difference between 90 % of estimated cost put to tender and the quoted price, as a performance guarantee for due fulfilment of our contractual obligation for the project.

Further, under any circumstances, whatsoever, if I/We fail to comply the same including compliance of any such other conditions of tender within the stipulated time. I /We hereby, authorized SBI to cancel my/Our tender, to forfeit my EMD/ISD/ASD and to take further necessary action as deemed fit including debarring our firm from participating in SBI future tenders/de-paneling etc.

4) I/ We understand that as per terms of this tender, SBI may consider accepting our tender in part or whole or may entrust the various work proposed in phases. We, therefore, undertake that we shall not raise any claim/ compensation in the eventuality of Bank deciding to drop any of the work from the scope of work of this tender at any stage during the contract period. Further, we also undertake to execute the work entrusted to us in phases on our approved percentage and within stipulated time limit without any extra claim for price escalation as also provided for in the clause pertaining to the "Instructions to Tenderers" of this tender.

5) I/ We, hereby, undertake that, we will obtain necessary statutory approvals/ necessary permission from relevant Govt/ competent authority in consultation with Project Architect M/s. Worksphere Ventures for carrying-out the captioned project works time-to-time on behalf of the Bank. For the purpose, Bank will reimburse the statutory charges/ cost as actual, on production of tax receipts/ invoices in original by us.

6) I/ We, hereby, also undertake that, we will not raise any claim for any escalation in the prices of any of the material during the currency of contract/execution/completion period including authorized extended contract period, if any.

7) Our Bankers are:
I)
ii)

Name of the partner of the firm
Authorised to sign
Or
(Name of person having Power of
Attorney to sign the Contract.
(Certified true copy of the Power
of Attorney should be attached)

Yours faithfully,
Signature of Contractors.

Signature and addresses of Witnesses
i)
ii)

INTEGRITY AGREEMENT

TO BE SIGNED BY THE BIDDER AND SAME SIGNATORY COMPETENT / AUTHORIZED TO SIGN THE RELEVANT CONTRACT WITH STATE BANK OF INDIA

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

BETWEEN

State bank of India represented through Deputy General Manager (Ops), Global Markets, Corporate Centre, Nariman Point, Mumbai 400051 (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 (NIT No. .....) (hereinafter referred to as "**Tender/Bid**") and intends to award, under laid down organizational procedure, contract for **"C/o ……..."**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 witness 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 Bidders(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 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 address of foreign agents/representatives, if any. Either the India 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 participates in a tender on behalf of one manufacturer, he shall not be allowed to quote on behalf of another manufacturer along with the first manufacturer in a subsequent/parallel tender for the same item.
e) The Bidder(s)/Contractor(s) will, when presenting his bid, disclose (with each tender as per proforma enclosed) any and all payments he has made, is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the Contract.

3) The Bidder(s)/Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

4) The Bidder(s)/Contractor(s) will not, directly or through any other person or firm indulge in fraudulent practice **means a 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 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 Indian Penal code (IPC)/Prevention of Corruption Act, or if the Principal/Owner has substantive suspicion in this regard, the Principal/Owner will inform the same to law enforcing agencies for further investigation.

ARTICLE 4: Previous Transgression

1) The Bidder declares that no previous transgressions occurred in the last 5 years with any other Company in any country confirming to the anticorruption approach or with Central Government or State Government or any other Central/State Public Sector Enterprises in India that could justify his exclusion from the Tender process.

2) If the Bidder makes incorrect statement on this subject, he can be disqualified from the Tender process or action can be taken for banning of business dealings/holiday listing of the Bidder/Contractor as deemed fit by the Principal/Owner.

3) If the Bidder/Contractor can prove that he has resorted/recouped the damage caused by him and has installed a suitable corruption prevention system, the Principal/Owner may, at its own discretion, revoke the exclusion prematurely.

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

1) The Bidder(s)/Contractor(s) undertake(s) to demand from all subcontractors a commitment in conformity with this Integrity Pact. The Bidder/Contractor shall be responsible for any violation(s) of the principles laid down in this agreement/Pact by any of its 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: Independent External Monitors (IEM)

1) The Principal/Owner has appointed IEM for this Pact as per Central Vigilance Commission order no 41/12/07 (Names and Addresses of the IEM to be given below).

NAME	**Mr. Satyajit Mohanty**	**Mr. Otem Dai**
CADRE	IPS (Retd.)	IAS (Retd.)
E-mail ID	satyajitmohanty88@gmail.com	otemdai@hotmail.com

2) The task of the IEM shall be to review independently and objectively, whether and to what extent the parties comply with the obligations under this Pact.

3) The IEM shall not be subject to instructions by the representatives of the parties and perform their functions neutrally and independently.

4) Both the parties accept that the IEM have the right to access all the documents relating to the project/procurement, including minutes of meetings.

5) As soon as the IEM notices, or has reason to believe, a violation of this Pact, he will so inform the Authority designated by the Principal/Owner.

6) The BIDDER(s) accepts that the IEM has the right to access without restriction to all Project documentation of the Principal/Owner including that provided by the BIDDER. The BIDDER will also grant the IEM, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his project documentation. The same is applicable to Subcontractors. The IEM shall be under contractual obligation to treat the information and documents of the BIDDER/ Subcontractor(s) with confidentiality.

7) The Principal/Owner will provide to the IEM sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between the parties. The parties will offer to the IEM the option to participate in such meetings.

8) The IEM will submit a written report to the designated Authority of Principal/Owner /Secretary in the Department/ within 8 to 10 weeks from the date of reference or intimation to him by the Principal/ Owner / BIDDER and, should the occasion arise, submit proposals for correcting problematic situations.

ARTICLE 7: Facilitation of Investigation

In case of any allegation of violation of any provisions of this Pact or payment of commission, the Principal/ Owner or its agencies shall be entitled to examine all the documents including the Books of Accounts of the BIDDER and the BIDDER shall provide necessary information and documents in English and shall extend all possible help for the purpose of such examination.

ARTICLE 8: Duration of the Pact

This Pact begins when both the parties have legally signed it. It expires for the Contractor/Vendor, 60 months (5 years) 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, SBI.

ARTICLE 9: Other Provisions

1) This Pact is subject to Indian Law, place of performance and jurisdiction is **Mumbai, / location** of the Principal/Owner, who has floated the Tender.

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

ARTICLE 10: 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/Contract 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 Bidder/Contractor)	(For and on behalf of Principal/Owner)

Date:

Place:

WITNESSES:

1. …….
(Signature, name and address)

2. ……
(Signature, name and address)

INFORMATION TO THE BIDDERS

1.0 General:

1.1 Letter of transmittal and forms for deciding eligibility are given in Section III.

1.2 **All information called for in the enclosed forms should be furnished against the relevant columns** in the forms. If for any reason, information is furnished on a separate sheet, this fact should be mentioned against the relevant column. Even, if no information is to be provided in a column, a **'nil'** or **'no such case'** entry should be made in that column. If any particulars/query is not applicable in case of the bidder, it should be stated as **'Not applicable'**. The bidders are cautioned that not giving complete information called for in the application forms or not giving it in clear terms or making any change in the prescribed forms (or) deliberately suppressing the information may result in the bid being summarily disqualified. Bids shall be submitted online only and those received in physical form, by telegram or telex and those received late will not be entertained.

1.3 The bid should be type written. The bidder should sign each page of application, forms and documents before scanning & uploading.

1.4 Over writing should be avoided. Corrections if any should be made by neatly crossing out, initialing, dating and rewriting. Pages of the eligibility criteria document are numbered. Additional Sheets if any added by the Bidder should also be numbered by him. They should be submitted as a package with signed letter of transmittal.

1.5 References, information and certificate from the respective clients certifying suitability, technical knowledge or capability of the bidder should be signed by an officer not below the rank of Executive Engineer or equivalent.

1.6 The bidder may furnish any additional information, which he thinks is necessary to establish his capabilities to successfully complete envisaged work. He is, however advised not to furnish superfluous information. No information shall be entertained after submission of eligibility criteria document unless it is called for by the Employer.

2.0 Definitions:

2.1 In this document the following words and expression have their meaning here by assigned to them.

2.2 Employer: Means the State Bank of India, having its office at Premises & Estate Department, 3rd Floor, Synergy Building, "G" Block, Bandra Kurla Complex, Bandra (E), Mumbai 400 051.

2.3 Bidder: Means the individual, proprietary firm, firm in partnership, limited company (private or public) orcorporation.

2.4 "Year" means "Financial year" unless stated otherwise.

3.0 Method of Application:

3.1 If the bidder is an individual, the application shall be signed by him above his/her full type written name and current address.

3.2 If the bidder is a proprietary firm; the application shall be signed by the proprietor above his/her full type written name and the full name of his firm with its current address.

3.3 If the bidder is a firm in partnership, the application shall be signed by all the partners of the firm above their full type written names and current addresses or alternatively by a partner holding power of attorney for the firm. In the latter case a certified copy of the power of attorney should accompany the application. In both the cases a certified copy of the partnership deed and current address of all the partners of the firm should accompany the application.

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

4.0 Final Decision-Making Authority:

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

5.0 Particulars – Provisional:

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

6.0 Site Visit:

The bidder is advised to visit the site of work, at his own cost, and examine it and its surroundings to himself collect all information that he considers necessary for proper assessment of the prospective assignment. Intending Bidders are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their bids as to the nature of the ground and sub-soil (so far as is practicable), the form and nature of the site, the means of access to the site, the accommodation they may require and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their bid. A bidder shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charge consequent on any misunderstanding or otherwise shall be allowed. The bidder shall be responsible for arranging and maintaining at his own cost all materials, tools & plants, water, electricity access, facilities for workers and all other Services required for executing the work unless otherwise specifically provided for in the contract documents. Submission of a bid by a bidder implies that he has read this notice and all other contract documents and has made himself aware of the scope and specifications of the work to be done and of conditions and rates at which stores, tools and plant, etc. will be issued to him by the Government and local conditions and other factors having a bearing on the execution of the work.

7.0 Initial Criteria for Eligibility:

The Firms / Contractors applying must fulfil each of the following criteria as interior renovation firm. The applications of the firms/contractors not fulfilling the following criteria will not be considered for pre-qualification.

The Companies / Firms that fulfill the criteria as given below shall be eligible:

a) i. The Company should be either a Partnership or a Public Limited Company or a Private Limited Company or Proprietorship firm registered under the Indian Companies Act 1956.

ii. The Company / Firm should have registration with Central/ State Govt. bodies / Public sector Undertakings, PSB's / Nationalized Banks / MES / Railway etc.

b) The firm / company should have an experience of minimum **07**years in relevant field i.e. interior renovation of offices as on **31.03.2025**.

c) The firm / company should have registration with GST, PF, ESIC, PAN No. and Prof. Tax etc. (as applicable) submit the proof of the same.

d) The firm should produce acknowledgement and copy returns of IT for the last three years.

e) The firm should have current and valid Electrical Contractor license issued by relevant Government Authorities.

f) **Bidders / Contractors** who fulfill the following requirements shall be eligible to apply. Joint ventures are not accepted.

g) The bidder should have satisfactorily completed the works mentioned below during the last **7(seven) years** ending on **31.03.2025:**

At least one similar project of minimum **Rs.28.80 Crores** each or two similar projects **of minimum Rs.18.00 Crores** each or three similar projects of minimum **Rs.14.40Crores** each during **last 7 years ending on 31.03.2025**. These Interior Works projects should be **Commercial Building projects** and the value of work mentioned is excluding GST.

"Similar Works":- The definition of similar work shall mean completed Interior Renovation Works which should include Civil, Interior,Furniture Plumbing Sanitary, Waterproofing, HVAC,Electrical,IT,CCTV works etc (all the components executed under single contract) executed for Commercial buildings for Central Govt. Dept./State Govt. Dept./ Semi Govt. Dept. / PSU / Public sector Banks / Reputed Private Sector Organisations listed on Stock Exchange/ NSE/ BSE during last 7 years as on 31.03.2025". Please refer brief description of work contained in this document. The work order and the completion certificate shall clearly indicate works completed pertaining to the above-mentioned services and as such the break-up thereof, which has to satisfy the minimum works qualifying criteria.

h) **Average Annual Financial Turnover:**
Bidder should have had Average Annual Financial Turnover of **Rs. 10.80 Crores**interior renovation works during the last three years ending 31stMarch 2024. Scanned copy of Certificate from CA with Unique Document Identification Number (UDIN) to be uploaded, in support of claim.

i) **Profit/Loss:**
Bidder should not have incurred any loss (profit after tax should be positive) in more than two years during the last five years ending 31st March 2025. (Standalone financial statement), duly audited and certified by the Chartered Accountant.

j) **Solvency Certificate:**
Bidder should submit a Solvency Certificate from a Scheduled Commercial Bank for Rs.**10.80 Crores**issued after 1st April, 2025 *as per **Form-B** of this tender document.*

NOTE:-

1. Machine room and Mumty shall not be counted as a storey.
2. Basement, Stilt constructed in the building shall be considered as storeys.
3. Only works executed in India shall be considered for similar work.
4. Qualified similar works shall be physically inspected by the SBI Officials/ Project Architect to ascertain the completion, performance on Quality of works for finalizing the technical bids.
5. If private work is shown in support of eligibility criteria, certified copy of Tax deducted at source (TDS) Certificate Form 16A and 26A) shall be submitted along with the experience certificate and TDS amount shall tally with the actual amount of work done. Otherwise, the amount that tally with TDS shall only be considered for eligibility.
6. Work of specialized E&M services if executed under a separate contract may be considered for the purpose of assessing the technical competency only without adding its monetary value for determining the eligibility criteria.

7. Components of work executed other than those included in definition of similar work shallbe deducted while calculating the cost of similar work. The RCC framed structure shall be of RCC slab, beams & columns. The bidder shall submit abstract of cost of work along with supporting documents and certificate issued by the experience issuing authority in support of this.
8. Completion of work for the purpose of considering experience shall mean completion of entire work in contract and not completion of some portion of the contract even though some portion may be satisfying the magnitude and physical attributes of similar work.

8.0 Even though any bidder may satisfy the above requirements, he would be liable to disqualification if he has:

(a) Made misleading or false representation or deliberately suppressed the information in the forms, statements and enclosures required in the eligibility criteria document.
(b) Record of poor performance such as abandoning work, not properly completing the contract, or financial failures/weaknesses etc.

9.0 Financial Information:
Bidder should furnish the Annual financial statement for the last Five years in **Form 'A'** and Solvency Certificate from Scheduled Commercial Bank as per **Form 'B'**

10.0 Experiences in Works Highlighting Experience in Similar Works:

10.1 Bidder should furnish list of all eligible similar nature of works successfully completed during last **Seven years** in **Annexure- 'I'**, and ongoing works on **Annexure- 'II'**

10.2 Performance report of each work referred to in **Annexure- 'I'** certified by an officer not below the rank of Executive Engineer / Project Manager or equivalent in **Annexure- 'III'** and ongoing works in **Annexure- 'III-A'**.

10.3 If eligible similar nature of works is executed for private firms, certified copy of the tax deducted at source certificate (TDS) and Form 26AS shall also be furnished along with the Performance report.

11.0 Organization Information:
Bidder is required to submit the information in respect of his organization in **Form- 'F'.** The bidder should have sufficient number of Technical and Administrative employees for the proper execution of the contract. The bidder should submit a list of these employees stating clearly how these would be involved in this work within 15 days of award of work.

12.0 Construction Plant & Equipment:
Bidders should furnish the list of construction plant and equipment including steel shuttering, centering and scaffolding to be used in carrying out the work. Details of any other plant & equipment required for the work not included in agreement and available with the bidder may also be indicated.

13.0 Letter of Transmittal:
The Bidder should submit the letter of transmittal attached with the document.

14.0 Opening of Price Bid:
After evaluation of applicants, a list of shortlisted agencies will be prepared. Thereafter the financial bids of only the qualified and technically acceptable bidders shall be opened and conducted at the notified time, date and place (to be notified on e-tender website) in the presence of the qualified bidders or their representatives. The bid shall remain **valid for 90 (Ninety) days** from the date of opening of Technical bid (eligibility bid).

15.0 Award criteria:

15.1 The employer reserves the right, without being liable for any damages or obligation to inform the bidder to:

(a) Amend the scope and value of contract to the bidder.
(b) Reject any or all the applications without assigning any reason.

15.2 Any effort on the part of the bidder or his agent to exercise influence or to pressurize the employer would result in rejection of his bid. Canvassing of any kind is prohibited.

INSTRUCTIONS TO THE TENDERERS

1.0 Scope of work

E-tendersare invited by SBI, Global Markets, Corporate Centre, Nariman Point, Mumbai for Proposed Interior Works at 1st to 4th Floors of LHO Mumbai Metro Building at Bandra Kurla Complex, Mumbai.

1. Site and its location

The proposed work is to be carried out at Synergy Building, G Block, Bandra Kurla Complex, Mumbai.

2.0 Tender documents

2.1 The work has to be carried out strictly according to the conditions stipulated in the tender consisting of the following documents and the most workmen like manner.

- Instructions to tenderers
- General conditions of Contract
- Special conditions of Contract
- Additional Conditions for Electrical Installation
- Technical Specifications
- Drawings
- Price bid

2.2 The above documents shall be taken as complementary and mutually explanatory of one another but in case of ambiguities or discrepancies, shall take precedence in the order given below:

- Price bid
- Technical Specifications
- Additional Conditions, if any, for specialized trades such as Electrical Installation
- General conditions of Contract
- Special conditions of Contract
- Instructions to tenderers

2.3 Complete set of tender documents including relative drawings can be downloaded from the Bank's website during the period mentioned in the NIT.

2.4 The tender documents are not transferable.

3.0 **Site Visit**

3.1 The tenderer must obtain himself on his own responsibility and his own expenses all information and data which may be required for the purpose of filling this tender document and enter into a contract for the satisfactory performance of the work. The Tenderer is requested satisfy himself regarding the availability of water, power, transport and communication facilities, the character quality and quantity of the materials, labour, the law & order situation, climatic conditions local authorities requirement, traffic regulations etc;

The tenderer will be fully responsible for considering the financial effect to any or all the factors while submitting his tender.

4.0 **Earnest Money**

4.1 The tenderers are requested to submit the Earnest Money of **Rs 36,00,000/- (Rupees Thirty Six Lakhs Only)** by means of Demand Draft / Pay Order (Valid for a period of 90 Days from the last date of submission of the tender) from any Scheduled Nationalized Bank drawn in favour of Deputy General Manager (Ops), State Bank of India, payable at Mumbai.

4.2 EMD in any other form other than as specified above will not be accepted. Tender not accompanied by the EMD in accordance with clause 4.1 above shall be rejected.

4.3 No interest will be paid on the EMD.

4.4 EMD of unsuccessful tenderer will be refunded within 30 days of award of Contract.

4.5 EMD of successful tenderer will also be returned on receipt of Initial Security Deposit.

5.0 **Initial Security Deposit**

The successful tenderer will have to submit a sum equivalent to 2% of accepted tender value in favour of SBI within a period of 15 days of acceptance of tender. EMD will be returned on receipt of Initial security Deposit.

6.0 Security Deposit

6.1 Total security deposit shall be 5% of contract value. Out of this 2% of contract value is in the form of Initial Security Deposit (ISD) which includes the EMD. Balance 3% shall be deducted from the running account bill of the work at the rate of 10% of the respective running account bill i.e., deduction from each running bill account will be @10% till Total Security Deposit (TSD) including ISD reaches to 5% of contract value. The 50% of the Total Security Deposit shall be paid to the contract on the basis of Architect's certifying the virtual completion. The balance 50% would be paid to the contractors after the defects liability period as specified in the contract.

6.2 No interest shall be paid to the amount retained by the Bank as Security Deposit.

6.3 Retention money shall be deducted as mentioned in clause no. 1.0.C (page no. 60)

6.3 **Additional Security Deposit**: -Additional Security deposit (ASD)/Additional performance Guarantee (APG) shall be applicable if the bid price is below 10 % of the estimated cost put to tender. The amount of such ASD/ APG shall be the difference between 90 % of estimated cost put to tender and the quoted price.

7.0 **Signing of contract Documents**

The successful tenderer shall be bound to implement the contract by signing an agreement and conditions of contract attached herewith within 15 days from the receipt of intimation of acceptance of the tender by the Bank. However, the written acceptance of the tenders by the Bank will constitute a binding agreement between the Bank and successful tenderer whether such formal agreement is subsequently entered into or not.

8.0 **Completion Period**:

The time period allowed for completion of the project shall be **3 months (Including monsoon and public holidays)** from the date of commencement of work or 15 days from the date of issuance of work order, whichever is earlier.

9.0 **Validity of tender**

Tenders shall remain valid and open for acceptance for a period of 3 (Three) Months days from the date of opening price bid. If the tenderer withdraws his/her offer during the value period or makes modifications in his/her original offer which are not acceptable to Bank without prejudice to any other right or remedy the Bank shall be at liberty forfeit the EMD.

10.0 **Liquidated Damages**

The liquidated damages shall be 0.50% per week subject to a maximum of 5% of contract value.

11.0 **Rate and Prices**

11.1 In case of percentage tender

11.1.1 The Tenderers shall quote percentage above / below / at par (in figures as well as in words) on the total estimated cost given in Schedule of Quantities, he will be willing to execute the work.

11.1.2 In percentage rate tenders only percentage quoted shall be considered. Any tender containing item rates is liable to be rejected. Percentage quoted by the tenderer in percentage rate tender shall be accurately filled in figures and works, so that there is no discrepancy.

11.1.3 The tender submitted shall be treated as invalid if the contractor does not quote percentage above / below / at par on the total amount of tender.

11.1.4 If the percentage above / below / at par is different in figures & words on the total amount of tender than amount quoted in words will be considered.

11.1.5 The rate and amount mentioned in the Schedule of Quantities will be in Indian Currency (₹) only and willbe firm and include all costs, allowances etc. except GST, which will be payable / reimbursed at actuals.

11.1.6 The SBI reserve their rights to accept any tenders, either in whole or in part or may entrust the work in phases or may drop the part scope of work at any stage of the project or get the works done through another contractor at the cost of the accepted tenderer within its sole discretion without assigning any reason(s) for doing so and no claim / correspondence shall be entertained in this regard.

11.1.7 In case it is decided by the SBI to reduce the scope of work at any stage of the project, the contractor shall not be entitled to raise any claim / compensation on account of reduction in scope of work. Also, the SBI may consider for increase in scope of similar work in other buildings in phases but within a reasonable time interval and the contractor shall be bound to execute the same within the stipulated time period and as per rates quoted by them in this tender without any claim for price escalation.

BRIEF PARTICULARS OF THE WORK

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

Name of work: Proposed Interior Works at 1st to 4th Floors in LHO

Estimated Cost: **Rs. 35,98,57,147.00** (Rupees: - **Thirty-Five Crores, Ninety-Eight Lakhs Fifty Seven-Thousand One Hundred and Forty Seven only)**: - Interior & Furniture Works: Rs.23,32,65,544.00 Electrical Works: - Rs. 5,78,36,445.00, HVAC Works: Rs. 4,77,31,573, IT/Data Cabling Works: Rs. 2,10,23,585.00

Time Period: **03 months (Total duration of the contract) (Including monsoon and public holidays)**

1. The work is situated at 1st to 4th floors in LHO, SBI, Bandra Kurla Complex, Mumbai

BRIEF PARTICULARS OF THE PROPOSED PROJECT /WORK DESCRIPTION:

Location-1st to 4th floors of LHO, Mumbai Metro Building at Bandra Kurla Complex, Mumbai

It is proposed for 1st to 4th floors Interior Renovation works of a Commercial Building for State Bank of India has approx. 86,000 Sqft, at LHO, Mumbai Metro Building at Bandra Kurla Complex, Mumbai with state of the art features. The Site consists of multi-storied Commercial Building (Ground+7). Emphasis would be to make the project to achieve IGBC rating with all material and other parameters covered under IGBC, which are to be followed. Brief description of the proposed Interior Renovation works is as below:

a) Interior Renovation works.

2. General features and major important components of the work are listed as under:

(A) Civil And Interior Work-

1.Demolition and removal of existing furniture
2.Masonry work in AAC Blocks & plastering
3.Water proofing work
4.Plumbing and sanitary fittings
5.Flooring & dado works in Vitrified Tiles, Italian Marble,
6.Woodworks, wall lining, carpentry works
7.False ceiling In Gypsum, Modular ceiling,
8.Painting & finishing works
9.Partition works In toughned glass, Laminate,Veneer,Gypsum
10.Miscellaneous works Like Vertical, Roller Blinds
11.Carpentary works like Desks, Storages in Laminate and Veneer
12.Modular furniture
13.Loose furniture ,sofa, side table
14.Chairs

B. Electrical works

1Panels and distribution boards

2.lt cables, cable trays, floor trunking

3.Earthing

4.point wiring

5.lighting fixtures

6.fire detection and alarm system

7.public addressal system

8.access control system

9.cctv surveillance system

10. rodent repellent system

11.fire fighting system

12.novac only from server room

13.wld for server room

C. HVAC works

1	Chiller
2	Pumps
3	Chilled Water Piping With Insulation
4	Condenser Water Piping With Insulatio
5	Chilled Water Piping With Insulation
6	Air Handling Units (Smart AHUs)
7	Sheet Metal Works
8	Thermal & Acoustic Insulation
9	Ventilation Work
10	VRF ODU / IDU and Other Accessories
11	Refrigerant Piping
12	Frame Work
13	Air-Cooled Hi-Wall Split Units
14	Indigenous Work

D. IT works

1.IO Outlets

2.Module Face Plates

3. Patch Cord

4.Patch Panel

5.Server Rack

6.Optical Fiber Cable

7. Fiber Transceiver

(A) Contact Information

E-Procurement Technologies Ltd.	State Bank of India
B-704, Wall Street - II, Opp. Orient Club, Nr. Gujarat College, Ahmedabad - 380 006. Gujarat State, India Tel.: +91 79 61200 579 | 580 | 567 | 569 | 566 Ms Khushboo Mehta E-mail : khushboo.mehta@eptl.in Contact No : 95108 13528	The Deputy General Manager (Ops), Global Markets, 14th Floor, Corporate Centre, State Bank of India, Nariman Point, Mumbai- 400 021. Department :Global Markets Contact No :022-2274 2296 E-mail: operations.gmu@sbi.co.in

(B) SAMPLE BUSINESS RULE DOCUMENT

ONLINE E-TENDERING FOR PROPOSED INTERIOR WORKS IN LHO MUMBAI METRO BUILDING AT BANDRA KURLA COMPLEX, MUMBAI"

(A) Business rules for E-tendering:

1. Only contractors under appropriate category who are invited by the project Architect/SBI shall only be eligible to participate.

2. SBI will engage the services of an E-tendering service provider who will provide necessary training and assistance before commencement of online bidding on Internet.

3. In case of e-tendering, SBI will inform the vendor in writing, the details of service provider to enable them to contact and get trained.

4. Business rules like event date, closing and opening time etc. also will be communicated through service provider for compliance.

5. Contractors have to send by email, the compliance form in the prescribed format (provided by service provider), before start of E-tendering. Without this the vendor will not be eligible to participate in the event.

6. The Contractors will be required to submit the various documents in sealed Envelope to the office of SBI at the address mentioned hereinbefore by the stipulated date i.e. (1) Hard Copy of Technical Bid duly signed and stamped on each page (2) Demand Draft of specified amount of EMD. Contractors not submitting any one or more documents shall not be eligible to participate in the on-line price bidding.

7. E-tendering will be conducted on schedule date & time.

8. **The e-tendering will be treated as closed only when the bidding process gets closed in all respects for the item listed in the tender.**

(B) Terms & conditions of E-tendering:

SBI shall finalize the Tender through e-tendering mode for which M/s. E-Procurement Technologies Ltd. has been engaged by SBI an authorized service provider. Please go through the guidelines given below and submit your acceptance to the same along with your Commercial Bid.

1. E-tendering shall be conducted by SBI through M/s. E-Procurement Technologies Ltd., on pre-specified date. While the Contractors shall be quoting from their own offices/ place of their choice, Internet connectivity and other paraphernalia requirements shall have to be ensured by Contractors themselves. In the event of failure of their Internet connectivity, (due to any reason whatsoever it may be) it is the bidders' responsibility. In order to ward-off such contingent situation bidders are requested to make all the necessary arrangements/ alternatives such as back–up power supply whatever required so that they are able to circumvent such situation and still be able to participate in the E-tendering successfully. Failure of power at the premises of Contractors during the E-tendering cannot be the cause for not participating in the E-tendering. On account of this the time for the E-tendering cannot be extended and SBI is not responsible for such eventualities.

2. M/s. E-Procurement Technologies Ltd.., shall arrange to train your nominated person(s), without any cost to you. They shall also explain you all the Rules related to the E-tendering. You are required to give your compliance on it before start of bid process.

3. BIDDING CURRENCY AND UNIT OF MEASUREMENT: Bidding will be conducted in Indian currency & Unit of Measurement will be displayed in Online E-tendering.

4. BID PRICE: The Bidder has to quote the rate as per the Tender Document provided by SBI their appointed Architects.

5. VALIDITY OF BIDS: The Bid price shall be firm for a period specified in the tender document and shall not be subjected to any change whatsoever.

6. Procedure of E-tendering:

i. **Online E-tendering:**

(a) The NIT &Technical bid available on the Bank's website during the period specified in the NIT.
(b) Online e-tendering is open to all the bidders who receive NIT from the Architect and qualified for participating in the price bidding as provisions mentioned herein above through SBI approved Service Provider.
(c) The Price-Bid shall be made available online by the Service Provider wherein the contractors will be required to fill-in their percentage rates on overall estimate.
(d) The Contractors are advised not to wait till the last minute to submit their online tender price bid to avoid complications related with internet connectivity, network problems, system crash down, power failure, etc.
(e) In case, contractor fails to quote their rates for any one or more tender items, their tender shall be treated as ***"Incomplete Tender***" and shall be liable for rejection.

7. LOG IN NAME & PASSWORD: Each Bidder is assigned a Unique User Name & Password by M/s. E-Procurement Technologies Ltd. The Bidders are requested to change the Password after the receipt of initial Password from M/s. E-Procurement Technologies Ltd. All bids made from the Login ID given to the bidder will be deemed to have been made by the bidder.

8. BIDS PLACED BY BIDDER: Bids will be taken as an offer to execute the work as specified. Bids once made, cannot be cancelled / withdrawn and the Bidder shall be bound to execute the work at the quoted bid price. In case the L-1 Bidder backs out or fail to complete the work as per the rates quoted, SBI shall at liberty to take action as deemed necessary including de-paneling such contractors and forfeiting their EMD.

9. At the end of the E-tendering, SBI will decide upon the winner. SBI decision on award of Contract shall be final and binding on all the Bidders.

10. SBI shall be at liberty to cancel the E-tendering process / tender at any time, before ordering, without assigning any reason.

11. SBI shall not have any liability to bidders for any interruption or delay in access to the site irrespective of the cause.

12. Other terms and conditions shall be as per your techno-commercial offers and other correspondences till date.

13. Note: Firm should possess valid digital signature for this e-tender.

1. OTHER TERMS & CONDITIONS:

- The Bidder shall not involve himself or any of his representatives in Price manipulation of any kind directly or indirectly by communicating with other suppliers / bidders.

- The Bidder shall not divulge either his Bids or any other exclusive details of SBI to any other party.

- SBI decision on award of Contract shall be final and binding on all the Bidders.

- SBI reserve their rights to extend, reschedule or cancel any E-tendering within its sole discretion.

- SBI or its authorized service provider M/s. E-Procurement Technologies Ltd. shall not have any liability to Bidders for any interruption or delay in access to the site irrespective of the cause.

- SBI or its authorized service provider/s. E-Procurement Technologies Ltd. is not responsible for any damages, including damages that result from, but are not limited to negligence.

- SBI or its authorized service M/s. E-Procurement Technologies Ltd. will not be held responsible for consequential damages, including but not limited to systems problems, inability to use the system, loss of electronic information etc.

N.B.

- All the Bidders are required to submit the Process Compliance Statement (Annexure II) duly signed to M/s. E-Procurement Technologies Ltd.

- **All the bidders are requested to ensure that they have a valid digital signature certificate well in advance to participate in the online even**

(E) Price Confirmation Letter (Annexure III)

(The bidders are required to print this on their company's letter head and sign, stamp before emailing)

To,
E-Procurement Technologies Ltd. (Auction Tiger)
B-704, Wall Street - II,
Opp. Orient Club,
Nr. Gujarat College, Ahmedabad - 380 006.
Gujarat State, India

Sub: Final Price Quoted for Proposed Interior Works at 1st to 4th Floors of LHO Mumbai Metro Building at Bandra Kurla Complex, Mumbai

Dear Sir,

We confirm that we have quoted.

Thanking you and looking forward to the valuable order from SBI.

Yours sincerely,

For _____

Name:
Company:
Date:
Seal:
Scan it and send to this Document on sujith@eptl.in

GENERAL CONDITIONS OF CONTRACT

1.0 **Definitions**: -

"Contract means the documents forming the tender and the acceptance there of and the formal agreement executed between State Bank of India (client) and the contractor, together with the documents referred there in including these conditions, the specifications, designs, drawings and instructions issued from time to time by the architects/ Bank and all these documents taken together shall be deemed to form one contract and shall be complementary to one another.

1.1 In the contract the following expressions shall, unless the context otherwise requires, have the meaning hereby respectively assigned to them.

1.1.1 'SBl' shall mean State Bank of India (client) a body Corporate created under State Bank of India Act 1955, having its Corporate Centre at State Bank Bhavan, Madame Cama Road, Mumbai 400 021 and includes the client's representatives, successors and assigns.

Architects/ Consultants' shall mean M/s Worksphere Ventures (India) Pvt Ltd, Mumbai.

1.1.2 'Site Engineer' shall mean an Engineer appointed by the Bank at site as their representative for day-to-day supervision of work and to give instructions to the contractors.

1.1.3 'The Contractor' shall mean the individual or firm or company whether incorporate not, undertaking the works and shall include legal personal representative of individual or the composing the firm or company and the permitted assignees of individual or firms of company.

The expression 'works' or 'work' shall mean the permanent or temporary work description in the "Scope of work" and / or to be executed in accordance with the contract includes materials, apparatus, equipment, temporary supports, fittings and things of kinds to be provided, the obligations of the contractor hereunder and work to be done by the contractor under the contract.

1.1.4 'Engineer' shall mean the representative of the Architect / consultant.

1.1.5 'Drawings' shall mean the drawings prepared by the Architects and issued by the Engineer and referred to in the specifications and any modifications of such drawings as may be issued by the Engineer from time to time 'Contract value shall mean value of the entire work as stipulated in the letter of acceptance of tender subject such additions there to or deductions there from as may be made under the provide herein after contained.

1.1.6 'Specifications' shall mean the specifications referred to in the tender and any modifications thereof as may time to time be furnished or approved by the architect/ consultant "Month" means calendar month.

1.1.7 "Week" means seven consecutive days.

1.1.8 "Day" means a calendar day beginning and ending at 00 Hrs and 24 Hrs respectively.

CLAUSE

1.0 **Total Security Deposit**

Total Security deposit comprise of:

a) Earnest Money Deposit
b) Initial Security Deposit
c) Retention Money
d) Additional Security Deposit

a) **Earnest Money Deposit -**

The tenderer shall furnish EMD of **Rs 36,00,000/- (Rupees Thirty Six Lakhs Only)** in the form of Demand drawn in favour of Assistant General Manager (Premises & Estate) SBI, LHO Mumbai, payable at Mumbai on any Scheduled Bank. No tender shall be considered unless the EMD is so deposited in the required form. No interest shall be paid on this EMD. The EMD of the unsuccessful tenderer shall be refunded soon after the decision to award the contract is taken without interest. The EMD shall stand absolutely forfeited if the tenderer revokes his tender at any time during the period when he is required to keep his tender open acceptance by the SBI or after it is accepted by the SBI the contractor falls to enter into a formal agreement or fails to pay the initial security deposit as stipulated or fails to commence the work within the stipulated time.

b) **Initial Security Deposit (lSD)**

The amount of ISD shall be 2% of accepted value of tender including the EMD. Balance of ISD (i.e. excluding EMD) is to be submitted in the form of D/D drawn on any scheduled Bank and shall be deposited within 15 days from the date of letter of acceptance of tender.

c) **Retention Money: -**

Besides the ISD as deposited by the contractor in the above said manner the retention money shall be deducted from the running account bill at the rate of 10% of the gross value of work done by the contractor and claimed in each bill provided the total security deposit i.e. the ISD plus Retention Money shall both together not exceed 5% of the contract value. 50% of the total security deposit shall be refunded to the contractor without any interest on issue of Virtual Completion certificate by the Architect/consultant. The balance 50% of the total security deposit shall be refunded to the contractors without interest within fifteen days after the end of defects liability period provided the contractor has satisfactorily attended to all defects in accordance with the conditions of contract including site clearance.

d) **Additional Security Deposit: -**

Additional Security deposit (ASD)/Additional performance Guarantee (APG) shall be applicable if the bid price is below 10 % of the estimated cost put to tender. The amount of such ASD/ APG shall be the difference between 90 % of estimated cost put to tender and the quoted price.

No interest shall be paid to the amount retained by the Bank as Security Deposit.

3.0 **Language Errors, omissions and discrepancies**

In case of errors, omissions and/ or disagreement between written and scaled dimensions on the drawings or between the drawings and specifications etc., the following order shall apply.

i) Between scaled and written dimension (or description) on a drawing, the latter shall be adopted.

ii) Between the written or shown description or dimensions in the drawings and the corresponding one in the specification the former shall be taken as correct.

iii) Between written description of the item in the specifications and descriptions in bills of quantities of the same item, the former shall be adopted:

iv) In case of difference between rates written in figures and words, the rate in words shall prevail.

v) Between the duplicate / subsequent copies of the tender, the original tender shall be taken as correct.

4.0 **Scope of Work:**

The contractor shall carry out, complete and maintain the said work in every respect strictly in accordance with this contract and with the directions of and to the satisfaction of the Bank to be communicated through the architect/consultant. The architect/consultant at the directions of the Bank from time to time issue further drawings and/or written instructions, details directions and explanations which are hereafter collectively referred to as Architect's/Consultant's instructions in regard to : the variation or modification of the design, quality or quantity of work or the addition or omission or substitution of any work, any discrepancy in the drawings or between the BOQ and/or drawings and/or specifications, the removal from the site of any material brought thereon by the contractor and the substitution of any other materials thereof, the demolition, removal and/or re-execution of any work executed by him, the dismissal from the work of any person employed/engaged thereupon.

5. (i) **Letter of Acceptance:**

Within the validity period of the tender the Bank shall issue a letter of acceptance either directly or through the architect by registered post or otherwise depositing at the address of the contractor as given in the tender to enter into a Contract for the execution of the work as per the terms of the tender. The letter of acceptance shall constitute a binding contract between the SBI and the contractor.

5.(ii) **Contract Agreement:**

On receipt of intimation of the acceptance of tender from the SBI/Architect the successful tenderer shall be bound to implement the contract and within **fifteen days** thereof he shall sign an agreement in a non-judicial stamp paper of appropriate value.

6.0 **Ownership of drawings**:

All drawings, specifications and copies thereof furnished by the SBI through its architect/ consultants are the properties of the SBI. They are not to be used on other work.

7.0 **Detailed drawings and instructions:**

The SBI through its architects/consultants shall furnish with reasonable promptness additional instructions by means of drawings or otherwise necessary for the proper execution of the work. All such drawings and instructions shall be consistent with the contract documents, true developments thereof and reasonably inferable there from.

The work shall be executed in conformity therewith and the contractor prepare a detailed programme schedule indicating therein the date of start and completion of various activities on receipt of the work order and submit the same to the SBI through the Architect/Consultant.

Copies of agreement
Two copies of agreement duly signed by both the parties with the drawings shall be handed over to the contractors.

8.0 **Liquidated damages:**

If the contractor fails to maintain the required progress in terms ofthe relevant clause of GCC or to complete the work and clear the site including vacating their office on or before the contracted or extended date or completion without justification in support of the cause of delay, he may be called upon without prejudice to any other right of remedy available under the law to the SBI on account of such breach to pay a liquidated damages at the rate of 0.5% of the contract value per week subject to a maximum of 5% of the contract value.

9.0 **Materials, Appliances and Employees**

Unless or otherwise specified the contractor shall provide and pay for all materials, labour, water, power, tools, equipment transportation and any other facilities that are required for the satisfactory execution and completion of the work. Unless or otherwise specified all materials shall be new and both workmanship and materials shall be best quality. The contractor shall at all times enforce strict discipline and good order among his employees and shall not employ on the work any unfit person or anyone not skilled in the work assigned to him. Workman whose work or behaviour is found to be unsatisfactory by the SBI/Architect/Consultant he shall be removed from the site immediately.

10.0 **Permits, Laws and Regulations:**

Permits and licences required for the execution of the work shall be obtained by the contractor at his own expenses.

The contractor shall give notices and comply with the regulations, laws, and ordinances rules, applicable to the contractor. If the contractor observes any discrepancy between the drawings and specifications, he shall promptly notify the SBI in writing under intimation of the Architect/Consultant. If the contractor performs any act which is against the law, rules and regulations he shall meet all the costs arising there from and shall indemnify the SBI any legal actions arising there from..

11.0 **Setting out Work:**

The contractor shall set out the work and shall be responsible for the true and perfect setting out of the same and for the correctness of the positions, levels, dimensions, and alignment of all parts thereof and get it approved by the architect/consultant before proceeding with the work. If at any time any error in this respect shall appear during the progress of the works, irrespective of the fact that the layout had been approved by the architect/consultant the contractor shall be responsible for the same and shall at his own expenses rectify such error, if so, required to satisfaction of the SBI.

12.0 **Protection of works and property:**

The contractor shall continuously maintain adequate protection, of all his work from damage and shall protect the SBI's properties from injury or loss arising in connection with contract. He shall make good any such damage, injury, loss due to his fault or negligence except which are due to causes beyond his control.
He shall take adequate care and steps for protection of the adjacent properties. The contractor shall take all precautions for safety and protection of his employees on the works and shall comply with all applicable provisions of Government and local bodies' safety laws and building codes to prevent accidents, or injuries to persons or property of about or adjacent to his place of work. The contractor shall take insurance covers as per the relevant clause at his own cost. The policy may be taken in joint names of the contractors and the SBI and the original policy may be lodged with the SBI.

13.0 **Inspection of work:**

The SBI/Architect/Consultant or their representatives shall at all reasonable time have free access to the work site and/or to the workshop, factories or other places where materials are lying or from where they are obtained and the contractor shall give every facility to the SBI, Architect/Consultant and their representatives necessary for inspection and examination and test of the materials and workmanship. No person unless authorized by the SBI/Architect/Consultant except the representative of Public authorities shall be allowed on the work at any time. The proposed work either during its construction stage or its completion can also be inspected by the Chief Technical Examiner's organization a wing of Central Vigilance Commission.

14.0 **Assignment and subletting**

The whole of work included in the contract shall be executed by the contractor and he shall not directly entrust and engage or indirectly transfer assign or underlet the contract or any part or share thereof or interest therein without the written consent of the SBI through the architect and no undertaken shall relieve the contractor from the responsibility of the contractor from active superintendence of the work during its progress.

15.0 **Quality of materials, workmanship & Test**

(i) All materials and workmanship shall be best of the respective kinds described in the contract and in accordance with Architect/Consultant instructions and shall be subject from time to time to such tests as the architect/consultant may direct at the place of manufacture or fabrication or on the site or an approved testing laboratory. The contractor shall provide such assistance, instruments, machinery, labour and materials

ii) Samples

All samples of adequate numbers, size, shades & pattern as per specifications shall be supplied by the contractor without any extra charges. If certain items proposed to be used are of such nature that samples cannot be presented or prepared at the site detailed literature/test certificate of the same shall be provided to the satisfaction of the Architect/ consultant. Before submitting the sample/literature the contractor shall satisfy himself that the material/equipment for which he is submitting the samples/literature meet with the requirement of tender specification. Only when the samples are approved in writing by the architect/consultant the contractor shall proceed with the procurement and installation of the particular material/equipment. The approved samples shall be signed by the Architect/Consultant for identification and shall be kept on record at site office until the completion of the work for inspection/comparison at any time. The Architect/Consultant shall take reasonable time to approve the sample. Any delay that might occur in approving the samples for reasons of its not meeting the specifications or other discrepancies inadequacy in furnishing samples of best qualities from various manufacturers and such other aspects causing delay on the approval of the materials / equipment etc shall be to the account of the contractor.

iii) **Cost of tests**

The cost of making any test shall be borne by the contractor if such test is intended by or provided for in the specification or BOQ.

iv) **Costs of tests not provided for**
If any test is ordered by the Architect/ Consultant which is either:

If so intended by or provided for or (in the cases above mentioned) is not so particularized or through so intended or provided for but ordered by the Architect/Consultant which is either to be carried out by an independent person at any place other than the site or the place of manufacture or fabrication of the materials tested or any Government/approved laboratory, then the cost of such test shall be borne by the contractor.

16.0 **Obtaining information related to execution of work**

No claim by the contractor for additional payment shall be entertained which is consequent upon failure on his part to obtain correct information as to any matter affecting the execution of the work nor any misunderstanding or the obtaining incorrect information or the failure to obtain correct information relieve him from any risks or from the entire responsibility for the fulfilment of contract.

17.0 **Contractor's superintendence**

The contractor shall give necessary personal superintendence during the execution of the works and as long, thereafter, as the Architect/consultant may consider necessary until the expiry of the defects liability period, stated hereto.

18.0 **Quantities**

i)The bill of quantities (BOQ) unless or otherwise stated shall be deemed to have been prepared in accordance with the Indian Standard Method of Measurements.

The rate quoted shall remain valid for variation of quantity against individual item to any extent subject to maximum variation of the contract value by 25%. The entire amount paid under the relevant Clause hereof as well as amounts of prime cost and provisional sums, if any, shall be excluded.

ii)Variation exceeding 25%: The items of work executed in relation to variation exceeding 25% shall be paid on the basis of provisions of the relevant clause hereof.

19.0 **Works to be measured**

The Architect/Consultant may from time to time intimate to the contractor that he required the work to be measured and the contractor shall forthwith attend or send a qualified representative to assist the Architect in taking such measurements and calculation and to furnish all particulars or to give all assistance required by any of them. Such measurements shall be taken in accordance with the Mode of measurements detailed in the specifications. The representative of the Architect/Consultant shall take joint measurements with the contractor's representative and the measurements shall be entered in the measurement book. The contractor or his authorized representative shall sign all the pages of the measurement book in which the measurements have been recorded in token of his acceptance. All the corrections shall be duly attested by both representatives. No over writings shall be made in the M book. Should the contractor not attend or neglect or omit to depute his representative to take measurements then the measurements recorded by the representative of the Architect/consultant shall be final. All authorized extra work, omissions and all variations made shall be included in such measurements.

20.0 **Variations**

No alteration, omission or variation ordered in writing by the Architect/Consultant shall vitiate the contract.
In case the SBI/Architect/Consultant thinks proper at any time during the progress of works to make any alteration in, or additions to or omission from the works or any alteration in the kind or quality of the materials to be used therein, the Architect/Consultant shall give notice thereof in writing to the contractor or shall confirm in writing within seven days of giving such oral instructions the contractor shall alter to, add to, or omit from as the case may be in accordance with such notice but the contractor shall not do any work extra to or make any alteration or additions to or omissions from the works or any deviation from any of the provisions of the contract, stipulations, specifications or contract drawings without previous consent in writing of the Architect/Consultant and the value of such extras, alterations, additions or omissions shall in all cases be determined by theArchitect/Consultant and the same shall be added to or deducted from the contract value, as the case may be.

21.0 **Valuation of Variations**

No claim for an extra shall be allowed unless it shall have been executed under the authority of the Architect/Consultant with the concurrence of the SBI as herein mentioned. Any such extra is herein referred to as authorized extra and shall be made in accordance with the following provisions.

a) The net rates or prices in the contract shall determine the valuation of the extra work where such extra work is of similar character and executed under similar conditions as the work priced herein. Rates for all items, wherever possible should be derived out of the rates given in the priced BOQ

b) The net prices of the original tender shall determine the value of the items omitted, provided if omissions do not vary the conditions under which any remaining items of works are carried out, otherwise the prices for the same shall be valued under sub relevant clausehereunder.

c) Where the extra works are not of similar character and/or executed under similar conditions as aforesaid or where the omissions vary the conditions under which any remaining items or works are carried out, then the contractor shall within 7 days of the receipt of the letter of acceptance inform the Architect/Consultant of the rate which he intends to charge for such items of work, duly supported by analysis of the rate or rates claimed and the Architect/Consultant shall fix such rate or prices as in the circumstances in his opinion are reasonable and proper, based on the market rate.

d) Where extra work cannot be properly measured or valued the contractor shall be allowed day work prices at the net rates stated in the tender of the BOQ or, if not, so stated then in accordance with the local day work rates and wages for the district; provided that in either case, vouchers specifying the daily time (and if required by the Architect/Consultant) the workman's name and materials employed be delivered for verifications to the Architect/Consultant at or before the end of the week following that in which the work has been executed.

e) It is further clarified that for all such authorized extra items where rates cannot be derived from the tender, the contractor shall submit rates duly supported by rate analysis worked on the "market rate basis" for material, labour, hire/running charges of equipment and wastages etc plus 15% towards establishment charges, contractor's overheads and profit. Such items shall not be eligible for escalation.

22.0 **Final measurement**

The measurement and valuation in respect of the contract shall be completed within six months of the virtual completion of the work.

23.0 **Virtual Completion Certificate (VCC)**

On successful completion of entire works covered by the contract to the full satisfaction of the SBI, the contractor shall ensure that the following works have been completed the satisfaction of the SBI:

a) Clear the site of all scaffolding, wiring, pipes, surplus materials, contractor's labour equipment and machinery.

b) Demolish, dismantle and remove the contractor's site office, temporary works, structure including labour sheds/camps and constructions and other items and things whatsoever brought upon or erected at the site or any land allotted to the contractor by the SBI not incorporated in the permanent works.

c) Remove all rubbish, debris etc. from the site and the land allotted to the contractor the SBI and shall clear, level and dress, compact the site as required by the SBI.

d) Shall put the SBI in undisputed custody and possession of the site and all land allot by the SBI.

e) Shall hand over the work in a peaceful manner to the SBI.

f) All defects / imperfections have been attended and rectified as pointed out by the Architects to the full satisfaction of SBI.

Upon the satisfactory fulfilment by the contractor as stated above, the contractor shall be entitled to apply to the Architect/Consultant for the certificate. If the Architect/Consultant is satisfied of the completion of the work, relative to which the completion certificate has been sought, the Architect/Consultant shall within fourteen (14) days of the receipt of the application for virtual completion certificate, issue a VCC in respect of the work for which the VCC has been applied.

This issuance of a VCC shall be without prejudice to the SBI's rights and contractor's liabilities under the contract including the contractor's liability for defects liability period nor shall the issuance of VCC in respect of the works or work at any site be construed as a waiver of any right or claim of the SBI against the contractor in respect of works or work at the site and in respect of which the VCC has been issued.

24.0 **Work by other agencies**

The SBI/Architect/Consultant reserves the rights to use premises and any portion of the site for execution of any work not included in the scope of this contract which it may desire to have carried out by other persons simultaneously and the contractor shall not only allow but also extend reasonable facilities for the execution of such work. The contractor however shall not be required to provide any plant or material for the execution of such work except by special arrangement with the SBI. Such work shall be carried out in such manners not to impede the progress of the works included in the contract.

25.0 **Insurance of works**

25.1 Without limiting his obligations and responsibilities under the contract the contractor shall insure in the joint names of the SBI and the contractor against all loss or damages from whatever cause arising other than the excepted risks, for which he is responsible under the terms of contract and in such a manner that the SBI and contractor are covered for the period stipulated in the relevant clause ofGCC and are also covered during the period of maintenance for loss or damage arising from a cause, occurring prior to the commencement of the period of maintenance and for any loss or damage occasioned by the contractor in the course of any operations carried out by him for the purpose of complying with his obligations under relevant clause.

a) The Works for the time being executed to the estimated current Contract value thereof, or such additional sum as may be specified together with the materials for incorporation in the works at their replacement value.

b) The constructional plant and other things brought on to the site by the contractor to the replacement value of such constructional plant and other things.

c) Such insurance shall be effected with an insurer and in terms approved by the SBI which approval shall not be unreasonably withheld and the contractor shall whenever required produce to the Architect / consultant the policy if insurance and the receipts for payment of the current premiums.

25.2 **Damage to persons and property**

The contractor shall, except if and so far as the contract provides otherwise indemnify the SBI against all losses and claims in respect of injuries or damages to any person or material or physical damage to any property whatsoever which may arise out of or in consequence of the execution and maintenance of the works and against all claims proceedings, damages, costs, charges and expenses whatsoever in respect of or in relation thereto except any compensation of damages for or with respect to :

a) The permanent use or occupation of land by or any part thereof.

b) The right of SBI to execute the works or any part thereof on, over, under, in or through any lands.

c) Injuries or damages to persons or properties which are unavoidable result of the execution or maintenance of the works in accordance with the contract

d) Injuries or damage to persons or property resulting from any act or neglect of the SBI their agents, employees or other contractors not being employed by the contractor or for or in respect of any claims, proceedings, damages, costs, charges and expenses in respect thereof or in relation thereto or where the injury or damage was contributed to by the contractor, his servants or agents such part of the compensation as may be just and equitable having regard to the extent of the responsibility of the SBI, their employees, or agents or other employees, or agents or other contractors for the damage or injury.

25.3 **Contractor to indemnify SBI**

The contractor shall indemnify the SBI against all claims, proceedings, damages, costs, charges and expenses in respect of the matters referred to in the provision of the relevant clause.

25.4 **Contractor's superintendence**

The contractor shall fully indemnify and keep indemnified the SBI against any action, claim, or proceeding relating to infringement or use of any patent or design or any alleged patent or design rights and shall pay any royalties which may be payable in respect of any article or part thereof included in the contract. In the event of any claim made under or action brought against SBI in respect of such matters as aforesaid the contractor shall be immediately notified thereof and the contractor shall be at liberty, at his own expenses to settle any dispute or to conduct any litigation that may arise there from, provided that the contractor shall not be liable to indemnify the SBI if the infringement of the patent or design or any alleged patent or design right is the direct result of an order passed by the Architect/Consultant in this behalf.

25.5 **Third Party Insurance**

25.5.1 The contractors under the terms of the contract are required to keep the works duly insured under CAR Policy (Contractor All Risk Policy) as well as third Party Insurance for minimum value of Rs. 20 Lakhs until the Completion of the project or handing over whichever is later. The Bank shall ensure that proper insurance policies are taken in the joint names by the contractors and the same are renewed at appropriate time. The policies taken out by the contractor shall be kept in safe custody of the concerned Department of the Bank. The Site Engineer/PMC shall ensure that insurance policies are in order while certifying the contractor's bills. The concerned Department of the Bank shall also verify at the time of releasing payments to the contractors.

Before commencing the execution of the work the contractor but without limiting his obligations and responsibilities under the relevant of GCC shall insure against his liability for any material or physical damage, loss, or injury which may occur to any property including that of SBI, or to any person, including any employee of the SBI, by or arising out of the execution of the works or in the carrying out of the contract, otherwise than due to the matters referred to in the provision to the said clause thereof.

25.5.2 **Minimum amount of Third Party Insurance**

Such insurance shall be affected with an insurer and in terms approved by the SBI which approval shall not be reasonably withheld and for at least the amount stated below. The contractor shall, whenever required, produce to the Architect/Consultant the policy or policies of insurance cover and receipts for payment of the current premiums.

25.6 The minimum insurance cover for physical property, injury, and death is Rs. 20.00 lacs per occurrence with the number of occurrences limited to four. After each occurrence contractor will pay additional premium necessary to make insurance valid for four occurrences always.

25.7 **Accident or Injury to workman:**

25.7.1 The SBI shall not be liable for or in respect of any damages or compensation payable at law in respect or in consequence of any accident or injury to any workmen or other person in the employment of the contractor or any sub-contractor, save and except an accident or injury resulting from any act or default of the SBI or their agents, or employees. The contractor shall indemnify and keep indemnified SBI against all such damages and compensation, save and except as aforesaid and against all claims, proceedings, costs, charges and expenses whatsoever in respect thereof or in relation thereto.

25.7.2 **Insurance against accidents etc. to workmen**

The contractor shall insure against such liability with an insurer approved by the SBI during the whole of the time any person employed by him on the works and shall, when required, produce to the architect/consultant such policy of insurance and receipt for payment of the current premium. Provided always that, in respect of any persons employed by any sub-contractor the contractor's obligation to insure as aforesaid under this sub-clause shall be satisfied if the sub contractor shall have insured against the liability in respect of such persons in such manner that SBI is indemnified under the policy but the contractor shall require such sub-contractor to produce to the Architect/Consultant when required such policy of insurance and the receipt for the payment of the current premium.

25.7.3 **Remedy on contractor's failure to insure**

If the contractor fails to effect and keep in force the insurance referred to above or any other insurance which he may be required to effect under the terms of contract, then and in any such case the SBI

may effect and keep in force any such insurance and pay such premium or premiums as may be necessary for that purpose and from time to time deduct the amount so paid by the SBI as aforesaid and also deduct 15% of contract value from any amount due or which may become due to the contractor, or recover the same as debt from the contractor.

25.7.4 Without prejudice to the other rights of the SBI against contractors in respect of such default, the Bank shall be entitled to deduct from any sums payable to the contractor the amount of any damages costs, charges, and other expenses paid by the SBI and which are payable by the contractors under this clause. The contractor shall upon settlement by the insurer of any claim made against the insurer pursuant to a policy taken under this clause, proceed with due diligence to rebuild or repair the works destroyed or damaged. In this event all the monies received from the insurer in respect of such damage shall be paid to the contractor and the contractor shall not be entitled to any further payment in respect of the expenditure incurred for rebuilding or repairing of the materials or goods destroyed or damaged.

26.0 **Commencement of Works:**

The date of commencement of the work will be reckoned as the recorded date of handing over site by the SBI or 15 days from the date of issue of Letter of Acceptance of Bank, whichever is later.

27.0 **Time for completion**

Time is essence of the contract and shall be strictly observed by the contractor. The entire work shall be completed within a period of **03 months (Including monsoon and public holidays)**from the date of commencement. If required in the contract or as directed by the Architect / consultant. The contractor shall complete certain portions of work before completion of the entire work. However the completion date shall be reckoned as the date by which the whole work is completed as per the terms of the contract.

28.0 **Extension of time**

If, in the opinion of the Architect/Consultant, the work be delayed for reasons beyond the control of the contractor, the Architect/Consultant may submit a recommendation to the SBI to grant a fair and reasonable extension of time for completion of work as per the terms of contract. If the contractor needs an extension of time for the completion of work or if the completion of work is likely to be delayed for any reasons beyond the due date of completion as stipulated in the contract, the contractor shall apply to the SBI through the Architect/Consultant in writing at least 30 days before the expiry of the scheduled time and while applying for extension of time he shall furnish the reasons in detail and his justification if any, for the delays. The architect/consultant shall submit their recommendations to the SBI in the prescribed format for granting extension of time. While granting extension of time the contractor shall be informed the period extended time which will qualify for levy of liquidated damages. For the balance period in excess of original stipulated period and duly sanctioned extension of time by the SBI the provision of liquidated damages as stated under the relevant clause of GCC shall become applicable. Further contract shall remain in force even for the period beyond the due date of completion irrespective whether the extension is granted or not.

29.0 **Rate of progress**

Whole of the materials, plant and labour to be provided by the contractor and the mode, manner and speed of execution and maintenance of the works are to be of a kind and conducted in a manner to the satisfaction of the Architect/Consultant. Should the rate of progress of the work or any part

thereof be at any time be in the opinion of the Architect/ Consultant too slow to ensure the completion of the whole of the work by the prescribed time or extended time for completion the Architect/Consultant shall thereupon take such steps as considered necessary by the Architect/Consultant to expedite progress so as to complete the woks by the prescribed time or extended time. Such communications from the Architect/Consultant neither shall the relieve the contractor from fulfilling obligations under the contract nor he shall be entitled to raise any claims arising out of such directions.

30.0 **Work during nights and holidays**

Subject to any provision to the contrary contained in the contract no permanent work shall save as herein provided be carried on during the night or on holidays without the permission in writing of the Architect/Consultant, save when the work is unavoidable or absolutely necessary for the saving of life or property or for the safety of the work in which case the contractor shall immediately advise the Architect/Consultant. However, the provision of the clause shall not be applicable in the case of any work which becomes essential to carry by rotation or double shifts in order to achieve the progress and quality of the part of the works being technically required and continued with the prior approval of the Architect/consultant at no extra cost to the SBI.

All work at night after obtaining approval from competent authorities shall be carried out without unreasonable noise and disturbance.

31.0 **No compensation or restrictions of work**

If at any time after acceptance of the tender SBI shall decide to abandon or reduce the scope of work for any reason whatsoever and hence not required the whole or any part of the work to be carried out. The Architect / consultant shall give notice in writing to that effect to the contractor and the contractor shall act accordingly in the matter. The contractor shall have no claim to any payment of compensation or otherwise what so ever on account of any profit or advantage which he might have derived from the execution of the Work fully but which he did not derive in consequence of the foreclosure of the whole or part of the work.

Provided that the contractor shall be paid the charges on the cartage only of materials actually and bona fide brought to the site of the work by the contractor and rendered surplus as a result of the abandonment, curtailment of the work or any portion thereof and then taken back by the contractor, provided however that the Architect/Consultant shall have in such cases the option of taking over all or any such materials at their purchase price or a local current rate whichever is less.

In case of such stores having been issued from SBI stores and returned by the contractor to stores, credit shall be given to him at the rates not exceeding those at which were originally issued to the contractor after taking into consideration and deduction for claims on account of any deterioration or damage while in the custody of the contractor and in this respect the decision of Architect/Consultant shall be final.

32.0 Suspension of work

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

a) On account any default on the part of the contractor, or

b) For proper execution of the works or part thereof for reasons other than the default the contractor, or

c) For safety of the works or part thereof.

The contractor shall, during such suspension, properly protect and secure the works the extent necessary and carry out the instructions given in that behalf by the Architect / consultant.

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

The contractor shall be entitled to an extension of time equal to the period of every such suspension. No compensation whatsoever shall be paid on this account.

33 **Action when the whole security deposit is forfeited**

In any case in which under any clause or clauses of this contract, the Contractor shall have rendered himself liable to pay compensation amounting to the whole of his security deposit the Architect/Consultant shall have the power to adopt any of the following course as they may deem best suited to the interest of the SBI:

a) To rescind the contract (of which rescission notice in writing to the contractor by - Architect / consultant shall be conclusive evidence) and in which case the security deposit of the contractor shall be forfeited and be absolutely at the disposal of SBI.

b) To employ labour paid by the SBl and to supply materials to carry out the work, or part of the work, debiting the contractor with the cost of the labour and materials cost of such labour and materials as worked out by the Architect/consultant shall final and conclusive against the contractor) and crediting him with the value of the work done, in all respects in the same manner and at the same manner and at the same rates as if it had been carried out by the contractor under the terms of this contract certificate of architect /consultant as to the value of work done shall be final conclusive against the contractor.

c) To measure up the work of the contractor, and to take such part thereof as shall be unexecuted, out of his hands, and to give it to another contractor to complete in which case any expenses which may be incurred in excess of the sum which would have been paid to the original contractor, if the

whole work had been executed by him (The amount of which excess the certificates in writing of the

Architects / consultant shall final and conclusive) shall be borne by original contractor and may be deducted f any money due to him by SBI under the contract or otherwise, or from his security deposit or the proceeds of sale thereof, or sufficient part thereof.

In the event of any of above courses being adopted by the SBI the contractor shall have no claim to compensation for any loss sustained by him by reasons of his having purchased or procured any material or entered into any engagements or make any advances on account of, or with a view to the execution of the work or the performance of the contract and in case the contract shall be rescinded under the provision aforesaid, the contractor shall not be entitled to recover or to be paid any sum or any work thereto for actually performed under this contract, unless, and until the Architect/Consultant will have certified in writing the performance of such work and the value payable in respect thereof, and he shall only be entitled to be paid the value so certified.

34.0 **Owner's right to terminate the contract**

If the contractor being an individual or a firm commit any 'Act of Insolvency' or shall be adjudged an insolvent or being an incorporated company shall have an order for compulsory winding up voluntarily or subject to the supervision of Government and of the Official Assignee of the liquidator in such acts of insolvency or winding up shall be called upon within seven days after notice to him to do so, to show to the reasonable satisfaction of the Architect/Consultant that he is able to carry out and fulfil the contract, and provide security therefore if so required by the Architect/Consultant.

Or if the contractor (whether an individual firm or incorporated Company) shall suffer execution to be issued or shall suffer any payment under this contract to be attached by or on behalf of any of the creditors of the contractor.

Or shall assign or sublet this contract without the consent in writing of the SBI through the Architect/Consultant or shall charge or encumber this contract or any payment due to which may become due to the contractor there under:

a) Has abandoned the contract; or

b) Has failed to commence the works, or has without any lawful excuse under these conditions suspended the progress of the works for 14 days after receiving from the SBI through the Architect / consultant written notice to proceed.

c) Has failed to proceed with the works with such diligence and failed to make such due progress as would enable the works to be completed within the time agreed upon, or has failed to remove the materials from the site or to pull down and replace work within seven days after written notice from the SBI through the Architect/ Consultant that the said materials were condemned and rejected by the Architect/ Consultant under these conditions; or has neglected or failed persistently to observe and perform all or any of the acts, matters or things by this contract to be observed and performed by the contractor for seven days after written notice shall have been given to the contractor to observe or perform the same or has to the detriment of good workmanship or in defiance of the SBI's or Architect's/Consultant's instructions to the contrary subject any part of the contract. Then and in any of said cases the SBI and or the Architect/Consultant, may not withstanding any previous waiver, after giving seven days notice in writing to the contractor, determine the contract, but without thereby affecting the powers of the SBI or the Architect/Consultant or the obligation and liabilities of the contractor the whole of which shall continue in force as fully as if the contract had not been so determined and as if the works subsequently had been executed by or on behalf of the contractor. And, further the SBI through the Architect/Consultant, their agents or employees may enter upon and take possession of the work and all plants, tools, scaffoldings, materials, sheds, machineries lying upon the premises or on the adjoining lands or roads, use the same by means of their own employees or workmen in carrying on and completing the work or by engaging any other contractors or persons to complete the work

and the contractor shall not in any interrupt or do any act, matter or thing to prevent or hinder such other contractor or other persons employed for completing and finishing or using the materials and plant for the works.

When the works shall be completed or as soon thereafter as convenient the SBI or the Architect/Consultant shall give a notice in writing to the contractor to remove his surplus materials and plants and should the contractor fail to do so within 14 days after receipt thereof by him the SBI sell the same by public auction after due publication and shall adjust the amount realized by such auction. The contractor shall have no right to question any of the act of the SBI incidental to the sale of the materials etc.

35.0 **Certificate of payment**

The contractor shall be entitled under the certificates to be issued by the Architect/ Consultant to the contractor within 10 working days from the date of certificate to the payment from SBI from time to time. The SBI shall recover the statutory recoveries and other dues including the retention amount from the certificate of payment.

Provided always that the issue of any certificate by the Architect/Consultant during the progress of works or completion shall not have effect as certificate of satisfaction or relieve the contractor from his liability under clause.

The Architect/Consultant shall have power to withhold the certificate if the work or any part thereof is not carried out to their satisfaction.

The Architect/Consultant may by any certificate make any corrections required in previous certificate.

The SBI shall modify the certificate of payment as issued by the Architect/Consultant from time to time while making the payment.

The contractor shall submit interim bills only after taking actual measurements and properly recorded in the Measurement book (M.B).

The Contractor shall not submit interim bills when the approximate value of work done by him is less than **Rs.3.60 Cr** and the minimum interval between two such bills shall be one month.

The final bill may be submitted by contractor within a period of **one month** from the date of virtual completion and Architect/Consultant shall issue the certificate of payment within a period of two months. The SBI shall pay the amount within a period of three months from the date of issue of certificate provided there is no dispute in respect of rates and quantities.

The contractor shall submit the interim bills in the prescribed format with all details.

36.0 **A. Settlement of Disputes and Arbitration**

Except where otherwise provided in the contract all questions and disputes relating to the meaning of the specifications, design, drawings and instructions herein before mentioned and as to the quality of workmanship or materials used on the work or as to any other question, claim, right, matter or thing whatsoever in any way arising out of or relating to the contract, designs, drawings, specifications, estimates, instructions, orders or these conditions or otherwise concerning the work or the execution or failure to execute the same, whether arising during the progress of the work or after the cancellation, termination, completion or abandonment thereof shall be dealt with as mentioned hereinafter:

i) If the contractor considers that he is entitled to any extra payment or compensation in respect of the works over and above the amounts admitted as payable by the Architect or in case the contractor wants to dispute the validity of any deductions or recoveries made or proposed to be made from the contract or raise any dispute, the Contractor shall forthwith give notice in writing of his claim, or dispute to the Assistant General Manager (Premises& Estate) endorse a copy of the same to the

Architect, within 30 days from the date of disallowance thereof or the date of deduction or recovery. The said notice shall give full particulars of the claim, grounds on which it is based and detailed calculations of the amount claimed and the contractor shall not be entitled to raise any claim nor shall the Bank be in any way liable in respect of any claim by the contractor unless notice of such claim shall have been given by the contractor to the Assistant General Manager (Premises& Estate in the manner and within the time as aforesaid. The contractor shall be deemed to have waived and extinguished all his rights in respect of any claim not notified to the Assistant General Manager (Premises & Estate) in writing in the manner and within the time aforesaid

ii) The Deputy General Manager (Ops) shall give his decision in writing on the claims notified by the contractor. The contractor may within 30 days of the receipt of the decision of the Deputy General Manager (Ops) submit his claims to the conciliating authority namely the General Manager (Ops) for conciliation along with all details and copies of correspondence exchanged between him and the Deputy General Manager (Ops).

iii) If the conciliation proceedings are terminated without settlement of the disputes, the contractor shall, within a period of 30 days of termination thereof shall give a notice to the concerned Officer of the Bank for appointment of an arbitrator to adjudicate the notified claims failing which the claims of the contractor shall be deemed to have been considered absolutely barred and waived.

iv) Except where the decision has become final, binding and conclusive in terms of the contract, all disputes or differences arising out of the notified claims of the contractor as aforesaid and all claims of the Bank shall be referred for adjudication through arbitration by the Sole Arbitrator appointed by the Chief General Manager at Global Markets, Corporate Centre. It will also be no objection to any such appointment that the Arbitrator so appointed is a technically competent person not below the rank of Superintending Engineer or equivalent position in Public Sector Banks / CPSEs, CPWD, LIC, RBI etc. If the arbitrator so appointed is unable or unwilling to act or resigns his appointment or vacates his office due to any reason whatsoever another sole arbitrator shall be appointed in the manner aforesaid by the Officer. Such person shall be entitled to proceed with the reference from the stage at which it was left by his predecessor.

v) It is a term of this contract that the party invoking arbitration shall give a list of disputes with amounts claimed in respect of each dispute along with the notice for appointment of arbitrator.

vi) It is also a term of this contract that no person other than a person appointed by such Chief General Manager aforesaid should act as arbitrator.

vii) The conciliation and arbitration shall be conducted in accordance with the provisions of the Arbitration & Conciliation Act 1996 or any statutory modification or re-enactment thereof and the rules made there under.

viii) It is also a term of the contract that if any fees are payable to the arbitrator these shall be paid equally by both the parties.

ix) It is also a term of the contract that the arbitrator shall be deemed to have entered on the reference on the date he issues notice to both the parties calling them to submit their statement of claims and counter statement of claims. The venue of the arbitration shall be such place as may be fixed by the arbitrator in his sole discretion. The fees if any, of the arbitrator shall, if required to be paid before the award is made and published, be paid half and half by each of the parties. The cost of the reference and of the award (including the fees, if any of the arbitrator) shall be in the

discretion of the arbitrator who may direct to any by whom and in what manner, such costs or any part thereof shall be paid and fix or settle the amount of costs to be so paid.

37.0 **Power Supply**

The contractor shall make his own arrangements for power and supply/distribution system for driving plant or machinery for the work and for lighting purpose at his own cost. The cost of running and

maintenance of the plants are to be included in his tender prices. He shall pay all fees and charges required for the power supply and include the same in his tendered rates and hold the owner free from all such costs. He has to obtain necessary approval from the appropriate authorities, if required.

38.0 **Water supply**

The contractor shall make his own arrangements for water required for the work and nothing extra will be paid for the same. This will be subject to the following conditions:

i) That the water used by the contractor shall be fit for construction purposes to the satisfaction of the Architect / consultant's.

ii) The contractor shall make alternative arrangements for the supply of water if the arrangement made by the contractor for procurement of water in the opinion of theArchitect / consultant is unsatisfactory.

38.1 The Contractor shall construct temporary well/tube well in SBI land for taking water for construction purposes only after obtaining permission in writing from the SBI. The contractor has to make his own arrangements for drawing and distributing the water at his own cost. He has to make necessary arrangements. To avoid any accidents or damages caused due to construction and subsequent maintenance of the wells. He has to obtain necessary approvals from the local authorities, if required.at his own cost. He shall restore the ground to its original condition after wells are dismantled on completion of work or hand over the well to the SBI without any compensation as directed by the Architect/Consultant.

39.0 **Treasure trove etc.**

Any treasure trove, coin or object antique which may be found on the site shall be the property of SBI and shall be handed over to the Bank immediately.

40.0 **Method of measurement**

Unless otherwise mentioned in the schedule of quantities or in mode of measurement, the measurement will be on the net quantities or work produced in accordance with up to date. Rules laid down by the Bureau of Indian Standards. In the event any dispute/disagreement the decision of the Architect/Consultant shall be final and binding on the contractor.

41.0 **Maintenance of registers**

The contractor shall maintain the following registers as per the enclosed perform at site of work and should produce the same for inspection of SBI architect / consultant whenever desired by them. The contractor shall also maintain the records / registers as required by the local authorities / Govt. from time to time.

1	Measurement Books.
2	Cement Register (Daily Record).
3	Steel Register.
4	Steel Consumption Register – Bill wise.
5	Drawings register
6	Materials at site register.
7	Register for hindrance to work
8	Concrete cube Test Register.
9	File and Register for extra / variation items.
10	Materials test Register and File.
11	Site Order Book (in triplicate).
12	Lead caulking Register.
13	Labour Reports and progress Reports Register.
14	Site Visit & Instructions Register.
15	Certified true copies of the contracts
16	Register for running account bill&Register for secured advance
17	Register for labour

42.0 PRICE VARIATION ADJUSTMENT (PVA) FOR ALL MATERIALS (INCLUDING CEMENT & STEEL) & LABOUR

(Applicable only for completion period beyond 12 months)

In partial modification of the provisions made elsewhere in this contract regarding rate quoted being not subject to any variations, price adjustments to the value of work payable to the Contractor at tendered rates shall be made towards variations in the prices of materials and labour in the manner specified hereunder: -

(a) There be any variation in the Consumer Price Index- General Index- for industrial workers (Base 1982=100) (source – data published from time to time Indian Labour Journal by the Labour Bureau, Government of India);

OR

(b) There be any variation in the All India Wholesale Price Index for all commodities (Base 1993-94=100) (as published from time to time in the RBI Bulletin based on the date issued by the Office of the Economic Advisor to the Government of India);

Price Variation Adjustment (PVA) towards (1) Labour Component and (2) Material Component shall be calculated in accordance with the formula A and B respectively, given below, subject to stipulations herein under mentioned:-

FORMULA (A) FOR LABOUR:

$$VL = 0.85P \times \frac{K1}{100C0} \times (C1 - C0)$$

FORMULA (B) FOR MATERIALS:

$$VM = 0.85X \frac{(P-Y)}{100} X \frac{K2}{10} X (11 - 10)$$

Where-

VL = Amount of Price Variation Adjustment
Increase or decrease in rupees due to labour component

VM = Amount of Price Variation Adjustment
Increase or decrease in rupees on account of materials component

 Signature & Seal of Contractor

NOTE: Bill period (noted hereunder) signifies the period of actual execution and not date of measurement or preparation of bill.

P = Cost of work done during the period under consideration (bill period) excluding advances on materials and/or adjustments thereof.

Y = Cost of any other materials supplied/ arranged by the Bank at fixed price during the period under consideration (bill period)

K1 = Percentage of labour component calculated as indicated in Note (1) below.

K2 = Percentage of materials component as indicated in Note (2) below.

CO = Consumer Price Index – General Index Number for industrial workers (Base 1982 = 100) referred to at (a) above, ruling on the last due date of receipt of tenders, and as applicable to the centre, nearest to the place of work, for which the index is published).

10 = All India Wholesale Price Index number for all commodities referred to at (b) above, ruling on the last date for receipt of tenders and as applicable to the centre, nearest to the place of work for which the index is published.

11 = Average of above mentioned Consumer Price Index number during the period under consideration (bill period).

NOTE (1) : K1 shall be taken as under:-

	Component of work	K1
(a)	Civil work including ancillary works and external work and RCC / tanks, septic tanks, etc. if any of sanitary and plumbing work	30
(b)	Sanitary and plumbing works including fittings and fixtures (internal work only)	20
c)	Electrical installations work including fittings and fixtures (external and internal works)	20

NOTE (2) : K2 shall be taken as under:-

	Component of work	K 2
a)	Civil work including ancillary works as detailed under Note (1) (a) above	70
b)	Sanitary and plumbing works including fittings and fixtures as detailed under Note (1) (b) above	80
c)	Electrical installations work including fittings and fixtures as detailed under Note (1) (c) above	80

Stipulations:

(i) PVA Clause is operative either way i.e. if the variations in above referred price indices are on the plus side. PVA shall be payable to the contractor and if they are on the negative side PVA shall be recoverable from the contractor for the respective bill period of occurrence of fluctuations.

(ii) The rates quoted by the Contractor shall be treated as firm for the value of work required to be done in the first 12months of the contract period from the date of written order to commence work and no PVA is admissible on the same on any grounds whatsoever. The value of work required to be done during the first 12 months of the contract period shall be taken as 80% of the value of work to be done on pro-rata basis in 12 months as compared to the total stipulated completion period. No PVA is admissible on the value of work required to be done in first 12 months as worked out above, even if this value of work is actually done in a period longer than 12 months. However, in case of any delay in the first 12 months due to genuine reasons which are not attributable to the contractor and which are beyond his control, such period of delay will be deducted from 12 months, and the value of work to be done will be 80% of the pro-rata value of work to be done in such reduced period on pro-rata basis.

(iii) (a) For works where the original stipulated period of completion is not more than 12 months, no PVA whatsoever is permissible under this clause. However, if the period of completion is delayed beyond 12 months on account of genuine reasons which are not attributable to the contractor and which are beyond his control, PVA will be admissible on the value of work done only in excess of value of work required to be done on a pro-rata basis in the first 12 months minus the period of such genuine delay.

(b) For purpose of admissibility of PVA all the cumulative period of extensions granted for reasons which are solely attributable to the contractor is excluded from the total extended period of the contracts and PVA shall not be admissible on the value of work done during such period of extensions, which are granted for keeping the contract current, but only due to reasons for which the contractor was solely responsible. Periods of extensions granted on account of genuine reasons which are not attributable to the contractor and which are beyond his control will however, be included in the period for which PVA is admissible.

(c) Notwithstanding anything to the contrary mentioned in any other clause/ clauses of the contract, extensions of the contract period shall be granted by the Architect only with prior approval of the Bank. Extensions granted by the Architect without Bank's prior approval shall not bind the Bank for payment of PVA for work done in the concerned period of extensions.

(i) (a) Where the total cost of work done beyond the value of work required to be done in the first 12 months (vide note (ii) and (iii) above does not exceed Rs.50 lacs the total amount of PVA worked out on the basis of provisions of foregoing stipulations will be limited to an upper ceiling of 10% of such value of work done in excess of value of work required to be done in the first 12 months, minus the cost of any materials issued/arranged by the Bank at fixed prices i.e. P – Y (these terms being as per definitions given formulae A and B above).

(b) Where the total value of work done beyond the value of work required to be done in the first 12 months exceeds Rs.50 lacs, the PVA on the first Rs.50 lacs will be calculated as provided for in the foregoing para and for the balance value of work done for which PVA is admissible subject to foregoing conditions, the PVA will have the upper ceiling of 10% but it will be worked out at a lower rate i.e. 80% of the amount worked out as per the formulae A and B referred to earlier.

(ii) In working out the amount of PVA as per all the foregoing stipulations, value of such extra items or such portions of extra items the rates of which are derived from the prevailing market rates of materials and labour will not be included in the value of work done. Value of only such extra items or such portions of extra items, rats of which are derived entirely from tendered rates will be included in the value of work on which PVA as calculated

(iii) For claiming the payment for PVA the contractor shall keep such books of accounts and other documents, vouchers receipts etc. as may be required by the Bank/Architect, for verification of the increased claims or reduction to be made as the case may be and he shall also allow Engineers and/or other duly authorized representatives of the Bank/Architects and furnish such information as may be required or called for to enable verification of the claim within a week of such request.

(iv) The contractor is required to submit to the Bank, through the Architect, his claims for PVA separately for each running Bill for the individual bill periods for the work paid to him by the Bank. He will also be required to submit detailed calculations in support of the claims.

(v) No claim will be entertained from the contractor for interest or any other grounds for non-payment or for any delay in payment of PVA due to late publication or non-availability of the necessary price indices or due to delay in preparation of the Running or Final Bills.

(vi) In view of adjustments for variations in process of materials and labour which have been covered in this clause no other adjustments for any reason whatsoever like statutory measures, taxes, levies, etc. will be allowed

43.0 **Force Majeure**

43.1 Neither contractor not SBI shall be considered in default in performance of their obligations if such performance is prevented or delayed by events such as war, hostilities revolution, riots, civil commotion, strikes, lockout, conflagrations, epidemics, accidents, fire, storms, floods, droughts, earthquakes or ordinances or any act of god or for any other cause beyond the reasonable control of the party affected or prevented or delayed. However, a notice is required to be given within 30 days from the happening of the event with complete details, to the other party to the contract, if it is not possible to serve a notice, within the shortest possible period without delay.

43.2 As soon as the cause of force majeure has been removed the party whose ability to perform its obligations has been affected, shall notify the other of such cessation and the actual delay incurred in such affected activity adducing necessary evidence in support thereof.

43.3 From the date of occurrence of a case of force majeure obligations of the party affected shall be suspended during the continuance of any inability so caused. With the cause itself and inability resulting there from having been removed, the agreed time of completion of the respective obligations under this agreement shall stand extended by a period equal to the period of delay occasioned by such events.

43.4 Should one or both parties be prevented from fulfilling the contractual obligations by a state of force majeure lasting to a period of 6 months or more the two parties shall mutually decide regarding the future execution of this agreement.

44.0 **Local Laws, Acts, Regulations:**

The contractor shall strictly adhere to all prevailing labour laws inclusive of contract labour (regulation and abolition act of 1970) and other safety regulations. The contractor shall comply with the provision of all labour legislation including the latest requirements of all the Acts, laws, any other regulations that are applicable to the execution of the project.

i) Minimum wages Act 1948 (Amended)
ii) Payment of wages Act 1936 (Amended)
iii) Workmen's compensation Act 1923 (Amended)
iv) Contract labour regulation and abolition act 1970 and central rules 1971 (Amended)
v) Apprentice act 1961 (amended)
vi) Industrial employment (standing order) Act 1946 (Amended)
vii) Personal injuries (Compensation insurance) act 1 963 and any other modifications
viii) Employees' provident fund and miscellaneous provisions Act 1952 and amendment thereof
ix) Shop and establishment act
x) Any other act or enactment relating thereto and rules framed there under from time to time.
xi) Prevailing Indian Electricity rules & act.

45.0 Safety Code:
Safety as per annexure 4.32 should be followed

46.0 **Accidents**
The contractor shall immediately on occurrence of any accident at or about the site or in connection with the execution of the work report such accident to the Architect/Consultant. The contractor shall also report immediately to the competent authority whenever such report is required to be lodged by the law and take appropriate actions thereof.

47.0 BANK'S BUILDING PROJECTS – MAINTENANCE OF RECORDS

A.	**Registers at the site office**
1	Measurement Books.
2	Cement Register (Daily Record).
3	Steel Register.
4	Steel Consumption Register – Bill wise.
5	Drawings register
6	Materials at site register.
7	Hindrance Register.
8	Concrete cube Test Register
9	File and Register for extra / variation items
10	Materials test Register and File
11	Site Order Book (in triplicate).
12	Lead caulking Register.
13	Labour Reports and progress Reports Register
14	Site Visit & Instructions Register
15	Certified true copies of the contracts

SPECIAL CONDITIONS OF CONTRACT

Scope of work

1.0 The scope of work is to carry out Interior works of State Bank of India Commercial building. (Interior works including of Civil, Electrical, HVAC, IT/ Data Cabling, Plumbing. Drainage & Waterproofing works).

2.0 **Address of site**

The site is located at Synergy Building, G Block Bandra Kurla Complex, Mumbai.

3.0 **Dimensions and levels**

All dimensions and levels shown on the drawings shall be verified by the contractor at the site and he will be held responsible for the accuracy. Figured dimensions are in all cases to be accepted and dimension shall not be scaled. Large scale details shall take precedence over small scale drawings. In case of discrepancy the contractor shall ask for clarification from the Architect / consultant before proceeding with the work.

4.0 Building Permissions/ Statutory Approvals

The successful bidder/ contractor has to obtain necessary statutory approvals/ necessary permission from relevant Govt/ competent authority in consultation with Project Architect M/s Worksphere Ventures (India) Pvt Ltd for carrying-out the captioned project works time-to-time on behalf of the Bank. For the purpose, Bank will reimburse the statutory charges/ cost as actual, on production of tax receipts/ invoices in original by the bidder/ contractor.

In absence of necessary permissions/ statutory approvals in place, Bank will be at liberty to levy penalties on the successful bidder/ contractor or ask the successful bidder/ contractor to demolish the unauthorized works on his risk & cost.

5.0 **Notice of operation**

The contractor shall not carry out any important operation without the Consent from the Bank's Engineer/Architect / Consultant:

6.0 **Construction records**

The contractor shall keep and provide to the Architect / consultant full and accurate records of the dimensions and positions of all new work and any other information necessary to prepare complete drawings recording details of the work as construction.

7.0 **Safety of adjacent structures and trees**

The contractor shall provide and erect to the approval of the Architect / consultant supports as may be required to protect effectively all structures and protective give to trees, which may be endangered by the execution of the works or otherwise such permanent measures as may be required by the Architect to protect the tree structures.

8.0 **Temporary works.**

Before any temporary works are commenced the contractor shall submit at least in advance to the architect / consultant for approval complete drawings of all temporary works he may require for the execution of the works. The contractor shall carry out the modifications relating to strength, if required by the architect / consultant may require in accordance with the conditions of contract at his own cost The contractor shall be solely responsible for the stability and safety of all temporary works and unfinished works and for the Quality of the permanent works resulting from the arrangement eventually adopted for their execution.

9.0 **Water power and other facilities**

a) The rate quoted by the contractor shall include all expenses that are required for providing all the water required for the work and the contractor shall make his own arrangements for the supply of good Quality water suitable for the construction and good Quality drinking water for their workers If necessary the contractor has to sink a tube well / open well and bring water by means of tankers at his own cost for the purpose The SBI will not be liable to pay any charges in connection with the above.

b) The rate quoted in the tender shall include the expenses for obtaining and maintaining power connections and shall pay for the consumption charges

c) The contractors for other trades directly appointed by the SBI shall be entitled to take power and water connections from the temporary water and power supply obtained by the contractor However, the concerned contractor shall make their own arrangements to draw the supply and pay directly the actual consumption charges at mutually agreed rates between them. All municipal charges for drainage and water connection for Construction purposes shall be borne by the contactor and charges payable for permanent connections, if any, shall be initially paid by the contactor and the SBI will reimburse the amount on production of receipts

d) The SBI as well as the Architect / consultant shall give all possible assistance to the Contractor's to obtain the requisite Permission from the various authorities, but the responsibility for obtaining the same in time shall be of the contractor

10.0 **Facilities for contractor's employees**

The contractor shall make his own arrangement for the housing and welfare of his staff and workmen including adequate drinking water facilities. The contractor shall also make the arrangements at his own cost for transport where necessary for his staff and workmen to and from site of work at his own cost.

11.0 **Lighting of works**

The contractor shall at all times provide adequate and approved lighting as required for the proper execution and supervision and inspection of work.

12.0 **Firefighting arrangements**

i) The contractor shall provide suitable arrangement for firefighting at his own cost. This purpose he shall provide requisite number of fire extinguishers and adequate number of buckets, some of which are to be always kept filled with sand and some with water these equipment's shall be provided at suitable prominent and easily accessible place and shall be properly maintained.

ii) Any deficiency in the fire safety or unsafe conditions shall be corrected by the contractor at his own cost and, to the approval of the relevant authorities. The contractor make the following arrangements at his own cost but not limited the following:

a) Proper handling, storage and disposal of combustible materials and waste.
b) Work operations which can create fire hazards.
c) Access for fire-fighting equipment's.
d) Type, number and location of containers for the removal of surplus materials and rubbish.
e) Type, size, number and location of fire extinguishers or other tire fighting equipment.
f) General house keeping

13.0 **Site order book**

A site order book shall be maintained at site for the purpose of quick communication between the Architect / Consultant. Any communication relating to the work may be conveyed through records in the site order book. Such a communication from one party to the other shall be deemed to have been adequately served in terms of contract Each site order book shall have machine numbered pages **in triplicate** and shall carefully maintained and preserved by the contractor and shall be made available to the architect / consultant as and when demanded- Any instruction which the architect /consultant may like to issue to the contractor or the contractor may like to bring to the architect / consultant two copies of such instructions shall be taken from the site order book and one copy will be handed over to the party against proper acknowledgment and the second copy will be retained for their record.

14.0 **Temporary fencing/ barricading**

The contractor shall provide and maintain a suitable temporary fencing / barricading and gates at his cost to adequately enclose all boundaries of the site for the protection of the public and for the proper execution and security of the work and in accordance with the requirement of the architect I consultant and regulations of local authorities. These shall be altered, relocated and adopted from time to time as necessary and removed on completion of the work.

15.0 **Site meetings**

Site meetings will be held to review the progress and Quality evaluation. There shall be a monthly Site meeting in presence of AGM (P&E) either on site or the Local Head Office of the Bank as per instructions and directions received from time to time. Apart from the monthly site meetings, weekly site meetings with the technical team of the project shall be held including progressive site meetings as and whenever required during the course of execution of works on site. The contractor shall depute a senior representative along with the site representative and other staff of approved sub-contractors and suppliers as required to the site meetings and ensure all follow up actions. Any additional review meetings shall he held if required by the architect/ consultant and the contractor along with his entire team shall remain present without fail.

16.0 **Disposal of refuse**

The contractor shall cart away all debris, refuse etc. arising from the work from the site and deposit the same as directed by the architect / consultant at his own cost. It is the responsibility of the contractor to obtain from the local authorities concerned to the effect that all rubbish arising out of contractor's activities at the construction site or any other off-site activities borrow pits has been properly disposed off.

17.0 **Contractor to verify site measurement**

The contractor shall check and verify all site measurements whenever requested other specialists contractors or other sub-contractors to enable them to prepare the own shop drawing and pass on the information with sufficient promptness as will in any way delay the works.

18.0 **Displaying the name of the work**

The contractor shall put up a name board of suitable size as directed by the architect/ consultant indicating therein the name of the project and other details as given by the architect/consultant at his own cost and remove the same on completion of work.

19.0 **As built drawings**

i) For the drawings issued to the contractor by the Architect / Consultant. The architect Consultant will issue two sets of drawings to the Contractor for the items for some changes have been made. From the approved drawings as instructed by the SBI/ architect / consultant. The contractor will make the changes made on these copies and return these copies to the architect / Consultant for their approval. In cases revision is required or the corrections are not properly marked the architect / Consultant will point out the discrepancies to the contractor. The contractor will have to incorporated these corrections and / or attend to discrepancies either on copies as directed by the architect / consultant and resubmit to him for approval. The architect / consultant will return one copy duly approved by him.

ii) For the drawings prepared by the contractor

The contractor will modify the drawing prepared by him wherever the changes made by the SBI / architect / consultant. And submit two copies of such modified drawings to the architect/ consultant for approval. The architect / consultant will return one copy of the approved drawing to the contractor.

20.0 Approved make

The contractor shall provide all materials from the list of approved makes at his own cost and also appoint the specialized agency for the waterproofing anti-termite, aluminium doors and windows and any other item as specified in the tender. The architect/consultant may approve any make / agency within the approved list as given in the tender after inspection of the sample/mock up.

21.0 **Procurement of materials**

The contractor shall make his own arrangements to procure all the required materials for the work.All wastages and losses in weight shall be to the contractors account

22.0 **Excise duty, taxes, levies etc;**

The contractor shall pay and be responsible for payment of all taxes, duties, levies, royalties, fees, cess or charges except GST in respect of the works including but not limited to sales tax, tax on works contract excise duty, and octroi, except GST payable in respect of materials, equipment plant and other things required for the contact. All of the aforesaid taxes, duties, levies, fees and charges except GST shall be to the contractor's account and the SBI shall not be required to pay any additional or extra amount on this account. Variation of taxes, duties, fees, levies etc if any except GST, till completion of work shall be deemed to be included in the quoted rates and no extra amount on this account. Variation of taxes, duties, fees, levies etc if any excluding GST, till completion of work shall be deemed to be included in the quoted rates and no extra claim on this account will in any case be entertained. If a new tax or duty or levy or cess or royalty or octroi is imposed under as statutory law during the currency of contract the same shall be borne by the contractor.

23.0 **Acceptance of tender**

The SBI shall have the right to reject any or all tenders without assigning any reason. They are not to bind to accept the lowest or any tender and the tenderer or tenderers shall have no right to question the acts of the SBI. However adequate transparency would be maintained by the SBI.

24.0 **Photographs:**

- The Contractor shall at his own expense supply to the Architects with duplicate hard copies of large photographs not less than 25 cm. x 20 cm. (10" x 8") or HD videographs of the works, taken from four approved portions of each floor , at intervals of not more than one months during the progress of the work or at every important stage of construction.

- In addition to above, the contractor shall be bound to submit adequate no. of site photographs along with their each Running Bill for the project clearing showing major progress of work measured and claimed therein failing which the Architect/Bank may consider returning the Bill to the contractor and no claim for delay on this account will be entertained.

25.0 **Corrupt Practices**

No representative of the Bank / Architect or any one directly or indirectly involved in this Works shall be offered by the **Contractor** or any of his Sub Contractor, directly or indirectly, any benefit, fee, commission, dividend, gift or consideration of any kind in connection with the services and will not at any time offer gratuities or merchandise cash services or other inducement. The Contractor is aware of and familiar with the existence, provisions and purposes of the Anti-Bribery laws described below:
The prevention of corruption Act of 1998 (Indian Law) of the Indian penal code and the Foreign contribution (Regulation) Act of India (1976).

26.0 Liasoning with the Statutory Authorities

26.1 The Contractor shall be responsible for taking the approvals / NOC's from the statutory bodies like MCGM, Building Proposal, Ward Office of MCGM, CFO, CIDCO, Fire Departments, MHADA, Ward Offices or any other Statutory approval authority and the official charges of these departments shall be reimbursed by the bank on production of necessary documentary evidence in the form of challans & receipts. The successful contractor will indemnify the bank / Architect for any problems arising out of such approvals. All the expensesinvolved for getting such approvals / NOC's shall be paid by the contractor and no extra claim whatsoever shall be entertained. The Architect shall assist the contractor in coordination and making available the necessary drawings proposed by him for submission to the authorities, however the necessary follow-up & liasoning with these departments shall be the responsibility of the contractor. Any damage arising out of strict action of any of these departments shall be the sole liability of the contractor.

27.0 SAFETY RULES & PRECAUTIONS WHILE WORKING

1. All personnel at site should be provided with Helmets and Safety Boots with some Identification Mark. Visitors also should be provided with Helmets. It should be ensured that these are used properly.

2. First Aid Box should be kept at site with all requisite materials

3. No one should be allowed to inspect / work at a height without Safety Belt.

4. Suitable scaffolds should be provided for workmen for all Works that cannot safely be done from the ground, or from solid construction except such short period Work as can be done safely from ladders. When a ladder is used an extra Mazdoor shall be engaged for holding the ladder and if the ladder is used for carrying materials as well as suitable footholds and handholds shall be provided on the ladder and the ladder shall be given an inclination not steeper than ¼ to 1 (¼ horizontal and 1 vertical).

5. Scaffolding or staging more than 3.5 meters above the ground or floors, swung or suspended from an overhead support or erected with stationary support shall have a guard rail properly attached, bolted, braced and otherwise secured at least 1 Meter high above the floor or platform of such scaffolding or staging and extending along the entire length of the outside and ends thereof with only such openings as may be necessary for the delivery of materials. Such scaffolding or staging shall be so fastened as to prevent it from swaying from the building or structure.

5. Working platforms, Gangways, and Stairways should be so constructed that they do not sag unduly or unequally, and if the height of the platform or the Gangway or the Stairway is more than 3-5 Meters above ground level or floor level they should be closely boarded, should have adequate width and should be suitably fenced, as described.

6. Every opening in the floor of a building or in a working platform be provided with suitable means to prevent the fall of persons or materials by providing suitable fencing or railing whose minimum height shall be 1 Meter.

7. Safe means of access shall be provided to all working platforms and other working places. Every ladder shall be securely fixed. No portable single ladder shall be over 9 Meters in length while the width between side rails in rung ladder shall in no case be less than 30cms for ladder up to and including Meters in length. For longer ladders this width should be increased at least 6mm for each additional 30 cms. Uniform step spacing shall not exceed 30 cms.

8. Adequate precautions shall be taken to prevent danger from electrical equipments. For electrical on line works gloves, rubber mats, and rubber shoes shall be used.

10. All trenches 1.2 Meters or more in depth shall at all times be supplied with at least one ladder for each 30 Meters length or fraction thereof. Ladder shall be extended from bottom of the trench to at least 1 Meter above the surface of the ground. The sides of the trenches, which are 1.5 Meters or more in depth shall be stepped back to give suitable slope, or securely held by timber bracing, so as to avoid the danger of sides collapsing. The excavated materials shall not be placed within 1.5 Meters of the edge of the trench or half of the depth of the trench whichever is more cuttings shall be done from top to bottom. Under no circumstances undermining or under cutting shall be done.

11. Before any demolition work is commenced and also during the process of the work :-

a) All roads and open areas adjacent to the Work Site shall either be closed or suitably protected.
b) No electrical cable or apparatus which is liable to be a source of danger over a cable or apparatus used by the operator shall remain electrically charged.

c) All practical steps shall be taken to prevent danger to persons employed from risk or fire or explosion or flooding. No floor, roof or other part of the building shall be so over-loaded with debris or materials as to render it unsafe.

d) All necessary personal safety equipment as considered adequate by the Site Engineer should be kept available for the use of the persons employed on the Site and maintained in a condition suitable for immediate use; and the Contractor should take adequate steps to ensure proper use of equipment by those concerned.

e) Workers employed on mixing Asphaltic materials, cement and lime mortars shall be provided with protective footwear and protective goggles.

f) Those engaged in white washing and mixing or stacking of cement bags or any materials which is injurious to the eyes shall be provided with protective goggles.

g) Those engaged in welding works shall be provided with Welder's protective eye-shields.

h) Stone breakers shall be provided with protective goggles and protective clothing and seated at sufficiently safe intervals.

i) When workers are employed in sewers and manholes, which are in use, the Contractor shall ensure that the manhole covers are opened and are ventilated at least for an hour before the workers are allowed to get into the manholes and the manholes so opened shall be cordoned off with suitable railing and provided with warning signals and boards to prevent accident to the Public.

12. Use of hoisting machines and tackle including their attachments, anchorage and support shallconform to the following standard or conditions: -

a) These shall be of good mechanical construction, sound material and adequate strength and free from patent defect and shall be kept in good repairs and in good working order.

b) Every rope used in hoisting or lowering materials or as a means of suspension shall be of durable quality and adequate strength, and free from patent defects.

c) Every crane driver or hoisting appliance operator shall be properly qualified and no person under the age of 21 years should be in-charge of any hoisting machine including any scaffold, winch or give signals to the operator.

d) In case of every hoisting machine and of every chain ring hook, shackle swivel and pulley block used in hoisting or lowering or as means of suspension the safe working load shall be ascertained by adequate means.

e) Every hoisting machine and all gear referred to above shall be plainly marked with the safe working load. In case of hoisting machine having a variable safe working load, each safe working load of the conditions under which it is applicable shall be clearly indicated. No part of any machine or of any gear referred to above in this paragraph shall be loaded beyond the safe working load except for the purpose of testing.

f) Motor, Gearing, Transmission, Electric wiring and other dangerous parts of hoisting appliances should be provided with efficient safeguards, hoisting appliances should be provided with such means as will reduce to the minimum the risk of accidental descent of the load, adequate precautions should be taken to reduce to the minimum the risk of any part of a suspended load becoming accidentally displaced.

g) When workers are employed on electrical installation, which are already energized, insulating mats, wearing apparel such as gloves, sleeves, and boots as may be necessary should be provided. The workers should not wear any rings, watches and carry keys or other materials, which are good conductors of electricity.

13. All scaffolds, ladders and other safety devices, mentioned or described herein shall be maintained in safe condition and no scaffold, ladder or equipment shall be altered or removed while it is in use. Adequate washing facilities shall be provided at or near places of work.

14. Observance of Contract Labour Act 1970

Various provisions of the Contract labour Act 1970 and the rules made there under cast certain obligations on the Bank in respect of Bank's Projects under construction at various centers. Under the Act, the AGM/DGM of Premises/ Estate Department would be considered as the "Principal

Employer", even though the labourers are employed by the building contractor. The Act applies to every establishment in which twenty or more workmen are employed or were employed on any day of the preceding 12 months as contract labour. A workman shall be deemed to be employed as contract labour in connection with the work of an establishment when she/he is hired in connection with such work through a contractor with or without the knowledge of the principal employer.

However, in the cases of package deal agreements, it would not apply until the builder/vendor is deemed to be a contractor after execution of Deed of Conveyance, if so provided in the agreement. The Act also does not apply to the work of gardening, maintenance of residential colonies and services therein. Such arrangements need not be included in the records to be maintained under the Act and rules made thereunder. During the construction of a project the "Principal Employer" shall comply with certain provisions of the Act in so far as they are applicable to the particular case. These provisions relate to-

(i) Registration of Establishment (Section 7).

The principal employer shall make an application to the registering officer in the prescribed manner for registration of establishment. The application for registration shall be made in triplicate in Form No.1 (Ref. Annexure 4.11) to the registering officer of the area in which the establishment sought to be registered is located. The application shall be accompanied by the Treasury receipt showing payment of fees for the registration of the establishment. The application shall be either personally delivered to the registering officer or sent to him by registered post. The employer can not employ the contract labour in his establishment unless he registers under Section 7 of the Act.

(ii) Maintenance of registers and other records (Section 29).

The following registers and records are required to be maintained by the Principal Employer:

a) Register of contractors in Form XII of the Contract Labour (Regulation & Abolition) Control Rules 1971 (Refer Annexure-4.12).

b) Notice showing the rates of wages, hours of work, wage period, dates of payment of wages, names and address of the Inspectors having jurisdiction and date of payment of unpaid wages, shall be displayed in English and in Hindi and in local language, in conspicuous places at the work site.

c) Return intimating the actual date of the commencement or completion of each contract work, under each contractor, shall be submitted to the Inspector within 15 days from the commencement or completion of the work as the case may be. The return shall be filed in Form No.VI B (Refer Annexure 4.13).

d) The annual return in duplicate in Form No. XXV (Annexure 4.14) shall be submitted to the Registering Officer concerned so as to reach him not later than the 15th February following the end of the year to which it relates.

All the registers, records and notices shall be produced on demand before the Inspector or any other authority under the Act.

(iii) Responsibility of payment of wages of workmen (Section 21).

Every principal employer shall nominate a representative duly authorized by him to be present at the time of disbursement of wages by the contractor and it shall be the duty of such representative to certify the amounts paid as wages in the prescribed manner. The authorized representative shall record under his signature, a certificate at the end of the entries in the Register of wages or in the Register of wage and Muster Roll, in the following form.

"Certified that the amount shown in Column No. ____ has been paid to the workmen concerned in my presence on _____ at _____."

The Contractor shall be advised to disburse the wages in the presence of the authorized representative. If the contractor fails to make payment of wages within the prescribed period or makes short payment, the principal employer shall be liable to make payment of wages in full or the unpaid balance due to the contract labour employed by the contractor and recover the amount so paid from amounts payable to the contractors.

(iv) Welfare measures (Sections 16 to 19)
The welfare measures like canteen, rest rooms and other facilities to the contract labour are required to be provided by the contractor himself, but if any of the facilities is not provided by the contractor, then it shall be provided by the employer within 7 days of the commencement of the employment of contract labour. However, all expenses incurred by the Bank in providing the amenity shall be recovered from the Contractor either by deductions from any amount payable to the contractor or as a debt payable by the contractor.

(v) Penalty for contravention (Section 22 to 27).
a) Whoever obstructs an Inspector in the discharge of his duties under the Act or refuses or willfully neglects to afford the Inspector any reasonable facility for making any inspection, examination, enquiry or investigation authorised by or under the Act in relation to an establishment, shall be punishable with imprisonment for a term which may extend to 3 months or with fine which may extend to Rs.500/- or with both.

b) The contravention of any provision of the Act or of the rules made thereunder or contravention of any condition of a license granted under the Act is punishable with imprisonment which may extend to 3 months or with fine which may extend up to Rs.1000/- or with both.
The contractor shall ensure that all the obligations under the relevant provisions of the Act including obtaining licenses under Section 12 of the Act are complied with. Before releasing the contractor's final payment, it shall be ensured that the contractors have paid all dues to their contract labour.

ARTICLES OF AGREEMENT

(On non-judicial Stamp Paper of Rs. 500/-)

ARTICLES OF AGREEMENT made the _____ date of _____ between State Bank of India, having its office at Mumbai hereinafter called "the Bank" of the One Part and _____

_____

_____

WHEREAS the Bank is desirous of _____

_____ and has caused drawings and specifications describing the work to be done to be prepared by M/s. Worksphere Ventures (India) Pvt. Ltd., its Architects.

AND WHEREAS the said Drawings numbered _____ to_____ inclusive, the Specifications and the Schedule of Quantities have been signed by or on behalf of the parties hereto.
AND WHEREAS the Contractor has agreed to execute upon and subject to the Conditions set forth herein and to the Conditions set forth herein in the Special Conditions and in the Schedule of Quantities and Conditions of Contract (all of which are collectively hereinafter referred to as "the said conditions") the works shown upon the said Drawings and / or described in the said Specifications and included in the Schedule of Quantities at the respective rates therein set forth amounting to the sum as therein arrived at our such other sum as shall become payable there under (hereinafter referred to as "the said Contract Amount.)

NOW IT IS HEREBY AGREED AS FOLLOWS:

1) In consideration of the said Contract Amount to be paid at the times and in the manner set forth in the said Conditions, the Contractor shall upon and subject to the said Conditions execute and complete the work shown upon the said Drawings and described in the said Specifications and the priced Schedule of Quantities.

2) The Employer shall pay to the Contractor the said Contract Amount, or such other sum as shall become payable, at the times and in the manner specified in the said Conditions.

3) The term "the Architects" in the said Conditions shall mean the said M/s. Worksphere Ventures (India) Pvt Ltd, or in the event of their ceasing to be the Architects for the purpose of this Contract for whatever reason, such other person or persons as shall be nominated for that purpose by the Employer, not being a person to whom the Contractor shall object for reasons considered to be sufficient by the Employer, PROVIDED ALWAYS that no person or persons subsequently appointed to be Architects under this Contract shall be entitled to disregard or overrule any previous decisions or approval or direction given or expressed in writing by the outgoing Architects for the time being.

4) The said Conditions and Appendix thereto shall be read and construed as forming part of this Agreement, and the parties hereto shall respectively abide by submit themselves to the said Conditions and perform the Agreements on their part respectively in the said Conditions contained.

5) The term Electrical Consultant refers to person or persons as may be appointed by the Architects with the approval of the Employer.

6) The Plans, Agreements and Documents mentioned herein shall form the basis of this Contract.

7) This Contract is neither a fixed lump-sum contract nor a piece work contract but a contract to carry out the work in respect of the entire building complex to be paid for according to actual measured quantities at the rates contained in the Schedule of Quantities and Rates or as provided in the said Conditions.

8) The Contractor shall be responsible for taking the approvals / NOC's from the statutory bodies like MCGM, Building Proposal, Ward Office of MCGM, CFO, CIDCO, Fire Departments, MHADA, Ward Offices or any other Statutory approval authority and the official charges of these departments shall be reimbursed by the bank on production of necessary documentary evidence in the form of challans & receipts. The successful contractor will indemnify the bank / Architect for any problems arising out of such approvals. All the expenses involved for getting such approvals / NOC's shall be paid by the contractor and no extra claim whatsoever shall be entertained. The Architect shall assist the contractor in coordination and making available the necessary drawings proposed by him for submission to the authorities, however the necessary follow-up & liasoning with these departments shall be the responsibility of the contractor. Any damage arising out of strict action of any of these departments shall be the sole liability of the contractor.

9) The Contractor shall afford every reasonable facility for the carrying out of all works relating to civil works, installation of lifts, Telephone, electrical installations, fittings air-conditioning and other ancillary works in the manner laid down in the said Conditions, and shall make good any damages done to walls, floors, etc. after the completion of his work.

10) The Employer reserves to itself the right of altering the drawings and nature of the work by adding to or omitting any items of work or having portions of the same carried out without prejudice to this Contract.

11) Time shall be considered as the essence of this Contract and the Contractor hereby agrees to commence the work soon after the Site is handed over to him or from 14th day after the date of issue of formal work order as provided for in the said Conditions whichever is later and to complete the entire work within 24 month including monsoon and public holidays subject to nevertheless the provisions for extension of time.

12) All payments by the Employer under this Contract will be made only at Mumbai.

13) All disputes arising out of or in any way connected with this Agreement shall be deemed to have arisen at Mumbai and only the Courts in Mumbai shall have jurisdiction to determine the same.

14) That the several parts of this Contract have been read by the Contractor and fully understood by the Contractor.

IN WITNESS WHEREOF THE EMPLOYER and the Contractor have set their respective hands to these presents and two duplicates hereof the day and year first hereinabove written.

SIGNATURE CLAUSE

SIGNED AND DELIVERED by the

_____ By the
(Employer)

hand of Shri _____

_____ (Signature of Employer)
(Name and Designation)

In the presence of :

1) Shri / Smt. _____ (Signature of Witness)

Address _____

_____
(Witness)

SIGNED AND DELIVERED by the

_____ by the
(Contractor) (Signature of Contractors)

in the presence of :

Shri / Smt. _____ (Signature of Witness)

Address _____

_____
(Witness)

APPENDIX HEREIN BEFORE REFERRED TO

1)	Name of the Client Offering Contract	:	The Deputy General Manager (Ops), Global Markets, Corporate Centre, Nariman Point, Mumbai 400021
2)	Consultants	:	**M/s Worksphere Venture Pvt Ltd** Architects & Interior Designers, 407 - 414, Exim Link, Mulund Goregaon Link Road, Nahur West, Mumbai 400078
3)	Site Address	:	Synergy Building, G Block, Bandra Kurla Complex, Mumbai.
4)	Scope of Work	:	Proposed Interior works at 1st to 4th Floors of LHO, Mumbai Metro Building at Bandra Kurla Complex, Mumbai 400051.
5)	Name of the Contractor	:	---------- ---------- ----------
6)	Address of the Contractor	:	---------- ---------- ----------
7)	Period of Completion	:	**03 months** from the work order. **(Including monsoon and public holidays)**
8)	Earnest Money Deposit	:	**Rs. 36,00,000**/-(Thirty Six Lakhs only) By means of Demand Draft / Pay Order (Valid for a period of 90 Days from the last date of submissionof the tender) from any scheduled Nationalized Bank drawn in favour of AGM, State Bank of India, Local Head Office payable at Mumbai.
9)	Retention Money	:	As per the relevant clause of general Conditions.
10)	Defects Liability Period	:	Twelve Months from the date of Virtual Completion.
11)	Insurance to be undertaken by the Contractor at his cost	:	125% of Contract Value (Contractor's all-risk policy) Workmen Compensation Policy

12)	Liquidated damages	:	0.5% of the estimated amount shown in the tender per week max. 5% of the contract value.
13)	Value of Interim Bill (Min.)	:	**Rs. 360.00 Lacs (Rs. Three Crore Sixty Lacs Only)**
14)	Period of Final Measurement	:	2 (Two) Months from the date of Virtual Completion.
15)	Initial Security Deposit	:	2% of the Accepted Value of theTender. (pertaining to the relevant clause)
16)	Total Security Deposit	:	Total security deposit i.e. the ISD plus Retention Money shall both together not exceed 5% of the contract value
17)	Refund of initial Security Deposit Comprising of EMD and ISD.	:	50% of the Security Deposit shall be refunded to the Contractor on completion of the work and balance refunded only after the Defect Liability Period is over.
18)	Period for Honoring Certificate	:	1. 10 working days for R.A. Bills 2. The final bill will be submitted by the Contractor within one month of the date and the Bill shall be Certified within two months from the date of receipt of final bill provided the bills are submitted with all pre-requisite documents/test reports etc prescribed in the tender.

_____

Signature of Tenderer.

Date:

INDEX

PROFORMAS OF VARIOUS TESTS

TABLE-I

RECORD OF CEMENT RECEIVED / USED / BALANCE

S. No.	Cement in stock Bags	Cement received (Bags)	Total Cement received (Bags)	Source from which received	Description of work Where cement is used	Number cement bags consumed	Balance in stock	Signature of Contractors Bank / Engineer
1	2	3	4	5	6	7	8	9

Signature & Seal of Contractor

TABLE-II

RECORD OF PAINT / LEAD / CICO REGISTER

Name of work :

Name of the Contractor :

Agreement No. :

Date of Receipt	Source Receipt with Ref. To S.O./Indent	Qty. Received	Progressive Total	Item of work for which issued with approx. qty. work done in case of paint only	Date of issues	Quantity issued	Qty. returned at the end of the day	Total issued	Delay Balance at hand	Contractors initials	Site Engineers initials	Signature of Banks/ Architect
1	2	3	4	5	6	7	8	9	10	11	12	13

Register for bitumen should be maintained. The format will be similar to that for cement.

Signature & Seal of Contractor

TABLE-III

RECORD OF REINFORCEMENT BARS RECEIVED

Truck No.	Challan No.	Name of Supplier	Binding Wire	6mm dia.	8mm dia.	12mm dia.	16mm dia.	20mm dia.	25mm dia.	Total Received
1	2	3	4	5	6	7	8	9	10	11

Number of diameters given is only illustrative. Open more columns for other diameters wherever needed.

Signature & Seal of Contractor

TABLE-IV

PROFORMA FOR REGISTER OF MATERIAL AT SITE ACCOUNT

Name of Work :

Name of Contractor :

Agreement No. :

Name of Article :

Estimated Requirement :

Issue Rate :

Date Receipt	Received from/Issued to (with Ret. to So/Indent)	Receipt	Issue	Balance	Initials Contractor	Initial of Bank's/ Architect's representative	Remark
1	2	3	4	5	6	7	8

Signature & Seal of Contractor

TABLE-V

PROFORMA FOR ACCOUNT OF SECURED ADVANCE REGISTER.

Name of Work :

Name of Contractor :

Agreement No. :

Description of Material	Qty. outstanding from previous Bill	Deduct Qty. utilised in works measured since previous bill	Qty.outstanding & Qty.brought to site since previous bill	Signature of Site Engineer	Signature Contractor	Initial of Bank's/ Architect's representative	Remark
1	2	3	4	5	6	7	8

Signature & Seal of Contractor

TABLE-VI

PROFORMA FOR BULKAGE TEST OF SAND REGISTER

Sr. .No.	Date of Test	Volume of dust sand in Cylinder inundated & stirred	Volume inundated Sand in Cylinder	Percentage of Bulkage	Signature of Site Engineer	Signature of Contractor	Initial of Bank's Architect's representative (Periodical)
1	2	3	4	5	6	7	8

Signature & Seal of Contractor

TABLE-VII

PROFORMA OF SILT TEST REGISTER

Sr. No.	Date of Test	Height of Sand in Cylinder inundated& stirred	Height Silt	Max percentage of silt as specified	Percentage of silt obtained	Signature of Site Engineer	Signature of Contractor	Initial of Bank's / Representative (Periodical)
1	2	3	4	5	6	7	8	9

Signature & Seal of Contractor

TABLE-VIII

PROFORMA SIEVE ANALYSIS OF FINE AGGREGATE REGISTER

Sr. No	Date of Test	Wt. of Material to be tested	Sieve as per I.S. designation	Wt. of Sand retained in sieve	%a retained in each sieve successively	Cumulative % retained in each sieve	F.M.	Signature of Site Engineer	Signature of Contractor	Signature of Banks/ Architect's representative & Remarks (Periodical)

Signature & Seal of Contractor

TABLE-IX

PROFORMA OF SIEVE ANALYSIS OF COARSE AGGREGATE REGISTER

S. No	Date of Testing	Wt. of Material to be tested	Nominal size of Aggregate	I.S. Sievedesignation	Standard passing for graded aggregate. of nominal size	Test Result	Obtained passing	Signature of Site Engineer	Signature of Contractor	Signature of Banks/ Architect's representative & Remarks (Periodical)
1	2	3	4	5	6	7	8	9	10	11

Signature & Seal of Contractor

TABLE-X

PROFORMA FOR SLUMP TEST REGISTER

Sr No	Date of Testing	Type of work for which slump taken	Specified slump		Slump Obtained		Signature of Site Engineer	Signature of Contractor	Signature of Banks/ Architect's representative & Remarks (Periodical)
			When Vibrators are used	When Vibrators are not used	When Vibrators are used	When Vibrators are not used			
1	2	3	4	5	6	7	8	9	10

Signature & Seal of Contractor

TABLE-XI

PROFORMA OF CUBE TEST REGISTER

Date taking Cube Lime	Sampl No.	No. of Cube taker	Specifi markin of Cub	Propor n mixtur	Descrip on work carried out	Signatur of Enginee taking sample	Signa ture Contra ctor	7/28 Days Testing				Permissible Compress strength of Concrete / 28 Days / 7 days		Remarks on Test Report and No.	Remarks of Banks/ Architects representa tive Periodical s
								Date of Test	Test Result Kg/ Sq.cm	Av. Stren-gth Kg. / Sq.cm.	Stran-dard stren-gth Kg / Sq.cm.	7 Days	28 Days		
1	2	3	4	5	6	7	8	9	10	11	12	13		14	15

Signature & Seal of Contractor

TABLE-XII

PROFORMA FOR HINDRANCE TO WORK

Name of Work : Date of Start of work :

Name of Contractor : Period of Completion :

Agreement No. : Dt. of Completion of work :

S.No.	Nature Hindrance	Date of Occurrence Hindrance	Date of which Hindrance was removed	Period of which Hindrance existed	Signature of Site Engineer	Signature of Bank / Architects Representative
1	2	3	4	5	6	7

Signature & Seal of Contractor

PROFORMA FOR RUNNING A/C BILL

i. Name of Contractor / Agency :
ii. Name of Work :
iii. Sl.No. of this Bill :
iv. No. & Date of previous Bill :
v. Reference to Agreement No. :
vi. Date of Written order to commence :
vii. Date of Completion as per Agreement :

S.No.	Item Description	Unit	Rate (₹)	As per Tender	
				Quantity	Amount (₹)
1	2	3	4	5	

Upto Previous R.A. Bill		Up Date (Gross		Present Bill		Remarks
Quantity	Amount (₹)	Quantity	Amount (₹)	Quantity	Amount (₹)	
6		7		8		9

Note: 1. If part rate is allowed forany items, it should indicated with reasons for allowing such a rate

2. If ad-hoc payment is made, it should mentioned specifically.

_____
_____
Net Value since previous bill

Signature & Seal of Contractor

CERTIFICATE

The measurements on the basis of which the above entries for the Running Bill No. ---------- were made have been taken jointly on ---------- and are recorded at pages ---------- to ---------- of measurement book No. ----------.

----------	----------	----------
Signature and date of Contractor	Signature and date of Architects Representative(Seal)	Signature and date of Site Engineer

The work recorded in the above-mentioned measurements has been done at the site satisfactorily as per tender drawings, conditions and specifications.

----------	----------
Architect	Signature and date of Site Engineer

TABLE - XIV

ACCOUNT OF SECURED ADVANCE, IF ADMISSIBLE ON MATERIALS HELD AT SITE BY THE CONTRACTOR

S.No.	Item	Quantity	Unit	Amount	Remarks
1	2	3	4	5	6

Total value of materials at Site.

Secured Advance @ ---------- of above value - B

CERTIFIED:

(i) That the materials mentioned above have actually been brought by the Contractor to the site of the work and on advance on any quantity of any of this item is outstanding on their security.

(ii) That the materials (are of imperishable nature) and are all required by the Contractor for use in the work in connection with the items for which rates of finished work have been agreed upon.

Dated Signature of
Site Engineer
Preparing the bill
Rank ----------

Date signature of
Banks Architects----------
(Name of the Architects)

Dated Signature of
the Contractor

TABLE - XV

MEMORANDUM FOR PAYMENT

R/A BILL NO.

1.	Total value of work done since previous bill (A)		₹ ----------
2.	Total amount of secured advance due since Previous Bill (B)		₹ ----------
3.	Total amount due since Previous Bill (C) (A+B)		₹ ----------
4.	PVA on account of declaration in price of Steel, Cement and other materials and labour as detailed in separate statements enclosed.		₹ ----------
5.	Total amount due to the Contractor		₹ ----------
	OBJECTIONS:		
i)	Secured Advance paid in the previous R/A	₹ ----------	
ii)	Retention money on value of works as per accepted tenders upto date amount ₹	₹ ----------	
	Less already recovered	₹ ----------	
	Balance to be recovered	₹ ----------	
iii)	Mobilization Advance, if any		
(a)	Outstanding amount (principal + interest) as on date	₹ ----------	
(b)	To be recovered in this bill	₹ ----------	
iii.	Any other Departmental materials cost to be recovered as per contract, if any	₹ ----------	
iv.	Any other Departmental service charges to be recovered if any, as per contract (water, power etc.) enclose statement.	₹ ----------	

 Signature & Seal of Contractor

Total Deduction as per contract (F) ₹ ----------

Adjustments, if any ---------- Amount less received by Contractor in ---------- R/A Bill (as per statement of Contractor) ₹ ----------

P.V.A. ₹ ----------

Total amount payable as per contract (E+F+G) ₹ ----------

(Rupees ---------- in words)

The bill amount to ₹ ---------- (both figures and words) has been scrutinized by us after due checking of the measurements of work as required and is recommended for payment.

Date: ---------- ----------

Signature of Architect
with Seal

The bill amount to ₹ ---------- certified by Consultants has been scrutinized by me after due test checking of measurements of works as required and is recommended for payment for an amount of ₹.....

Date : ----------

Signature of Owners
Engineer

STATUTORY DEDUCTION:

i) Total Amount due (E) ₹ ----------

ii) Less I.T. Payable ₹ ----------

iii) Less S.T. Payable ₹ ----------

Net Payable ₹ ----------

These figures given in the Memorandum for payable has been verified and bill passed for payment ---------- ---------- (in words and figures)

Date: ---------- ----------

Assistant General Manager(Premises& Estate)

MODE OF MEASUREMENT

1. Unless otherwise stated, all pipes shall be measured net, length as laid and measured overall fittings, such as bends, junctions, etc., and given in running meters. The length shall be taken along the centre line of the pipes and fittings.

2. Length of fittings viz, taps, valves, traps etc., which are paid under appropriate items shall not be re-measured under linear measurements as enumerated above.

3. Soil waste and vent pipes shall be measured along the centre line of the stack including the connecting bends/tees to W.C. Pan, Nahani trap, etc. and shall be paid as enumerated above.

4. W.C. Pans, Lavatory basins, Sinks, drain boards, Urinals, Mirrors, Glass shelf Toilet paper Holder, shall be measured by number and shall include all accessories as enumerated in detail specification under each item.

5. Unless otherwise specified, all types of taps, valves, etc., shall be measured by number and paid separately.

6. Manholes, inspection Chambers, Gully traps, etc. shall be constructed according to detail specification and measured by number and paid separately. The depth of Manhole shall mean the vertical distance from the top of the Manhole cover to the outgoing invert of the main drain channel.

7. Water meter shall include Y strainer and other appurtenances required by the local bodies and shall include brick masonry chamber, etc., as per detailed specifications and item shall be measured by number and paid for accordingly or as per schedule of quantity.

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TECHNICAL SPECIFICATION
(CIVIL & ALLIED SERVICES)

SECTION – A: MATERIALS

1) Material shall be of best approved quality obtaining and they shall comply with the respective Indian Standard Specification.
2) Samples of all materials shall be got approved before placing order and the approved sample shall be deposited with the Architect.
3) In case of non-availability of materials in metric sizes the nearest size in FPS units shall be provided with prior approval of the Architects for which neither extra will be paid nor shall any rebates be recovered.
4) If directed, materials shall be tested in any approved Testing Laboratory and the test certificates in original shall be testing including charges for repeated tests, if ordered, shall be borne by the Contractor.
5) It shall be obligatory for the Contractor to furnish certificate, if deemed by the Architects, from manufacturer or the material supplier that the work has been carried out by using their material and as per their recommendations.
6) All materials supplied by the Employer / any other Specialist Firms shall be properly stored and the Contractor shall be responsible for its safe custody until they are required on the works and till the completion of the work.
7) Unless otherwise shown on the Drawings or mentioned in the "Schedule of Quantities" or special specification, the quality of materials, workmanship, dimensions, etc., shall be as specified as hereunder.
8) All equipment and facilities for carrying out field tests on materials shall be provided by the Contractor without any extra cost.

a) **Cement:**

Cement shall comply in every respect with the requirements of the latest publications of IS: 269 and unless otherwise specified ordinary Portland Cement shall be used.

The weight of ordinary Portland Cement shall be taken as 1440 kg. per cu.m. (90 lbs. per c.ft.). Cement shall be measured by weight and in whole bags, and each undisturbed and sealed 50 kg. bag being considered equivalent to 35 liters (1.2 c.ft.) in volume care should be taken to see that each bag contains full quantity of cement. When part bag is required cement shall be taken by weight or measured in measuring boxes.

No other make of cement but that approved by the Architects will be allowed on works and the source of supply will not be changed without approval of Architect in writing. Test certificates to show that cement is fully complying the specifications shall be submitted to the Architects and
notwithstanding this, the Architect may at his discretion, order that the cement brought on site and which he may consider damaged or of doubtful quality for any reason whatsoever, shall be re-tested in an approved testing laboratory and fresh certificates of its soundness shall be produced.

Cement ordered for re-testing shall not be used for any work pending results of re-test.

Cement shall be stored in weather-proof shed with raised wooden plank flooring to prevent deterioration by dampness or intrusion of foreign matter. It shall be stored in such a way as to allow the removal and use of cement in chronological order of receipt i.e., first received being used first used. Cement deteriorated and or clotted shall not be used on the work but shall be removed at once from the site. However, allowing use of warehouse set cement shall be determined by the Architects.

b) **Lime:**

Lime shall comply in every respect with the requirements of IS: 712 and shall be made from approved line stone or kankar and properly burnt. It shall be free from excess of unburnt kankars or lime stone ashes or other extraneous materials and shall be stored in weather-proof sheds. Lime which has damaged by rain, moisture, or air slacking shall not be used but shall be removed from the site of work forthwith. Lime shall be slacked with fresh water and screened through appropriate screens and stored and used within 14 days provided it is protected from drying out.

Field tests according to IS: 1624 shall be carried out from time to time to determine the quality of lime.

c) **River Sand:**

River sand shall confirm to IS: 383 and relevant portion of IS: 515. It shall pass through pass through a I.S. sieve 4.75 mm. (3/16 B.S.) test sieve, leaving a residue not more than 5%. It shall be from natural source i.e. only river or crushed stone screenings, if allowed, chemically clean, sharp, hard durable, well graded and free from dust, pebbles, clay, shale, salt, organic matter, loam, mica or other deleterious matter. The sum percentages of all deleterious substances to acceptable limits. River sand shall not contain any trace of salt and it shall be tested and river sand containing any trace of salt shall be rejected.

The fine aggregate i.e. river sand for concrete shall be graded within limits as specified in IS: 383 and the fineness Modules may range between 2.60 to 3.20.

The fine aggregate shall be stacked carefully on a clean hard dry surface so that it will not get mixed up with deleterious foreign materials. If such a surface is not available a platform of planks or corrugated iron sheets or brick floor or a thin layer of lean concrete shall be prepared.

d) **Fine & Coarse Aggregate:**

Shall consist of crushed or broken stone 95% of which shall be retained on 4.75 mm. IS tests sieve. It shall be obtained on crushing Granite, Quartzite, Trap, Basalt, or similar approved stones from approved quarry and shall confirm to IS:383 and IS 515. Fine & Coarse aggregate shall be chemically inert when mixed with cement and shall be cubical in shape and be free soft, friable, thin, porous, laminated or flaky pieces. It shall be free from dust and any other foreign matter.

Gravel / Shingle of desired grading may be permitted as a substitute in part or full in plain cement concrete if the Architect is otherwise satisfied about the quality of aggregate. For all the R.C.C. works the size of coarse aggregate shall be 20 to 25 mm. and fine aggregate shall be 10 to 15 mm.

e) Reinforcement:

Reinforcement shall be of mild steel tested quality confirming to I.S.: 432-1966 and any other I.S. applicable or deformed bar confirming to IS:1786 and Is:1139 or hard drawn Fe 415 (Tor Steel) steel wire fabric confirming to IS:1566;1967.

All finished bars shall be free from cracks, surface flaws, laminations, jagged and imperfect edges.

f) **Bricks :**

Bricks shall generally comply with IS:1077 except in size which shall be classified as 1st and 2nd class.1st class bricks shall be the best quality locally available table moulded, well burnt but not over burnt, have plain rectangular faces with parallel sides and sharp right-angled edges, have a find compact and uniform texture. The bricks shall be free from cracks, chips, flaws, stones or subsequent to soaking in water. It shall emit a clear ringing sound on being struck and shall not absorb water more than 20% by weight. Common building bricks shall have a compressive strength of 35 kg. / sqm unless otherwise specified for first class bricks.

g) **Neeru:**

Shall be made of Class "C" Lime (i.e. pre-fat lime) as mentioned in IS: 712. It shall be slaked with fresh water then sifted and reduced to a thick paste by grinding in a mill. Neeru thus prepared shall be kept moist until used and no more than that can be consumed in 15 days shall be prepared at time.

h) **Surkhi :**

Shall be made by grinding well burnt bricks, brick bats, burnt clay balls, etc., the brick etc., to be used shall be prepared from selected clay. The quality shall confirm to IS:1344.

Bricks bats, etc., shall be ground in mechanical disintegrator to a find powder passing through IS Sieve No. 9 (2.36 mm.) with a residue not exceeding 10% by weight.

Surkhi for lime surkhi plaster shall be ground to fine powder in a mortar mill to pass through IS Sieve 150 micron (No. 100)

Surkhi shall be stored in a weather-proof shed on a brick pave platform.

i) **Water :**

Water for mixing cement / lime / surkhi mortar or concrete shall not be salty or brackish and shall be clean, reasonably clear and free from objectionable quantities of silt and traces of oil, acid and injurious alkali, salts, organic matter and other deleterious materials which will either weaken the mortar or concrete or cause affluence or attack the steel in reinforced cement concrete. Water shall be obtained from sources approved by the Architect. Potable water is generally considered satisfactory for mixing and curing concrete, mortar masonry, etc., where water other than main source is used this shall be tested in an approved testing laboratory to establish its suitability. All charges connected therewith shall be borne by the Contractor.

j) **Timber :**

Timber shall be well seasoned and of the best quality Indian Teak of specified species viz., Dandeli, Balarshah, Melabar, C.P.

Timber shall be considered as well seasoned, if its moistures content does not exceed the following limits.

a) Timber for frames	14%
b) Timber for planking, shutters, etc.	12%

The moisture content of timber shall be determined according to method described in paragraphs 4 of IS:287 for Maximum permissible moisture content of timber used for different purpose in different climatic zones.

In measuring cross-sectional dimensions of the frame pieces tolerance up to 1.5 mm. shall be allowed for each planed surface.

k) **Superior quality Indian Teak Wood :**

Superior quality Indian Teakwood means Dandeli, Balarshah, and Malabar Teak. It shall be of good quality and well-seasoned. It shall have uniform colour, reasonably straight grains, and shall be free from large.

Loose, dead knots, cracks, shakes, warp, twists, bends, borer holes, sap-wood or defects of any kind. No individual hard and should knot shall be more than 1 cm. in diameter and aggregate areas of all knots shall not exceed ½% of area of the piece. There shall not be less than 6 growth rings per 2.5 cm. width.

l) **1st Class Indian Teakwood :**

1st Class Indian Teakwood means C.P. and Bulsar teak of good quality and well-seasoned. It shall have uniform colour, reasonably straight grains and shall be free from large. Loose dead knots, cracks, shakes, warp, twists, bends, sap-wood or defects of any kind. No individual hard and should knot shall be more than 2.5 cm. in diameter and aggregate areas of all the knots exceed 1% areas of the piece. There shall not be less than 5 growth tings per 2.5 cm. width.

m) **2nd Class Indian Teakwood :**

Shall be similar to first class Indian teak wood except that knot up to 4 cm. diameter and aggregate area of all knots up to 1 ½% of the area of the piece shall be allowed. There shall not be sapwood up to 15% is allowed.

n) **Flush Doors :**

All flush doors shall be solid core exterior grade unless otherwise specified and it shall generally confirm to IS:2202 and shall be fabricated as described under specification.

o) **Steel Windows and Doors :**

Steel windows and doors shall be fabricated of steel sections conforming to IS:226. They shall conform to IS 1038. Unless otherwise specified the details of construction etc., shall be as described under specification.

p) **Vitrified Tiles :**

Vitrified tiles shall comply with IS:777 or relevant or latest I.S. code. It shall be from an approved manufacturer and shall be flat and true to shape. They shall be free cracks, crazing, spots, chipped edges and corners. The glazing and colour shall be uniform shade and unless otherwise specified the tiles shall be 9 mm. thick.

q) **Marbles :**

Marble slabs for flooring, dado veneering etc., shall be of kind specified in the item such as white or pink, Makrana, Chittor black, Bhanslana black, Jaisalmer yellow, Baroda green, Patiala (Pepsu) grey, etc., Marble from which slabs are made shall be selected quality, hard, sound dense and homogenous in texture and free from cracks, weathering, decay and flaws. Before starting the work, the contractor shall get the sample of Marble slabs approved by the Architect.

The slabs shall be machine cut and machine polished.

r) **Kotah / Shahabad / Cudappa / Granite :**

Shall be of selected quality, hard, sound, dense, and of homogenous texture, free from cracks decay, weathering and flaws. Stone slabs shall be of uniform colour as approved by the Architect. They shall be machine cut and machine polished where specified and shall confirm to the required size. Thickness shall be specified in the respective items.

s) **Glazing :**

Glass used for glazing shall be float glass of best quality, free from flaws, specks bubbles and shall be 2.9 mm. thick up to 0.60 x 0.60 mm. size and for larger size it shall be 4 mm. thick unless otherwise specified in the Schedule of Quantities.

The following type of glasses shall be used:-

1) For Office Building	Clear glass or as specified in the Schedule of Quantities.
2) Office (toilets)	Clear or frosted
3) Partitions	Frosted

t) **Paints :**

Lime for lime wash, dry distemper, oil bound distemper cement primer, oil paint, enamel paint, flat oil paint, plastic emulsion paint, anti-corrosive primer, red lead, water-proof cement paint and exterior grade Acrylic Emulsion paint, cement paint, sand-tex matt shall be from an approved manufacturer and shall conform to the latest Indian Standard for various paints. Ready mixed pains as received from the manufacturer without any admixture shall be used, except for addition of thinner, if recommended by the manufacturer.

u) **Mortar :**

Lime SurkhiMortar :

Lime and surkhi shall confirm to the specifications. It shall be composed of approved lime and surkhi in proportion of 1 lime to 2 surkhi mixed thoroughly. The ingredients shall be accurately gauged by measure and shall be well and evenly mixed together on a platform and water added to make it homogenous. When large quantities are required the mortar shall be mixed in a mechanical grinder.

Cement Mortar :

Cement mortar shall be of proportions specified for each type of work in the schedule. It shall be composed of Portland Cement and sand. The ingredients shall be accurately gauged by measure and shall well and evenly mixed together in a mechanical pan mixer, care being taken not to add more water than is required. No mortar that has begun to set shall be used. River sand shall be used unless otherwise specified.

If hand mixing is allowed, then it shall be done on pucca water-proof platform. The gauged materials shall be put on the platform and mixed dry. Water will then be added and the whole mixed again until it is homogenous and of uniform colour. Not more than one bag of cement shall be mixed at one time and which can be consumed within half an hour of its mixing.

Composite Lime, Cement, Sand Mortar :

The mortar shall be of proportions specified for each type of work in the schedule of quantities. It shall comprise of Portland cement, lime and sand. Lime shall be measured in gauge boxes similar to one used for measuring cement and sand to the proportion specified and sufficient water then added to it to form a thick slurry thus obtained shall then be added to dry cement and sand mixture and thoroughly mixed to make a workable homogenous mortar of uniform colour by adding more water if necessary. Mechanical ixersshall generally be used for mixing such mortars. If hand mixing is allowed it shall be done on pucca platform.

Note :

In connections with the I.S. Code numbers indicated under Section, Specification, Section A – General
Refer to the following I.S. Code numbers and the year and or otherwise latest modified I.S. Code Number.

1) Cement	:	I.S. 269 – 1976
2) Lime	:	I.S. 712 – 1964
		I.S. 1624 – 1960
3) Fine – Aggregate	:	I.S. 383 – 1970
4) Coarse – Aggregate	:	I.S. 515 – 1970
5) Reinforcement	:	I.S. 432 – 1966 Fe 415
		I.S. 1786 – 1966 (Tor Steel)
		I.S. 1139 – 1966
6) Bricks	:	I.S. 1077 – 1970
7) Neeru	:	I.S. 712 – 1964
8) Surkhi	:	I.S. 1344 – 1968
9) Timber	:	I.S. 287 – 1960
10)Flush Doors	:	I.S. 2202 – 1966
11)Floor Tiles	:	I.S. 1237 – 1980
12)Ceramic / Vitrified Tiles	:	I.S. 777 – 1970
13) Asbestos Roofing and Rainwater pipes	:	I.S. 459 – 1962
14) R.C.C. design mix M-25	:	I.S. 456 – 2000

SECTION – B: MODE OF MEASUREMENTS

The method of measurement for various items in the tender shall be generally in accordance with the IS: 1200 subject to the items for which the mode of measurements is not given under or elsewhere in the tender.

1) **Cement Concrete (Plain & Reinforcement)**:

Cement concrete in R.C.C. and P.C.C. items shall be measured exclusive of reinforcement and plaster thickness but shall include necessary costs of shuttering, centering, hire charges of all equipment, curing, hacking and fair finish. Reinforcement and plaster shall be measured and paid separately.

Items line R.C.C. precast jalli, R.C.C. pipes and other such items which are normally manufactured in factories as well as those items which have been specifically mentioned in the Schedule of Quantities shall be measured inclusive of reinforcement.

No deductions will be made for openings up to 0.1 sq.mtr. and no extra labour for forming such openings or voids shall be paid.

Columns shall be measured from face to face of columns / beams and shall include haunches, if any. The depth of the beams (other than raft foundations beam) shall be measured from the top of the slab to the bottom of the beam.

2) **Reinforcement**:

Shall be measured in lengths of bars as actually placed in position on standard weight basis; no allowance being made in the weight for rolling margin, Wastage and binding wire shall not be measured, authorised overlaps and spacers shall only be measured.

Standard weight for steel reinforcement bars

Diameter of the steel b in mm.	6	8	10	12	16	20	25	32
Weight of steel bars in per Rmt.	0.22	0.39	0.62	0.89	1.58	2.47	3.85	6.31

3) **Brick Work** :

Except walls of half-brick thickness or less, all brick work shall be measured in cubic meters.

Thickness of Wall:

Brick walls up to and including three bricks in thickness shall be measured in multiples of half-brick which shall be deemed to be inclusive of the mortar joints. Where fractions on half-bricks occur due to Architectural or other reasons, the measurement shall be taken half-bricks.

For walling, which is more than three bricks in thickness, the actual thickness of the wall be measured to the nearest centimeter.

Honey-combed brick walling shall be given in square meters stating the thickness of wall and the pattern of honey-combing. Honey comb openings shall not be deducted.

Deductions:

No deductions or additions shall be made on any account for

a) Ends of dissimilar materials (i.e. joists, beams, lintels, lofts, grinders, rafters, purlins, trusses, corbels, steps, etc.) up to 500 square centimeters in section.
b) Opening up to o.1 sq. in section.
c) Wall plates, bed plates and bearing of slabs, chajjas and the like where the thickness does not exceed 10 cm. and the bearing does not extend over the full width of the wall.

4) **Stone Masonry** :

Except where otherwise described, stone work and stone walling generally shall be given in cubic meters and facia work in square meters.

When measuring walls, the thickness shall be measured to the nearest one centimeter.

Deductions shall be made as described under brick work.

5) **Wood Work**:

All work shall be measured net as fixed. No extra measurement will be given for shape, joints, splayed meeting styles of doors and windows and shall be measured in unit of square meters.

Area over the face inclusive of exposed frame thickness (excluding width of cover mould) shall be measured in case of door, windows and ventilators when frames are included in the item. Portions embedded in masonry or flooring shall not be measured. Where frames are measured separately mode of measurement shall be as per C.P.W.D. practice or IS:1200.

6) **Steel doors, windows, ventilators, louvers**:

Clear area over one face inclusive of exposed frame shall be measured. Holdfasts or portions embedded in masonry or flooring shall be measured.

7) **Flooring, Skirting, Dado**:
Flooring shall be measured from skirting to skirting and where the wall surface is plastered or provided with Dado, it shall be measured from plaster to plaster or dado to dado.

8) **Plastering and Pointing**:

All plastering and pointing shall be measured in square meters unless otherwise described.

Net are of surface plastered shall be measured. No deductions will be made for ends of joints, beams, posts, etc., and opening not exceeding 0.5 Sq.mtr. each and no additions shall be made neither for reveals, jambs, soffits, sills, etc. of these openings nor for finishing the plaster around openings, ends, of joists, beam and posts, etc.

Full deductions will be made for door, window and ventilator from each side with adding jambs for door, window and ventilator.

9) **Painting, White Washing, Colour Washing and Distempering**:

All painting work shall be measured in square meters.

Net are of surface painted shall be measured. No deductions will be made for unpainted surfaces of ends of joists, beams, posts etc., and opening not exceeding 0.5 sq.mtr. each and no additions shall be made for reveals, jambs, soffits, sills, etc., of these openings.

Full deductions will be made for door, window and ventilator from each side with adding jambs for door, window and ventilator.

No coefficient will be considered for painting over sponge finished or sand faced plaster.
The following multiplying factors for obtaining equivalent areas shall be adopted.

No.	Description of works	How measured	Multiplying Factor
a)	Wood paneled framed ledged, braces and battened.	Measured flat (not girthed) including frame, edges, chawkats, cleats, etc., shall be deemed to be included in the item.	1 1/8 (for each side).
b)	Wood flush part paneled and part.	-- do – glazed or gauzed.	1 (for each side).
c)	Fully glazed or gauzed or glazed louvered ventilators / window / door.	-- do --	¼ (for each side).
d)	Fully venetioned of louvered (not with glazing).	-- do --	1 ½ (for each side).
e)	Weather boarding.	Measured flat (not girthed supporting frame work shall not be measured separately).	1 1/8 (for each side).
f)	Trellis (or Jaffri) work one way or two ways.	Measured flat overall, no deduction shall be made for opening (supporting members shall not be measured separately)	1 (for each side).
g)	Guard bars, balustrades, gratings, grille railings, grille partitions, etc.	--- do ---	1 (for painting all over).
h)	M.S. gates & open palisades fencing, door including standards, braces, rails, stays, etc.	See note below	1 (for painting over all).
i)	Steel rolling / alligator type shutters.	Measured flat over jambs, guides, bottoms, rails and locking arrangement etc. shall be deemed to be included in the item.	1 ¼ (for each side).
j)	Carved or enriched work.	Measured flat.	2 (for each side).
k)	Fully glazed or gauzed steel windows or partitions.	Measured flat.	1 ¼ (for all over).

Note :

The height shall be taken from the bottom of the lowest rail, if the palisades do not go below it (or from the lower end of the palisades, if they project below the lowest rail) up to the top of the palisades, but not up to the top of the standards, if they are higher than the palisades. Similarly, for the gates, depth of roller shall not be considered while measuring the height.

Area painted over sand cement plaster, sponge finished / sand faced plaster / rough cast plaster area painted without considering any coefficient for painting over sand faced plaster

SECTION – C: WORKMANSHIP

PLAIN & REINFORCED CEMENT CONCRETE

A) **VOLUMETRIC BASIS**: -

General : Except where they are varied by the requirements of this specification due provision of Indian Standard Specification IS-456-1964 for plain and reinforced concrete and IS-432 part I and II for Mild and Medium Tensile steel Bars and hard drawn steel wire for concrete reinforcement and any other relevant ISS applicable together with the latest amendments shall be held to be incorporated this specifications. It shall be intent of these specifications to ensure that all concrete placed at various location of the job should be durable, strong enough to carry design, loads, it should wear well and practically be impervious to water. It should be free from such defects as shrinkage, cracking and honey-combing.

Proportioning the Mix :

In ordinary concrete, excluding controlled concrete, proportions of cement to fine and coarse aggregate shall be as specified in the respective items and shall be accurately measured as in table "A" below. These proportions are based on assumption that the aggregates are dry. If aggregates are moist allowance shall be made for bulking in accordance with IS:2386/-. Allowance shall also be made for surface water present in aggregate when computing water contents. Surface water present shall be determined by one of the field methods described in IS:2386/- (Part III). In the absence of exact data, the amount of surface water may estimate by the value given in table "B" below (Table "A" and "B" please see on page nos.124 & 125).

Mixing :

Concrete of 1:2:4 or richer mix shall be mixed in an approved mechanical mixer. The mixer and mixing platform shall be suitably protected from wind and rain. Aggregates shall be accurately measured out in boxes and mixed dry along with cement, water shall be then added in measured quantity and mixing shall be continued until there is a uniform distribution of the materials and the mass is uniform in colour and in consistency but in no case shall he mixing be done for less than 2 minutes.

When hand mixing is permitted with the approval of the Architect it shall be carried out on water-tight mixing platform and care shall be taken to ensure that mixing is continued until mass is uniform in colour and consistency.

Consistency :
Quantity of water for making reinforced concrete shall be sufficient so as to ensure that concrete shall surround and properly grip all the reinforcement. The best consistency shall be that, which will flow sluggishly without flattening out and without separation of

coarse aggregates from the mortar. The degree of plasticity shall depend on the nature of work and atmospheric temperature and whether the concrete is vibrated or hand compacted. The slumps shown in table "C" obtained by standard slump test carried out in accordance with the procedure laid down in IS:119-1959 shall be adopted for different types of work.

Admixtures :

The usage of admixtures is allowed only if approved by the structural consultant and his decision in this regard shall be final.

Transportation:

Concrete shall be conveyed from the place of mixing to the place of final deposit as rapidly as practicable by methods which will prevent segregation or loss of any of the ingredients. If segregation does occur during transport, the concrete shall remix before being placed. In no case, more than 30 minutes shall elapse between mixing the consolidation in its position.

Placing and Compacting :

Concrete shall be placed in layers of suitable thickness or in strips and compacted before initial setting commences and should not be subsequently disturbed. Method of placing shall be such as to preclude segregation and as far as practicable the placing shall be continuous. Special care shall be taken in accordance with IS:456 while laying concrete under extreme weather.

Concrete shall be thoroughly compacted during the operation of placing and thoroughly working around the reinforcement, embedded fixtures and spaded against corners of the form work and by punning, rodding, mechanically vibrating or by any other approved means. In addition, form work shall be tapped lightly by using wooden mallet at the pouring head. The number and type of vibrator to be used shall be subject to the approval of the Architects and in general immersion type vibrators shall be used. External vibrators shall also be used whenever directed.

The intensity and duration (of vibration shall be sufficient to cause complete settlement and compaction without any stratification of successive layers or separation of ingredients or formation of laitance. Vibrator shall be inserted vertically in the concrete at points not more than 45 cm. apart and withdrawn very slowly when air bubbles no longer come on the surface. Over vibration or vibration of very wet mixes is harmful and should be avoided. Care shall be taken to utilize the vibrator only to compact the concrete and not to spread it, sufficient number of reserve vibrator in good working condition shall be kept on hand at all times, so as to ensure that there is no slackening or interruption in compacting.

Construction Joints :

Concreting shall be carried out end to end continuously as far as possible and when construction joints are totally unavoidable, it shall be located in a predetermined position approved by the Architect. The joints shall be kept at places where the shear force is the minimum and these shall be straight and at right angles to the direction of main reinforcement. When the work has to be resumed, on a surface which has hardened, such surface shall be roughened. It shall be swept clean, thoroughly wetted and covered with a 13 mm. layer of mortar composed of cement and sand in the same ration as the cement concrete mix. This 13 mm. layer of mortar shall be freshly mixed and placed immediately before the placing of the concrete.

Where the concrete has not fully hardened, all laitance shall be removed by scrubbing the
Wet surface with wire or bristle brushes, care being taken to avoid dislodgment of particles of aggregate. The surface shall then be coated with neat cement grout. In horizontal joints the first layer of concrete to be placed on this surface shall not exceed 15 cm. thickness and shall be well rammed against old work, particular attention being paid to corners.

Expansion Joint:

Expansion joint shall be provided where required as shown on the drawings or as directed by the Architect / Consultant. The joints shall be filled by the approved quality filler.

Curing :

Concrete shall be carefully protected during first stage of hardening from harmful effects of excessive heat, drying winds, rain or running water. It shall be covered with a layer of sacking, sand canvas, hessian, or similar absorbent materials and kept constantly, wet for ten days from the date of placing of concrete. Alternatively, the concrete being thoroughly wetted and covered by layer of approved water-proof material which should be kept in contact with it for seven days.

Form Work :

The form work shall conform to the shape, lines and dimensions as shown on the plans and be so constructed as to remain sufficiently rigid during the placing and compacting of the concrete and shall be sufficiently watertight to prevent loss of cement slurry from the concrete. Form work or centering shall be constructed of steel or timber and adequately designed to support the full weight of wet concrete without deflection and retain its form during laying, ramming and setting of concrete. Timber used shall be properly seasoned so as to prevent deformation when wetted.

All props shall be straight and of full height and no joints shall be allowed. Props shall be braced with thin bamboos or wooden battens and where additional staging is necessary, extra care shall be taken to use bigger diameters props with bracing at 4 or 5 levels. All props shall be supported on sole plates and double wedges. At the time of removing props these wedges shall be gently eased and not knocked out.

All rubbish, chippings, shavings and saw dust shall be removed from the interior of the forms before the concrete is placed and the form work in contact with the concrete shall be cleaned and thoroughly wetter or treated with non-staining mineral oil or any other approved materials is kept out of contact with the reinforcement.

All form work shall be removed without shock or vibration and shall be eased off carefully in order to allow the structure to take up its load gradually. Forms shall not be disturbed until concrete has adequately hardened to take up superimposed load coming on it and in no circumstances shall forms be struck until the concrete may be subjected at the time of striking.

In the normal circumstances (generally where temperatures are above 21 degrees centigrade) and where ordinary cement is used, forms may be struck after expiry of following periods :

a)	Walls, Columns and Vertical sides of beam}	48 hours as may be directlyby the Architect
b)	Bottom of slab up to 4.5 m. span.	7 days.
c)	Bottom of slab up to 4.5 m. span.	14 days.

bottom of beam and arch rib up to 6 m. span.

d) Bottom of beams and arch rib over 6 m. span. 21 days.

However, this period may be increased or decreased at the discretion of Architects. Special care shall be taken while striking the centering of cantilevered slab canopies, portal frames, folded plate construction and period of striking centering shall be as determined by the Architect.

If directed, form shall be given an upward camber to ensure that the beams do not have any sag. Surface that becomes exposed on removal of forms shall be carefully examined and any fins, burrs, projections etc., that are detected shall be removed. Any honeycombing of minor nature shall be finished neatly with cement mortar 1:2.

Any work showing signs of damage through premature or careless removal of centering or shuttering, shall be reconstructed by the contractor at his own cost.

Strength :

Concrete mixed in the proportion desired shall have compressive strength after placing, not less than the following:

No	Concrete Mix.	Minimum compressive strength @ 7 days	Minimum compressive strength @ 28 days
1	1:1:2	160 Kg. / Sq.mtr. (2250 Lbs. / Sq. inch).	250 Kg. / Sq.mtr. (3500 Lbs. / Sq. inch).
2	1:1½:3	132 Kg. / Sq.mtr. (1875 Lbs. / Sq. inch).	200 Kg. / Sq.mtr. (2850 Lbs. / Sq. inch).
3	1:2:4	106 Kg. / Sq.mtr. (1500 Lbs. / Sq. inch).	150 Kg. / Sq.mtr. (2250 Lbs. / Sq. inch).

Tests :

Tests on concrete shall be carried out in accordance with IS-456/- and any other is applicable. The frequency of work test shall be at such intervals as ordered by the Architect and subject to that every 150 cu.m. of concrete placed or part thereof and for a day's concrete exceeding 30 cu.m. a batch of 6 cubes shall be made for every sample and 3 of them tested after 7 days and the remaining 3 cubes shall be tested after 28 days. The criteria for acceptance of a concrete as confirming to a specified proportion / grade of concrete shall be in accordance with IS:456 and the Contractor shall entirely re-do the rejected work at his own cost. Strength of 28 days shall alone be considered for acceptance.
The Contractor shall arrange to carry out the tests in accordance with the relevant Indian Standards Specifications in an approved laboratory and the test reports in original be submitted to Architect. The entire cost of testing shall be borne by the Contractor.

Steel Reinforcement :

Reinforcement shall be accurately fabricated, placed and adequately maintained in position as shown on the drawings or as directed by the Architect. All finished bars shall be free from cracks, surface flaws, laminations,

jagged and imperfect edges. Cement mortar blocks shall be used to give requisite cover as shown be firmly tied with binding wire of 16 to 18 gauge. Reinforcement shall be bent in accordance with the procedure stipulated in IS:2502-1963 and will not be straightened in a manner which will injure the material.

All reinforcement shall immediately before placing in concrete be thoroughly cleaned of loose mill scale, loose rust, oil and grease or other deleterious matter that would destroy or reduce bond.

Reinforcement in reinforced concrete members shall not be connected by welding or coupling except in accordance with relevant ISS and with the previous approval of the

Architect. Overlaps and joints shall be staggered and located at points, along the spans where neither shear nor bending moment is maximum.

Cover :

Reinforcement shall have cover as shown on the R.C.C. drawings and where not specified the thickness of cover shall be as follows. Cement mortar blocks in C.M. 1:1 shall be used for making cover blocks.

a) At each end of reinforcing bar not less than 25 mm. not less than twice the diameter of such rod or bar.
b) For a longitudinal reinforcing bar in a column not less than the diameter of such rod or bar. In the case of columns of minimum of 20 mm. or under whose reinforcing bars do not exceed 13 mm. the cover of 25 mm. may be used.
c) For longitudinal reinforcing bar in a column not less than 25 mm. not less than diameter of such rod or bar.
d) For tensile, compressive, shear or other reinforcement in a slab not less than 13 mm. nor less than diameter of such reinforcement, and
e) For ant other reinforcement not less than 13 mm. not less than the diameter of such reinforcement.

A) **WEIGH-BATCHING BASIS i.e. (DESIGN MIX CONCRETE):**

Workmanship of Design Mix Concrete shall be carried out in accordance with I.S:456 – 2000 and any other I.S. Code is applicable.

TABLE – A

No	Nominal Mix.	Quantity of aggregates required per 50 kgs of cement.		Quantity of water required per 50 kgs of cement.	
		Fine Cu.m.	Coarse Cu.m.	Vibrated	Un-vibrated (For dry aggregate)
1	1:1:2	0.035 (1.2 C.ft.)	0.070 (2.4 C.ft.)	22 lit. (4.8 Gal.)	27 lit. (6 Gal.)
2	1:1½:.3	0.052 (1.8 C.ft.)	0.106 (3.6 C.ft.)	23 lit. (5 Gal.)	30 lit. (6 Gal.)
3	1:2:4	0.070 (2.4 C.ft.)	0.138 (4.8 C.ft.)	27 lit. (6 Gal.)	32 lit. (7 Gal.)
4	1:3:6	0.105 (3.6 C.ft.)	0.210 (7.2 C.ft.)	28 lit. (6.25 Gal.)	34 lit. (7.5 Gal.)
5	1:4:8	0.150 (4.8 C.ft.)	0.280 (9.6 C.ft.)	-- --	45 lit. (10 Gal.)

TABLE – B

No	Aggregate	Approx. quantity of surface water in Lit / Cu.m.
1	Very wet sand.	120
2	Moderately wet sand.	80
3	Moist sand.	40
4	Moist gravel or crushed sock. Coarser the aggregate, lesser the wate will carry.	20 to 40

TABLE – C

No.	Type of Work	SLUMPS	
		When vibrated	When not vibrated
1.	Mass concrete in R.C.C. foundation footing	2.5 cms. (1")	5 cms. (2")
2.	Beams, slabs, columns with sim reinforcement.	2.5 cms. to 5 cms. (1" to 2")	5 cms. to 10 cms. (2" to 4")
3.	Thin sections with congested reinforcement	5 cms. to 10 cms. (2" to 4")	10 cms. to 15 cms. (4" to 6")

Note: Should conditions governing slump and workability changed pointing to advisability of an increased slump, this shall only be done by decreasing the amount of aggregate and not by increasing the amount of water.

B) **WEIGH-BATCHING BASIS i.e. (DESIGN MIX CONCRETE)**:-

Workmanship for design mix concrete shall be carried out in accordance with I.S. 456-2000 and any other I.S. code is applicable.

BRICK AND STONE MASONRY

General :

All brick work should be carried out as shown on the drawings with setbacks, projections, cuttings, toothings, etc. Wherever the proportion of cement mortar has not been specifically mentioned, cement mortar in the proportion of 1:6 shall be used. Flat bricks arches shall be provided wherever required without any extra cost. Brick work shall be kept wet while in progress, till mortar has properly set. On holidays or when work is topped, top of all unfinished masonry shall be kept wet. Should the mortar become dry, white or powdery, for want of curing work shall be pulled down and rebuilt at the Contractor's expenses.

Brick Work 1st Class:

Bricks shall be thoroughly cleaned, well wetted and soaked for at least twelve hours in fresh water before being used on the work. Bricks shall be of locally, available best quality.

English bond shall be used throughout in walling. A good bond shall be maintained throughout the work, both laterally and transversely. In walling, the courses shall be kept perfectly horizontal and in plumb with the frogs facing upwards. Vertical joints shall not exceed 10 mm. thickness and shall be full of mortar. No broken bricks shall be used except as closers. After day's work all joints shall be raked to 12 mm. depth to provide for proper key to plastering.

Mortar used shall be as specified in respective items and every third course of brick work shall be flushed with mortar grout.

Whole of the masonry work shall be brought up at one uniform level throughout the structure; but where breaks are unavoidable, joints shall be made in good long steps. All junctions of walls and cross walls shall be carefully bounded into the main walls. The rate of laying masonry may be up to a height of 60 cm. per day if cement mortar is used and 45 cm. per day if lime mortar is used. Greater heights may be built only if permitted by the Architect.

During rains, the work shall be carefully covered to prevent mortar from being washed away. Should any mortar or cement be washed away, the works shall be removed and rebuilt at the Contractor's expenses.

Bricks Work 2nd Class:
Shall be similar to 1st class brick work except that 2nd class bricks shall be used and joints shall be 10 mm. t0 12 mm. thick.

Half BrickMasonry :

Shall be set in cement mortar as specified. Hoop iron bands of 2.5 cm. x 0.16 (1" x 1/16") shall be embedded in every fourth course with thick mortar band or 2 Nos. 6 mm. (1/4") dia. bars shall be used in every sixth course otherwise as specified under item.

RUBBLE MASONRY

General :

Stones shall be of the kind specified in the item and shall be from an approved quarry. Stones shall be well wetted before laying in position. The mortar shall be as specified in the item. Face stone shall not be less than in breadth than in height, it shall also tail into the work more than its height. Jambs of doors, windows and openings shall be formed with quoins. In case of battered walls, the courses on battered surface shall be at right angle to the batter.

Through stones or headers shall be laid in every course at a distance not exceeding 2 meters part and shall be staggered. They shall be in one piece for walls up to 1.5-meter width and shall be lap jointed in case of wall having thickness more than half meter. The face area of each header shall not be less than 0.50 sqm. 1:2:4 cement concrete may also be allowed where good length headers are not available. Headers shall be marked with oil paint for ready identification.

Height of quoins shall be same as that of the course. Length of quoins shall be 0.50 m. and shall be laid header and stretcher alternatively. Faces of quoins shall be fair dressed. No quoins stones shall be less than 0.30 cum. In content. Joints of masonry shall be raked out and unless otherwise stated, shall be raised cement pointed by using cement mortar 1:1 to all exposed surfaces. All masonry work shall be well watered for a period of seven days.

a) **Coursed Rubble Masonry – First Sort** :

Height of course shall not be less than 15 cm. and all courses shall be of uniform height. All stones in the course shall be of same height. In no case height of course shall be more than any of the course below it. Bed and sides shall be hammer or chisel dressed back from the face 75 mm. and 35 mm. respectively.

Faces of stones shall be hammer dressed and bushing shall not be more than 35 mm. Thickness of joints shall not be more than 10 mm. Stones shall break joints at least half the height of the course. Work on interior face shall be precisely the same, as on exterior face.

Quoins shall be at least 0.5 m. long laid square on their beds and shall be fair dressed to a depth of at least 10 cm.

b) Uncoursed Rubble Masonry :

Stones shall be hammer dressed. Nearly fifty per cent of stones shall not be less than 0.30 cum. in content each, and twenty-five per cent of stone shall tail back in masonry by 40 cm. or more. Stones shall be so arranged as to break joints as much as possible.

Long vertical joints shall be carefully avoided. Thickness of joints shall in no case exceed 12 mm.

Pillar offsets shall be properly dressed with hammer or chisel to form proper angle. Stones used for the backing shall be of fairly large size.

c) **Random Rubble Masonry – First Sort** :

Stones shall be roughly chisel dressed. They shall be solidly bedded in mortar. Height of stone shall not be more than width of face or length of tail. Stones shall be of equal size and so arranged as to break joints as much as possible, avoiding long lines of horizontal or vertical joints. Quoins shall be same as described in Coursed Rubble Masonry – 1st Sort. All stones shall be carefully fitted. Thickness of face joint shall be not exceeded 25 mm. Edges of stones shall be chisel dressed for fitting in position properly.

WOOD WORK

Timber used shall conform to specifications described under Materials, Doors, Windows, Ventilators, walls, Paneling, False Ceiling, etc., shall be in accordance with Architect's drawing in every detail and all joiner's work shall be accurately set out, framed and finished in a proper workman-like manner, frames of doors, windows and ventilators etc. and shutter styles and rails shall be best solid teak of quality specified in the schedule of quantities. The scantlings shall be accurately planed smooth, rebates, rounding and mouldings shall be made as shown on the drawings, patching or plugging of any kind shall not be allowed. Joints shall be simple, neat and strong. Framed joints shall be coated with suitable adhesive like glue or synthetic resin before the frames are put together. All mortice and tenon joints shall be fit and fully and accurately without wedging on filling. The joints shall be pinned with hard wood or bamboo pins of 10 mm. to 12 mm. dia. or rust resisting star shaped metal pins 8 mm. after the frames are put together and pressed in position by means of press. The frames are put together and pressed in progress of work by suitable boxing. All portions of timber abutting against or embedded in masonry or concrete shall be treated against termites by giving a coat of any approved wood preservative.

Unless otherwise specified all doors, frames shall have six M.S. flat holdfasts and window frames shall have four holdfasts shall be provided to the ventilators, if directed. Size of holdfasts shall be 30 mm. x 40 mm. x 6 mm. M.S. flat bent to shape worth fish tail end and it shall be fixed to frame with sufficient number of screws as directed. When door / window frames are to be fixed to R.C.C. column or R.C.C. wall, holdfasts shall be substituted by suitable arrangements such as coach crews, rawl bolts etc., to secure frames to R.C.C. column or R.C.C. wall as directed by the Architect.

Frames and shutter shall not be painted or erected before being approved by Architect.

Panelled Shutter :

Panels shall be of pattern and size as shown on the drawings or as directed by Architect. Solid teak wood panels shall be in one piece wherever possible. Where two or more pieces are permitted, they shall be of equal width. Panels shall be framed into grooves made in styles and rails to the full depth of groove and faces shall be closely fitted to sides of groove.

Where panels specified are block board, it shall be solid core with teak internal lipping and of approved make.

Partly paneled and partly glazed shutter shall be similar to paneled shutters except that such parts as are directed shall be glazed with plain or ground glass as specified. Styles and rails shall be rebated 12 mm. to receive glass. Sash bars shall be moulded and rebated and mitered on sides to receive the glass which shall be fixed with putty and beads

Hardware Fittings :

Unless otherwise specified all hardware, fittings and fixtures shall be supplied by the employer free of charge. However, the cost of fixing fittings shall be included in the rate quoted. The fixing shall be done in the best workman-like manner in accordance with the manufactures specifications. The Contractor shall be held responsible for working of all moving parts dependent on proper fixing. He will also be responsible for any breakage due to negligence during fixing or lack of protection before the building is handed over. The Contractor shall also take delivery of all hardware fittings etc., as and when supplied and arrange for safe storage etc.
Hardware required for fixing false ceiling, wall paneling etc., shall be arranged by the Contractor at his cost. Apart from the hardware fittings required for the joinery items, the Contractor shall have to fix all other items of hardware fittings to be supplied by the employer viz. coat / picture hooks, numerical, letters to denote buildings, hanging rods etc., as directed by the Architects.

Painting and polishing of wood work shall be as per specifications under respective heads.

Flush Doors :

All flush doors shall be solid core unless otherwise specified. It shall conform to the relevant specifications of I.S. 2202 and shall be obtained from approved manufactures. The finished thickness of the shutter shall be mentioned in the items. Face veneers shall be of the pattern and colour approved by the Architect and an approved sample shall be deposited with the Architect for reference.

The solid core shall be wood laminae prepared from battens of well-seasoned and treated good quality wood having straight grains. The battens shall be of uniform size of about 2.5 cm. width. Theses shall be properly glued and machine pressed together, with grains of each piece reversed from that of adjoining one. The longitudinal joints of the battens shall be staggered and no piece shall be less than 50 cm. in length. Alternatively, the core shall be of solid teak particle board. Edges of the core shall be lipped internally with 1st Class teak wood battens of 4 cm. (1.5") minimum depth, glued and machine pressed along with the core.

The core surface shall then have two or three veneers firmly glued on each face. The first veneer (called cross band) shall be laid with its grains at right angles to those of the core and the second and the third veneers with their grains parallel to those of the core. The under veneers shall be of good quality, durable and well-seasoned wood. The face veneers shall be of minimum 1 mm. thickness and of well-matched and seasoned 1st class teak, laid along with

grains of the core battens. The combined thickness of all the veneers on each face shall not be less than 4 mm. Thermosetting synthetic resin conforming to I.S. 303 or moisture-proof plywood grade MPF.I. shall be used in manufacture.
In addition to internal lipping all doors shall have external lipping all round.

STEEL DOORS, WINDOWS, VENTILATORS, M.S. GRILLES ETC.

Steel used in the manufacture of rolled steel sections shall not have more than 0.060 per cent of Sulphur and 0.065 per cent of phosphorus. The carbon content shall not exceed 0.30 per cent and shall be of weldable quality. In all other respects, the rolled steel sections shall conform to I.S. 226-1955 and I.S. 1977-1962.

Frames shall be square and flat. Both the fixed and openable frames shall be constructed of sections which have been cut to length, mitred and electrically welded at corners. Sub-dividing bar units shall be tenoned and rivetted into the frames. All frames shall have the corners welded to a true right angle and welds shall be neatly cleaned off. Couplings, mouldings and weather bar shall be provided as directed by the Architects.

Outer frames shall be provided with fixing holes centrally in the web of the sections and fixing screws and lugs shall be used for fixing the frame to masonry. Mastic cement shall be used for making the joints watertight.

Hinges shall be strong projecting type. If directed friction type hinges shall be used in which case windows shall not be fitted with peg stays.

Projecting type hinged shutter shall be fitted with bronze or brass peg stays, 30 cm. long with peg and brackets welded / riveted to the frame or as sated under item.

All windows shall be provided with handles of brass or bronze or otherwise as stated under them.

Top hung ventilators shall be fixed with plain hinges rivetted / welded to the fixed frame. A brass or bronze peg stay 30 cm. long as in windows shall be provided or as stated under item.

Centre hung ventilators shall be hung on two pairs of brass or leaded tin bronze cup pivots rivetted to the inner and outer frames of the ventilators to permit the ventilators to swing through an angle of approximately 85. The opening position of the ventilator shall be so balanced to keep it open at any desired angle under normal weather conditions. A bronze spring catch shall be fitted in the center of the top bar of the ventilator for the operation of the ventilator. This spring catch shall be secured to the frame with brass screws and shall close into a mild steel malleable iron catch plate rivetted or welded to outside of the outer ventilator frame bar. A brass cord pulley wheel in mild steel or malleable iron brackets shall be provided along with card eye.

The windows and ventilators shall be painted. All the steel surfaces shall be thoroughly cleaned free of rust, scale or dirt and mill scale by picking or phosphating and before erection painted with one coat of approved primer and after erection painted with two finishing coats of synthetic enamel paint of approved shade and quality.

Glazing of specified thickness shall be provided on the outside of frames and unless otherwise specified, metal beading of approved shape, and section shall be used for fixing glasses. Special metal sash putty of approved make shall be used, if directed.

Aluminum Doors, Windows, Ventilators & Partitions etc.:

These shall be obtained from approved and established manufactures and shall be of Aluminum alloy conforming to I.S. 733 and sections shall generally conform to I.S. 1948. Theses shall be fabricated as per the details drawings,

Frames for windows, ventilators etc., shall be square and flat. Both fixed and openable frames shall be constructed of section which have been cut to length, mitred and welded at corners. Sub-dividing bars shall be tenoned and rivetted into the frames. All frames shall have corners welded to a true right angle. For side hung shutters, hinges shall normally be of projecting type made of Aluminum alloy and rivetted / welded to frames. Handles, peg stays etc., or approved quality Aluminum or its alloy conforming to IS Specifications.

All types of shutters shall be fabricated, supplied and fixed as specified in the IS:1948. The rate shall include supplying and fixing all fittings and fixtures required for proper and safe operation.

The doors shall be fabricated by using standard aluminum alloy extruded sections as specified in IS:1948. The rate shall include supplying and fixing all fittings and fixtures including approved locking arrangement as directed.

All aluminum fabricated work shall be anodized to the British Standard 1616:1961 to give an anodized film of 25 micron.

The Contractor shall take to stack the fabricated frames etc., on site under cover. They shall be handled with care, stacked on edge on level bearers and supported evenly. Before erecting, the frames coming in contact with concrete, masonry, plaster of dissimilar metals shall be coated with a coat of Zinc Chromate conforming to IS:104-1950. The Contractor shall cover all anodized finish work with a thick layer of clear transparent lacquer based on methacrylate or cellulose butyrate to protect the surface from wet cement during installation. This coating shall remove on completion. Before handing over, the aluminum work shall be washed with mild solution of non-alkali soap and water.

Glazing:

Glazing shall be approved especially quality glass of specified thickness and unless otherwise directed it shall be provided the exterior with metal beading.

FLOORING, SKIRTING, DADO AND STONE VENEERING

All flooring, skirting, dado and stone veneering etc., shall be executed strictly as per relevant IS Specification and in workman-like manner.

Indian Patent Stone:

Selection of materials, method of mixing, placing and compacting shall generally conform to the specifications under plain and reinforced cement concrete described earlier. A stiff mix consistent with workability shall be used.

Preparation of Surface:

Before the operation for laying topping is started the surface of base concrete shall be thoroughly cleaned of all dirt, loose particles coked mortar droppings and laitance if any, by scrubbing with coir or steel wire brush. Where the concrete has hardened so much that roughening of surface by wire brush is not possible, the surface shall have roughened by chipping or hacking at close intervals. The surface shall then be cleaned with water and kept wet for 12 hours and surplus water shall be removed by mopping before the topping is laid.

Laying:

The screed strips shall be fixed over the base concrete dividing it into suitable panels. Before placing the concrete for topping, neat cement slurry shall be thoroughly brushed into the prepared surface of the base concrete just ahead of the finish. Concrete of specified proportion and thickness shall be laid in alternate panels to required level and slope and thoroughly tamped.

Finishing the Surface:

After the concrete has been fully compacted it shall be finished by troweling or floating with neat cement rendering. Finishing operations shall start shortly after the compaction of concrete and the surface shall be troweled three times at intervals so as to produce a uniform and hard surface. The satisfactory resistance of floor to wear depends largely upon the care with troweling is carried out. The time intervals allowed between successive troweling is very important. Immediately after placing cement rendering, only just sufficient troweling shall be done to give a level surface. Excessive troweling in the earlier stages shall be avoided as this tends to bring a layer rich in cement to the surface. Sometime, after the first troweling, the duration depending upon the temperature, atmospheric conditions and the rate of the set of cement used, the surface shall be re-troweled to close any pores in the surface and to bring to surface and to scrape off any excess water in concrete or laitance. No dry cement shall be used directly on the surface to absorb moistures or to stiffen the mix. The final troweling shall be done well before the concrete has become too hard but at such time that considerable pressure is required to make any impression on the surface.

If directed by the Architect, approved mineral pigment shall be added to the rendering to give desired colour and shade to the flooring at no extra cost.

When instead of 1:2:3 or 1:2.5:3.5 mix, 1:2:4 is specified the topping shall be rendered with 1:1 cement mortar with a suitable mineral pigment, if directed, instead of cement only. If specified in the Schedule of Quantities, the flooring shall be machine polished as per the Architect's instructions.

Wherever the patent stone flooring is used as finishing on roof the joints shall be filled with an approved bitumastic filler in workman like manner.

Ironite Topping:

Instead of finishing the top with rendering coat of 1:1 cement mortar, the top shall be finished with 12 mm. thick ironite topping. Unless otherwise specified, one part of ironite and four parts of ordinary cement by weight shall be mixed dry thoroughly. This dry mixture shall be mixed with stone grit 6 mm. (1/4") and down size or as otherwise directed in the ratio of 1:2 by volume and well turned over. Just enough water shall be added to this dry mix and mixed thoroughly well and laid to uniform thickness of 12 mm. and compacted. After initial set has started the surface shall be finished as directed.

Plain and Coloured Cement Tiles, Marble Mosaic and Terrazzo Tiles Flooring:

The tiles shall conform to IS : 1237 having the colour approved the Architect and the rate shall include provision of border tiles and tiles of different colours in pattern if directed. The mosaic topping of lighter shade tiles shall be made of White Cement with an approved shade pigment and neutral shade shall be of Grey cement with an approved shade pigment. The type of tiles shall be as specified in respective items.
The sub-grade shall be thoroughly wetted after cleaning of all dirt, laitance, and loose material. A bed of lime mortar consisting of one part of lime and two parts of sand shall be laid and properly leveled to an average thickness of 25 mm. and the surface shall be kept slightly rough to form a satisfactory key for tiles. Neat cement paste of honeylike consistency shall be spread over mortar bed, over such area at a time as would accommodate about 20

tiles. Tiles shall be soaked in water for 15 minutes and allowed to dry for the same duration. Tiles shall then be fixed with a thin coat of cement paste on back of each tile and then each tile being gently tapped with a wooden mallet till it is properly bedded and in level with adjoining tiles. Joints shall be fine and as imperceptible as possible.

After tiles have been laid in a room or a day's fixing work is completed, surplus cement grout that may have come out of the joints may be wiped off gently and joints cleaned. A

thin slurry of coloured cement matching to the colour of tiles shall be spread over it and rubbed so as to seal even a thinnest joint between the tiles and make it impervious and the flooring cured for 7 days. The tiles shall be polished and finished according to IS:1443.

Dado, Skirting and Risers:

Tiles shall conform to IS:1237 and shall be of approved design. The tiles shall be fixed near cement grout on a blacking coat consisting of 1:4 cement sand plaster of 15 mm. thick. The top and bottom junctions of tiles shall be rounded off neatly as directed. The joints shall be filled with matching shade coloured cement slurry. The surface shall be kept wet for 7 days and then polished with carborundum stone to obtain smooth surface and fine polish.

Shahabad / Tandur / Kotah / Cuddappa Stone Flooring :
The flooring shall be either with rough stone or machine cut and machine polished as specified in respective items and shall be of specified thickness and of approved quality and size, free from cracks and flakes and shall be uniform in colour with straight edges. The sides of machine cut and machine polished stone shall have perfect right angles and surface smooth. The stone slabs shall be laid and finished as described under plain cement or colour cement tiles on a bedding of 1:2 lime mortar 25 mm. (Average) thickness. The finished stone surface thus laid shall then be polished to the required degree as approved by the Architect.

In Dado, Skirting, Risers etc.:

Stone slabs shall be laid on backing plaster of cement mortar 1:4 of 15 mm. to 20 mm. thick and finished as described under plain and coloured cement tile dado.

Marble mosaic / Terrazzo in situ work in flooring, dado, skirting etc.:

The terrazzo / mosaic finish shall be laid on an under layer of thickness as specified in the respective items. The topping shall consist of a layer of marble chips of selected sizes, colour and design approved by Architect, mixed with cement with desire shade of pigment.

For lighter shade mosaic. terrazzo white cement shall be used and for neutral shade, grey cement shall be used. The proportion of terrazzo mix shall be three parts of cement one part of marble powder by weight. For every part of cement marble powder mix, the proportion of marble aggregate by volume shall be 1.5 parts unless otherwise specified.

The topping shall be mixed and laid in panels as described in IS:2114 and as per decorative designs prepared by Architects. The dividing strips of panels shall be Aluminum or as specified in the Schedule of Quantities. It shall be polished as specified in IS: 2114.

Marble Flooring:

Marble slabs shall be of the best Indian marble of White or other approved colour as specified in the item. They shall be hard, dense, uniform and homogeneous in texture. They shall have even crystalline grain and free from defects and cracks. The surface shall be machine polished to an even and perfectly plane surface and edges machine cut true to square. The rear face shall be rough enough to provide a key for the mortar.

No slab thinner than the specified thickness at its thinnest part. The sizes of the slabs shall be as specified in the respective items.

The slabs shall be paid as described under mosaic tile flooring in every respect.

White Glazed / Ceramic Tiles / Vitrified Tiles in Flooring and Dado:

White Glazed Tiles from an approved manufacturer conforming to IS:777 shall be used. They shall be of specified size and thickness. All specials viz. coves, internal and external angles, corners, beads etc., shall be used wherever directed. Underlayer of specified thickness and mortar of stipulated proportion shall be laid as described in marble mosaic flooring. Tiles shall be washed clean and set in cement grout and each tile being gently tapped with a wooden mallet till it is properly bedded and in level with the adjoining
tiles. The joints shall be kept as thin as possible and I straight lines or to suit the required pattern. After the tiles have been laid, surplus cement grout shall be cleaned off.

The joints shall be cleaned off the grey cement grout with a wire brush or trowel to a depth of 5 mm. (3/16") and all dust and loose mortar removed. Joints shall then be flush pointed with white cement. The floor shall then be kept wet for seven days. After curing, the surface shall be washed with mild hydrochloric acid and clean water. The finished floor shall not sound not sound hollow when tapped with a wooden mallet.

PLASTERING

Scaffolding:

Scaffolding for carrying out plastering work shall be double steel scaffolding having two sets of vertical supports so that the scaffolding is independent of the walls.

Preparation of surface:

All putlog holes in brick work and junction between concrete and brick work shall be properly filled in advance. Joints in brick work shall be racked about 10 mm. if not raked out while constructing brick masonry work and concrete surface hacked to provide the grip to the plaster, if not hacked earlier projecting burns of mortar formed due to gaps at joints in shuttering shall be removed.

The surface shall be scrubbed clean with wire brush / coir brush to removed dirt, dust etc., and the surface thoroughly washed with clean water to remove efflorescence, grease and oil etc., and shall be kept wet for a minimum of six hours before application of plaster.

Neeru Plaster:

Cement mortar of specified proportion and thickness shall be prepared in small batches and applied to the wall surface / ceiling. The ensure proper thickness, gauged patches shall be made at 1.5 to 2 m. apart and the surface plastered true to line, level and plumb taking special care to finish jambs of windows, doors, wall returns, corners, junctions etc. A thin layer of neeru shall then be applied and rubbed into surface and finished by means of trowel until the surface is even and smooth. The surface shall be kept moist for seven days and then given a coat of white wash.

Sand-faced Plaster:

The surface shall be prepared as above.

The coat of cement mortar in proportion of 1:4 or as specified, shall be applied uniformly all over the surface to a thickness of 12 mm. and finished true to level and line and keys shall formed on the surface. The surface shall be kept moist till the finishing coat is applied.

The finishing coat shall be applied a day or two after. The proportion of mortar for finishing coat shall be one part of cement and three parts of selected, well graded and washed sand, or as specified under item and it shall be applied in a uniform thickness of 6 mm. (1/4").

The surface shall be tapped to uniform grained texture by using sponge pads as directed. Curing shall start after 24 hours and the surface kept wet for seven days.

Rough Cast Plaster:

Except for the finishing coat the surface shall be prepared and base coat of plaster applied as under sand-faced plaster.
Finishing coat mortar shall be in proportion of one part of cement and one part of specially selected and graded sand and one part of gravel of 3 to 6 mm. size. It shall be flung upon the first coat with large trowel to form an even and decorative coat. The work shall generally conform to clause 16.5 of IS:1661-1960. The thickness of the coat shall be about 12 mm. (1/2"). It shall be cured for seven days.

Rough coat plaster with colour finish:

This finish shall be similar to Rough cast plaster above except a high-grade mineral pigment of approved shade shall be mixed with white cement instead of ordinary grey cement while preparing the mortar.

Water-proofing Treatment :

Unless otherwise specified, the Contractor shall carry out waterproofing treatment of basements, terrace and water retaining structures through reputed firms having specialization in the line and approved by the Architects. The Contractor shall also furnish full details of such treatment to the Architects and provide all information / proof etc., regarding the effectiveness of the treatment when called upon to do so. All such treatment shall have to be guaranteed in the form approved by the Employer for a minimum period of ten years. Any defects / leakages noticed during the guarantee period shall have to be rectified free of cost by the Contractor including reinstating the surface to its original condition and finish.

Water-proofing of sunk portions of floor slabs for baths, W.C. and kitchen mories etc., in residential buildings, unless otherwise specified, shall be done as specified in the schedule and shall generally comprise of :

a) A coat of hot bitumen, min. 6 mm. thick screened with stone grit.

b) Min. 20 mm. thick cement plaster in cement mortar 1:3 with approved water-proofing cement compound as per manufactures specifications. The plaster shall be cured by pounding for seven days.

The rate for the above treatment shall include drying and cleaning surfaces free of dust etc. and wiping with kerosene before application of bitumen. The vertical faces and returns shall also be treated similarly. The actual area treated including vertical faces and returns shall be measured and paid for. The work should be done in such a way that the finished flooring in bath has a minimum slope of 20 to 25 mm.

PAINTING

General:

Wherever scaffolding is necessary, it shall be double scaffolding.

The surface shall be thoroughly brushed free from mortar droppings and foreign matter. All steel work shall be cleaned of loose rust, mill scales etc. so as to expose the original surface. All broken edges, cracks, loose plaster and wavy surface shall be brought up either by patch plaster work or by plaster of paris.

All materials viz., dry distemper, oil bound distemper, oil paint, flat oil paint, synthetic enamel paint, plastic emulsion paint, cement primer, red lead and other primers and metallic paints shall conform to respective I.S. specifications and shall be obtained from approved manufactures. All paints shall be brought on site in sealed thins in ready mixed form and shall be applied direct with the addition of thinner, if recommended by the manufacturers.

White Washing:

White was shall be prepared from lime slaked on spot, mixed and stirred with sufficient water to make a thin cream. This shall be allowed to stand for 24 hours and shall be screened through clean cloth. Four kg. gum dissolved in hot water shall be added to each cubic meter of the cream (115 gm. per cft.).

Blue shall be added to give required whiteness. The approximate quantity of water to be added in making cream shall be five liters per kg. of lime.

White wash shall be applied in specified coats by using flat brushes or spray pumps. Each coat shall be allowed to dry before next coat is applied. If additional coats than what have been specified, are necessary to obtain uniform and smooth finish, it shall be given at no extra cost.

The finished dry surface shall not show any signs of cracking and peeling nor shall it come off readily on the hand when rubbed. If directed by the Architects one coat of chalk and glue shall be applied before application of white / colour wash at no extra cost.

ColourWash:

Colour wash shall be prepared by adding mineral colours not affected by lime to white wash. No colour wash shall be done until a sample of the colour wash to the required tint or shade has been got approved form the Architects. Colour wash shall be applied as specified under white wash.

Dry Distemper:

Shade shall be got approved from the Architects before application of distemper.

The surface shall be prepared as specified earlier. A primer coat using approved primer or sizing shall be applied. Distemper prepared as per manufacturer's directions shall be applied and each coat shall be allowed to dry before subsequent coat is applied. The finished surface shall be free form chalking when rubbed, even uniform and shall show not brush marks. If additional coats are necessary, they shall be given at no extra cost.

Oil Bound Distemper:

The surface shall be prepared as specified above. A primer coat of either cement primer or any approved distemper primer shall be applied.

After the primer coat has dried, the surface shall be lightly sand papered and dusted to make to smooth to receive distemper.

Distemper shall be prepared as per the directions of the manufacturer and conforming to shade approved. It shall be applied in specified coats, taking care to allow for drying of each coat before subsequent coats are applied.

Water-proof Cement Paint / Sand-tex matt Paint:

The surface shall be prepared as specified above and thoroughly wetted with clean water before water-proof cement paint is applied.

The paint shall be prepared strictly as per manufacturers specifications and in such quantities as can be used up in an hour of its mixing, as otherwise the mixture will set and thicken, affecting flow and finish.

The paint thus prepared shall be applied on clean and wetted surface with brush or spraying machine. The solution shall be kept stirred during the period of application. It shall be applied on the surface which is on the shady side of the building so that the direct heat of the sun on the surface is avoided. The completed surface shall be watered after the days work. Number of coats shall be s specified in the item.

Painting – Oil / Enamel / Plastic Emulsion etc.:

Ready mixed oil paint, flat oil paint, plastic emulsion paint, ready mixed synthetic enamel paint, etc., shall be brought in original containers and in sealed tins. If for any reason thinner is necessary, the brand and quantity of thinner recommended by the manufacturer or as instructed by the Architect shall be used. The surface shall be prepared as specified above and a coat of approved primer shall be applied. After 24 hours drying approved or specified quality paint shall be applied evenly and smoothly. A filler putty coating may be given to give a

smooth finish. Each coat shall be allowed to dry out thoroughly and then lightly rubbed down with sand paper and cleaned of dust before the next cost is applied. Number of coats shall be as specified in the item and if the finish of the surface is not uniform, additional coats as required shall be applied to get good and uniform finish at no extra cost. After completion no hair marks from the brush or clogging of paint puddles in the corners of panels, angles or mouldings etc., shall be left on the work. The glass panes, floor etc. shall be cleaned of stains.

When the final coat is applied, if directed, the surface shall be rolled with a roller of if directed, it shall be stippled with a stippling brush.

POLISHING AND VARNISHING

French Polishing:

French spirit polish shall be of an approved make conforming to IS:348. If it has to be prepared on site, the polish shall be made by dissolving 0.7 kg. of best shellac in 4.5 liters of methylated spirit without heating. To obtain required shade pigment may be added and mixed.

Surface shall be cleaned. All unevenness shall be rubbed down smooth with sand paper and well dusted. Knots, if visible, shall be covered with a preparation of red lead and glue. Resinous or loose knots and gaps shall be filled with season timber pieces and make level with rest of the surface. Holes and indentations on surface shall be filled with putty made of whiting and linseed oil. Surface shall be give a coat of filler made of 2.25 kg. of whiting in 1.5 liter of methylated spirit. When it dries, surface shall again be rubbed down perfectly smooth with sand paper and wiped clean.

Piece of clean fine cotton cloth and cotton wool made into shape of pad shall be used to apply polish. The pad shall be moistened with polish and rubbed hard on the surface applying the polish sparingly but uniformly and completely over the entire surface. It shall have allowed to dry and another coat applied in the same way. To give finishing coat, the pad shall be covered with a fresh piece of clean fine cotton cloth, slightly damped with methylated spirit and fubbed lightly and quickly with a circular motion, till the finish surface attains uniform texture and high gloss.

Wax Polishing :

Wax polish shall either be prepared on site or obtained readymade from market. Polish made on the site shall be prepared from a mixture of pure bee's wax, linseed oil, turpentine oil and varnish in the ratio of 2:1.5:1:½ by weight. The bees wax and the
boiled linseed oil shall be heated over a slow fire. When the wax is completely dissolved the mixture shall be cooled till it is just warm, and turpentine oil and varnish added to it in the required proportions and the entire mixture is well stirred.

Surface shall be prepared as described under French polishing except that the final rubbing shall be done with sand paper which has been slightly moistened with linseed oil.

Mixture or polish shall be applied evenly, with a clean cloth pad in such a way that no blank patches are left and rubbed continuously for half an hour. When the surface is quite dry a second coat shall be applied in the same manner and rubbed continuously for an hour or until the surface is dry. Final coat shall then be applied and rubbed for two hours or more if necessary, until the surface has assumed a uniform gloss and is quite dry showing no sign of sickness when touched. Gloss of the polish depends on the amount of rubbing, therefore rubbing must be continuous and with uniform pressure and frequent change in direction.

Varnishing :

Surface shall be prepared as described above. After preparation of surface, two coats of clean boiled linseed oil shall be applied at sufficient interval of time. After the linseed oil has dried two coats of varnish obtained from approved manufacturer shall be applied at sufficient interval of time. If the surface fails to produce the required gloss an additional coat shall be applied without any extra cost.

Miscellaneous Items of Work:

The rates quoted by the Contractor for all miscellaneous items of work viz. cooking platforms, mories, built-in cupboards, counters, partitions, railings, electrical meter, switchboard cupboards, etc., shall be for the work as described in the schedule of quantities and as show in detailed drawings and shall be to the entire satisfaction of the Architects.

MATERIAL TESTING

A chart showing the recommended time and quantity scheduled for conducting test on various building materials is given. Please ensure that tests are carried our according to the above guidelines. Contractor's rate should include for necessary expenditure for testing including transport of samples of following tests.

No	Material	Test	Test Procedure	Minimum Quantity	Frequency

Signature & Seal of Contractor

1	Sand	a) Silt Content b) Bulking c) Particle size distribution	Field Field Field	20 Cum 20 Cum 40 Cum	20 Cum or part thereof --- Do --- Every 40 Cum required for RCC work.
2	Stone	a) Soft and Deleterious b) Particle size distribution	IS - 2336 Part – II Field	45 Cum.	As required. Every 45 Cum part thereof for RC work. For rest of work as desired.
3	Cement Concrete or RCC	Slump Cube Strength	Field Field / Laboratory	20 Cum slab, beams and connected columns 5 Cum in columns	Once a day or as desired. Every 20 Cum of a day's concrete. Every 5 Cum column concrete.
4	Steel	a) Tensile Strength	IS - 1529	20 tonnes	Every 20 tonnes or part.
		b) Bend Strength	---- Do ----	---- Do ----	---- Do ----
5	Lime	Chemical and Physical properties of lime.	IS - 6932	5 M.T.	10 M.T. or part thereof
No	**Material**	**Test**	**Test Procedure**	**Minimum Quantity**	**Frequency**
6	Bricks	Dimensions Water absorption Efflorescence compressive strength		Designation 100 75) 50) 40,000 35) --- Do --- 100-40,000 75) 50) 100,000 35)	Every 40,000 or part thereof. Every 100,000 or part thereof one test for source of 40,000 or part thereof. Two tests for 1st lot of 40,000 and one test later for every 40,000 and part thereof.
7	Brick Tiles	Compressive Strength Efflorescence		40,000 40,000	For 40,000 or part. One test per Source.
8	Marble	Moisture absorption	IS – 1124 –	Rs.10,000/-	Rs. 10,000/- or part

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		Mhos scale hardness	1974 IS – 1706 – 1972	Value	thereof. (Value)
9	Timber	Moisture	IS – 11215 – 1985	1 Cum.	Every one Cum and part.
10	Aluminum door or window fitting	Thickness of anodic coating.	IS – 5523 – 1969	Rs. 5,000/-	Rs. 10,000/- or part thereof.
11	Ceramic Tiles / Vitrify Tiles / Designer pre-cast Concrete Tiles and interlocking paver block	a) Transverse Strength b) Water Absorption c) Abrasion test	IS – 1237 --- Do --- --- Do ---	200 Tiles --- Do --- --- Do ---	2000 Tiles or part. --- Do --- --- Do ---
12	Flush Door	a) End Immersion b) Knife c) Adhesion	IS – 2207	22 – 65 66 – 100 101 – 180 181 – 300 301 – 500 501 – above	Destructive tests No. of shutters. 1 2 2 3 4 5

No	Material	Test	Test Procedure	Minimum Quantity	Frequency
13	Tar felt Type-3 Grade - I	Conform to I.S. 1322 – 1970			One Test
14	Pig lead	I.S. 782 – 1978			One Test
15	R.C.C. design mix M-25	All test as per I.S.:456-2000		As per directed	As per directed

Note : The Contractor will have to take necessary material test other than above test as per I.S. code for above material or other than above material, if required and as directed by the Architect / Owner.

SPECIFICATIONS FOR SANITARY, PLUMBINGAND WATER SUPPLY INSTALLATION WORK

SECTION – A - GENERAL

CONTRACT:

 Signature & Seal of Contractor

The form of Contract shall be according to the printed form "Conditions of Contract". The following Clause shall be considered as an extension and not in limitation of the obligation of the Contractor.

DRAWINGS:

All-important drawings shall be mounted on boards and placed in racks and indexed; no drawings shall be rolled.

DIMENSIONS :

Figured dimensions shall in all cases be accepted in preference to scaled sizes. Large scale details take precedence over small scale drawings. In case of any discrepancies the Contractors shall ask for clarification from the Architect before proceeding with the work.

CONTRACTOR TO INSPECT SITE:

The Contractor should visit and examine the site of work and satisfy himself as to the nature of existing roads and other means of communication and other details pertaining to the work and local conditions and facilities for obtaining his own information on all matter affecting the execution of the work. No extra charge made in consequence, if any misunderstanding or incorrect information on any these points or on grounds of insufficient description will be allowed.

SETTING OUT:

The Contractor shall set out the drainage, soil, waste and water pipe lines and other fittings and fixtures in accordance with the plans and instructions of the Architects. The Contractor shall be responsible for the correctness of the above and any inaccuracies are to be rectified at his own expense as stated in Clause of the Conditions of Contract. He will be responsible for taking levels of the site before setting out and putting them on record without extra charge.

WORK PROGRAMME:

The Contractor should not that the work should be executed and completed ahead of the completion of the general building work and the Contractor shall take care to see that no damage or breakage is done to work once it is constructed and finished. The sanitary and water supply work shall be programmed in such a way that it does not hold up the general construction or works of other trades.

In case of non-availability of materials in metric sizes, the nearest sizes in FPS units shall be provided with prior approved of the Architects for which neither extra will be paid nor any rebate shall be recovered.

If directed, materials shall be tested in any approved Testing Laboratory and the Contractor shall produce the test certificate in original to the Architect and entire chares for originals as well as repeated tests shall be borne by the Contractor. If required by the Architects, the Contractor shall arrange to test portions of the work at his own cost in order to prove their soundness and efficiency. If after any such test the work or portion of work is found, in the opinion of the Architects, to be defective or unsound, the Contractor shall pull down and re-do the same at his own cost. Defective materials shall be removed from the site.

It shall be obligatory for the Contractor to furnish Certificate, if demanded by Architect, from manufacturer or the material supplier, that the work has been carried out by using their material and installed / fixed as per their recommendations.

CEMENT:

Cement shall comply in every respect with the requirement of the latest publication of IS:269 and unless otherwise specified, ordinary Portland Cement shall be used.

The weight of cement in sealed bags shall be considered as 50 kgs. being equivalent to 35 liters (1.2 Cft.) in volumes.

Cement shall be stored in weather-proof shed with raised wooden plank flooring to prevent deterioration by dampness or intrusion by foreign matter.

SAND:

River Sand shall be clean, free from salt, clay, shells vegetable matter and fit for use in the opinion of Architects.

COARSE AGGREGATE:
Coarse Aggregate shall be angular, tough, sharp and well graded stone metal from approved source. It shall be clean and free from any foreign material. If directed the materials shall be washed.

BRICKS:

Bricks shall be locally available and of the approved quality and well burnt, free from cracks, chips, flaws and stones. It shall not absorb water more than 20% of its own weight when dry.

CEMENT MORTAR:

Cement mortar shall be of the proportion specified in the particular item in the Schedule of Quantities. Sand shall be measured in suitable measuring boxes and correct quantity of cement shall be added. The materials are mixed dry on a clean platform. Clean water is then added and mixed thoroughly. It shall be prepared in such quantity as can be readily used up. Mortar which has partially set shall under no circumstances be re-tampered by mixing with additional materials or water.

I. DRAINAGE (INTERNAL AND EXTERNAL)

STONEWARE PIPE AND FITTINGS:

Shall comply IS:651 in every respect and all stoneware pipes, bends, gully traps and sewer traps shall be of the best salt glazed, variety, glazed inside as well as outside, hard, smooth, even, textured, free from fire cracks, blows and blisters. The pipes shall be truly circular in cross section perfectly straight and of standard nominal diameter, length and depth of socket.

TREASURE TROVE:

Should any treasure, fossils, minerals or work of are antiqurial interest be found during excavation or while carrying out the work, the Contractor shall give immediate notice to the Architects of any such discovery and shall make over such finds to the Employer.

ACCESS FOR INSPECTION:

The Contractor shall provide at all times during the progress of the works and the maintenance period, proper, facilities and necessary attendance for inspection or measurement of works by the Architects or their representatives.

WATER SUPPLY:

Water shall be arranged in accordance with the relevant Clause of Special Conditions of Contract.

ELECTRIC SUPPLY:

Electric energy shall be arranged in accordance with the relevant Clause of Special Conditions of Contract.

VOUCHERS:

The Contractor shall furnish to the Architects with vouchers on request to prove that the materials are as specified and to indicate the rates at which the materials are purchased in order to work out the rate analysis of the non-tender items which he may be called upon to carry out.

SECTION – B - WORKS TO COMPLY LOCAL REGULATIONS AND RATE TO INCLUDE:

1) All sanitary installations, water supply and drainage work shall conform to the Local Municipal Bye-Laws and / or rules and regulations of Local Bodies and the work shall be inspected and passed by the various authorities having jurisdiction.

2) The work shall be carried out through a Licensed Plumber.

3) The Contractor shall arrange with the Local Municipal and / or Public Authorities for obtaining water and drainage connections and the Employer will reimburse the permanent connection charges on production of receipts.

4) The Contractor shall obtain all necessary permission forms from the various authorities having jurisdiction and shall make application and file all plans required for obtaining permission and satisfactory completion of the work.

5) The rates quoted shall be for complete items as fixed in position and cover all costs of materials, labour, tools, supervision, cutting of holes, chases, etc., and also for providing, fixing arrangements viz. clamps, brackets, wooden blocks etc. The rates shall also include restoration to original condition of all damage to walls, floors etc., during the process of fixing of sanitary installations, water supply and drainage. All debris of plumber's excavation etc., shall be removed without any extra charge.

6) All C.I. pipes, brackets, C.I. cisterns, G.I. pipe and fixtures, M.S. fixtures, A.C. pipes and fittings shall be painted externally with one coat of approved primer and two coats of enamel / flat oil paint. All painting work shall be carried out to the entire

   satisfaction of the Architects. If directed, additional coats of paint shall be applied to get uniform and matching finish without any extra cost.

7) In the interior of the building all pipe whether of Cast Iron lead or G.I. shall be embedded in an approved manner in chases made in walls or floors if required by the Architects. The plumbers shall make necessary holes in the walls, etc., and restorethem to the original condition.

8) All water supply and sanitary fixtures, pipes and pipe fittings, traps etc., which are to be embedded into the concrete or masonry work or other building work shall be placed in position and embedded or concealed at the time of casting concrete or erecting brick work. In case where chasing or cutting of concrete, masonry, or other structural or construction work is unavoidable, the locations of such fittings, pipe lines and traps, etc., shall be marked suitably and the cutting, chasing or disturbing of the construction work shall proceed only after due approval of the Architects.

9) All cutting, chasing and fixing work shall be completed before commencement of any plastering, tiling or finishing work.

10) Unless otherwise specified Galvanised Iron pipes and pipe fittings shall be of medium quality conforming to IS: 1239 and shall be tested if required by the Architects.

11) The Contractor shall responsible for the adequacy and efficiency of the entire plumbing system and if, in his opinion he finds any serious objection to the system shown on the drawing, he shall set forth his objection or his suggestions to ensure adequacy and efficiency of the said system and notify the Architects before proceeding with the work.

12) The work in every respect during its progress and till final acceptance by the Employer, including raw materials delivered to the work site to be incorporated for use in construction of the work by the Contractor shall be under the charge and in the care of and under the responsibility of the Contractor and at his risk. Any loss or damage to such materials or work prior to final acceptance of the work by the Employer shall immediately be replaced by the Contractor at his expense.

SECTION – C -MATERIALS:

1) Materials shall be of best approved quality obtainable and unless otherwise specified they shall conform to the respective Indian Standard Specification.

2) Samples of all material be got approved before placing order and the approved samples shall be deposited with the Architects.

3) In case non-availability of materials in metric sizes, the nearest size in FPS units shall be provided with prior approval of the Architects for which neither extra will be paid nor any rebate shall be recovered.

4) If directed, materials shall be tested in any approved Testing Laboratory and the Contractor shall produce the test certificate in original to the Architect and entire charges for original as well as repeated tests shall be borne by the Contractor. If required by the Architects, the Contractor shall arrange to test portions of the work at his own cost in order to prove their soundness and efficiency.

   If after any such test the work or portion of works is found, in the opinion of the Architects, to be defective or unsound, the Contractor shall pull down and redo the same at his own cost. Defective materials shall be removed from the site.

5) It shall be obligatory for the Contractor to furnish certificate if demanded by Architect, from manufacturer or the material supplier, that the work has been carried out by using their material and installed / fixed as per their recommendations.

TRENCHES FOR S.W PIPE DRAINS:

EXCAVATION :

The trenches for the pipes shall be excavated to lines and levels as directed. The bed of the trench shall be truly and evenly dressed throughout from one change of grade to the next.

The gradient is to be set out by means of boning rods and should the required depth exceeded at any point, the trench shall be refilled by means of lime concrete of proportion 1:2:4 at the Contractor's own expense.

The bed of the trench, if in soft or made up earth, shall be well watered and rammed and depression thus formed shall be made up with sand or other suitable materials as directed by the Architects without any extra cost.

If rock is met with, it shall be removed to 15 cm. below the level of the pipe and the trench refilled with concrete or sand or other suitable material as directed by the Architects without any extra cost.

The rates shall include keeping trenches dry either by bailing out or pumping water, timbering and shoring of sides of excavation if required and directed by the Architects.

The trench width shall be nominal diameter of the pipe plus 38 cm. (15") but it shall not be less than 52 cm. (21").

PROTECTION OF EXISTING SERVICES:

All pipes, water mains, cables, etc., meet with in the course of excavation shall be carefully protected and supported.

REFILLING:

Refilling in trenches for pipes shall be commenced as soon as the joints are tested, approved and haunching is done. The refilling on the top and around the drain shall be done with great care and in such a manner as will obtain the greatest amount of compactness and a solidity possible. For this purpose, the earth shall be laid in regular layers of 15 cm. (6") watered and each layer rammed.

All surplus earth shall be disposed of as directed by the Architects.

CONCRETING:

All pipes shall be laid on bed of 15 cm. (6") concrete with one part of cement, four parts of sand and eight parts of brickbats of 38 mm. (1.5") down gauge or stone metal properly consolidated. Concrete shall be laid to the full width of the trench and also in haunches as per the standard drawings.
Or as described under item in Schedule of Quantity.

LAYING AND JOINTING S.W. PIPES :

LAYING :

The pipes shall be carefully laid to the levels and gradients shown on the plans and sections with "Socket Up" the gradient.

JOINTING:

Spun yarn soaked in neat cement wash shall be passed round the joint and inserted in it by means of caulking tool. More skeins of yarn shall be added and well rammed home. Cement mortar with one part of cement and one part of sand shall be slightly moistened and must on no account be soft or sloppy and shall be carefully inserted by hand into the joint. The mortar shall then the punched and caulked into the joint and more cement mortar added until the space of the joint has been filed completely with tightly caulked mortar. The joint shall then be finished off neatly outside the socket at an angle of 45 degree.

CURING :

The joint shall be cured at least for seven days.

TESTING:

All joints shall be tested to a head of two feet of water above the top of the highest pipe between the two manholes. Any joint found leaking or sweating shall be remade or embedded in 15 cm. thick layer of cement concrete (1:2:4) 30 cm. in length and section retested at Contractors own cost.

STONEWARE GULLY TRAPS:

S.W. gully traps of specified sizes and quality as described earlier shall be fixed on 15 cm. thick and 70 cm. square cement concrete 1:4:8 bedding and the gully outlet to the branch drain shall be jointed similar to jointing of S.W. pipes. A brick masonry chamber 30 cm. x 30 cm. internally shall be constructed in half brick masonry with 1:5 cement
mortar and the space between the trap and the wall filled up with cement concrete (1:4:8) and the upper portion of the chamber finished internally with 1:3 cement mortar and finished with neat cement. The corners and bottom of the chamber shall be rounded off so as to slope towards the grating.

In addition to 15 cm. x 15 cm. C.I. grating, the chamber shall have a C.I. cover with frame 30 cm. (inside) with machined seating faces, fixed on the top of the brick masonry with cement concrete 1:2:4 and rendered smooth. The weight of cover shall not be less than 4.53 kgs. and that of frame 2.72 kgs. The finished top of cover shall be left 4 cm. above the adjoining surface so as to exclude the surface water from entering the gully trap.
Or as described under item in Schedule of Quantity.

HUME PIPE DRAINS :

PIPES :

Shall be reinforced and conform to relevant I.S. Specification. They shall be new and perfectly sound, free from cracks, cylindrical, straight and of specified nominal diameter. Each pipe shall have one collar.

TRENCHES AND REFILLING :

Shall be as described under S.W. pipes.
Or as described under item in Schedule of Quantity.

CONCRETING :
No concreting is ordinarily necessary. In cases where the soil is made up or is very soft, concreting may be resorted to as described under "Stoneware pipe fitting" without any extra cost.

LAYING AND JOINTING :
The pipe shall be laid as described under Stoneware pipe and fittings by placing the collar centrally over the joint.

CAST IRON PIPES FOR DRAINAGE:
All drainage lines passing under buildings, floors and roads, in exposed horizontal positions above ground, shall be cast iron pipes. Pipes shall be sand cast conforming to Class "A" IS:1537 or centrifugally spun cast iron Class LA conforming to IS:1536.

	BARREL					
Nominal dia. mm.	Outside dia. mm.	Wall thickn in mm.	Wt. per (approx.) in k	Socket V in kgs.	Depth of soc in mm.	Total Wt. 3.66 m. in kgs
80	98	7.2 (7.9)	14.7 (16)	5.5	84	59 (64)
100	118	7.5 (8.3)	18.6 (20.5)	7.1	88	75 (82)
125	144	7.9 (8.7)	24.7 (26.4)	9.2	91	98 (106)
150	170	8.3 (9.2)	30.1 (33.2)	11.5	94	122 (133)
200	222	9.2 (10.1)	44 (48.1)	16.8	100	178 (193)
250	274	10.0 (11.0)	59.3 (65.0)	22.9	103	240 (261)

Note : Figures in brackets indicate particulars of pipes conforming to Class "A" IS:1537 quality and other particulars remaining the same.

These shall be free from cracks and other flaws. The interior of pipes and fittings shall be clean and smooth and painted inside and outside with Dr. Angus Smith's solution or other approved anti-corrosive paint, if not painted initially by the manufacturer.

The access door fittings shall be of proper design so as not to form any cavities in which filth may accumulate. Doors shall be provided with 3 mm. (1/8") rubber insertion packing and when closed and bolted they shall be watertight.

The joints shall be filled with lead as described under Soil Pipes.

II. SANITARY INSTALLATION:

SANITARY FIXTURES:

INDIAN TYPE W.C.PANS :

The W.C. pan shall be of White Vitreous China, of specified size and pattern. Pan shall be of approved quality and shall bear the mark of the firm manufacturing it. It shall have 10 cm. (4") porcelain trap ("P" or "S" type with effective seal) and 5 cm. (2") vent arm.

ORISSA TYPE PANS :

Shall be from an approved manufactures and traps as specified above.

FIXING :

Pan shall be fixed securely with a cushioning bed in an approved manner taking care that the cushion is uniform and even, without having any hollows between pan and the concrete. The joint between the pan the trap be made with cement mortar 1:1 and shall be leakproof.

Each closet shall be provided with the following accessories and the rate shall be all inclusive.

1) Necessary length of 10 cm.; H.C.I. pipe or lead pipe connecting the pan and plug bend. (The plug bend / tee connection to vertical stack shall be paid under appropriate item).

2) Wherever anti-syphonage pipe connections are required necessary length of lead pipe 6.25 cm. shall be provided.

3) Flushing cistern shall be 10 litres capacity and cast-Iron overhead type with heavy G.I. Chain pull unless otherwise specified. If low down cistern is specified it shall be White Vitreous China cistern of best quality from an approved manufacturer with Chromium plated flush handle. The cistern shall have G.I. overflow pipe of length as per Municipal requirement or as per Architects drawing with mosquito-proof Brass screw cap and C.I. brackets with wall plugs and Brass union and couplings for flush pipe etc. complete unit.

4) 12 mm. PVC water inlet pipe with 12 mm. Brass stop cock.

5) The flush pipe from the cistern shall be of 32 mm. dia. telescopic G.I. pipe or lead pipe or as specified, which shall be connected to the W.C. pan by means of an approved type of joint.

6) Painting : All fittings and fixtures shall be painted with two coats of enamel paint over a coat of primer.
Or as described under item in Schedule of Quantity.

EUROPEAN TYPE W.C. :

The closet shall be of White Vitreous China readily flushed, of wash down type and shall be of best quality manufactured by an approved firm, and fixed to the floor by approved means, as described under item in Schedule of Quantity.,

Each closet shall be provided with the following accessories and the rate shall be all inclusive.

1) **Seat** : Heavy black plastic seat of approved quality and seat cover with rubber buffers fixed to the pan with C.P. Brass bar hinge.

2) **Cistern** : Low level flushing tank 10 litres capacity of White Vitreous China cistern of best quality manufactured by an approved firm with C.P. flush handle and C.P. overflow pipe of length as per Municipal requirement or as per Architects drawing with mosquito-proof brass C.P. Cap etc., complete unit including enameled or C.P. flush pipe and bend.
Or as described under item in Schedule of Quantity.

3) Necessary length of PVC water inlet pipe and 12 mm. dia. C.P. brass stop cock.

4) Necessary length of porcelain or lead or C.I. connecting pipe 10 cm. dia. (plug bend / tee connection to vertical stack shall be paid under appropriate item).

5) Wherever anti-syphonage pipe connections are required, necessary length of lead pipe 6.25 cm. dia. shall be provided.

PAINTING :

All fittings and fixtures shall be painted with two coats of enamel paint over a coat of primer, externally.

LIPPED URINALS:

Shall be flat back or angle urinal of specified dimensions and shall be of White Vitreous China from an approved manufacturer.
They shall be screwed to the wall with coach screws of Chromium Plated Brass on dowel shaped wooden plugs built into the walls or fixed as per manufacturers specification. Each basin should have an outlet with C.P. Brass hinged grating connected to 40 mm. diameter waste pipe through a C.P. bottle trap. When a range of urinals are provided only a straight length of 40 mm. diameter waste pipe and white glazed half round channel with tread platform finished with white glazed tiles complete as per Architects drawings shall be provided. All joints shall be in plumbers wiped solder joint with necessary C.P. Brass sockets and thimble etc.

STALL WALL TYPE URINALS :

Shall be White Vitreous China of approved design and manufacture.

They shall be fixed to the wall as per manufacturer's specification. Each urinal should have an outlet with C.P. Brass hinged grating connected to 40 mm. diameter waste pipe through a C.P. Brass bottle trap. All joints shall be in plumber's wiped solder joint with necessary C.P. Brass sockets and thimble etc.

FLUSHING CISTERN :

These shall be automatic flushing cistern of vitreous China or as specified in the Schedule of Quantities complete with valve less syphon fittings. Cistern shall be supported on brackets of standard pattern and fixed to wooden dowel plugs embedded in the wall with C.P. Brass screws.

ANGLE VALVE :

The cistern shall be fed with 15 mm. (1/2") C.P. Brass inlet tube angle valve of approved make with necessary length of lead inlet pipe complete with C.P. Brass unions unless otherwise specified in the Schedule of Quantities.

The capacity of flushing cistern and size of the flush pipe for the number of urinals shall be as follows :

	Capacity of flushing cister		Mains		Size of distribution	
Numbers o Urinals	In Litres	In Gallons	In mm.	In inches	In mm.	In inches
1	5	1	--	--	15	1/2
2	10	2	20	3/4	15	1/2
3	10	2	25	1	15	1/2
4	15	3	32	1.25	15	1/2

The main and distribution pipe fittings and clamps shall be of C.P. Brass unless otherwise specified in the Schedule of Quantities. Distribution pipes shall feed the urinals with C.P. brass spreaders of approved make.

PAINTING :

All brackets etc., shall be painted with two coats of enamel paint over a coat of primer.

LAVATORY BASINS:

They shall be of White Vitreous China of best quality manufactured by an approved make and size as specified in the Schedule of Quantities. They shall be supported on a pair of C.I. brackets of approved design.

a) **Fittings**: Each lavatory basin shall be provided with a single cold water C.P. Brass pillar tap of approved design and make, C.P. Brass waste, C.P. Brass chain and rubber plug, C.P. Brass bottle trap of approved quality and design, with C.P. brass stop cock and PVC water inlet pipe of standard length 1/2" dia. complete.

b) **Waste Pipe** : Waste pipe beyond bottle trap shall be measured and paid separately under appropriate item.
Where specified, lavatory basins shall be provided with puff pipe with a brass perforated screws cap.

c) **Painting** : All brackets, pipes etc. shall be painted with two coats enamel paint over a coat of primer.

SINKS :

They shall be of White Vitreous China or as specified in the Schedule of Quantities with weir type overflow. The size of sink shall be as specified and shall be of approved make. They shall be supported on a pair of C.I. brackets of approved design.

a) **Fittings** : Each sink shall be provided with 40 mm. (1.5") C.P. Brass waste of approved pattern with C.P. Brass chain and 40 mm. rubber plug and 40 mm. dia. C.P. Brass trap and union which shall be connected to 40 mm. diameter waste pipe.
Waste pipe beyond the trap shall be measured separately and paid under appropriate item.
Where specified sinks shall be provided with puff pipe with a Brass perforated screw item.

b) **Painting** : All fittings, brackets and pipes shall be painted with two coats of enamel paint over a coat of primer.

DRAINAGE BOARD :

Drainage boards of type and size as specified in the Schedule of Quantities shall be provided. These shall be fixed on strong brackets of approved design and where necessary provided with hinges. Brackets shall be painted with two coats of enamel over a coat of primer.

III. TOILET REQUISITES :

MIRRORS :

Mirrors shall be of the best quality, specified size, approved design and make. It shall be mounted on plywood / particle board backing and shall be fixed in position by means of four C.P. Brass screws and cup washers over rubber washers on wooden plugs firmly embedded in the wall. Alternative method for fixing could be by using Brass clamps with C.P. Brass screws. A suitable T.W. cover mould of approved design shall be fixed all round as directed.

GLASS SHELF :

The shelf shall be of glass of approved quality and thickness with edges rounded off. The size of the shelf shall be as specified and shall rest on C.P. Brass brackets which shall be fixed with C.P. Brass screws to wooden plugs, firmly embedded in the wall. The shelf shall have C.P. Brass guard rail all round.

TOWEL RAIL :

Towel rail shall be of C.P. Brass with two C.P. Brass brackets. The size of the rail shall be as specified. The brackets shall be fixed by means of C.P. brass screws to wooden cleats firmly embedded in the wall. Where specified, Aluminum towel rails may be used of approved quality and design.

TOILET PAPER HOLDER :

Toilet paper holder shall be of White vitreous China or as specified. It shall be recessed in wall.

IV. C.I. SOIL, WASTE AND VENT PIPES AND FITTINGS:

C.I. PIPES AND FITTINGS:

Cast Iron Soil, Waste and Vent pipes and fittings shall be of heavy quality conforming to IS:3989 for spun pipes which is preferred to Sand Cast Soil pipes conforming to IS:1729. The standard weights and thickness of pipes are given below and a tolerance up to 4% my however be allowed against these standard weights.

(IS:3989-1967 for centrifugally spun soil pipe)

Nominal dia.		Thickness	Overall weight 1.8 m. length (Six fee	Internal dia. of socket
In mm.	In inches	In mm.	In kgs.	In mm.
50	2	3.5	8.5	73
75	3	3.5	12.7	99
100	4	4.0	19.2	126
150	6	5.0	35.5	179

(IS:1729-1964 for sand cast soil pipes)

Nominal dia.		Thickness	Overall weight 1.8 m. length (Six fee	Internal dia. of socket
In mm.	In inches	In mm.	In kgs.	In mm.
50	2	5	11.41	76
75	3	5	16.52	101
100	4	5	21.67	129
150	6	5	31.92	181

LAYING :

The pipes shall be laid as described in the Schedule of Quantities and as shown on the Architects drawings.

FIXING:

The pipes and fittings shall be fixed to walls by using proper holder bat clamps, if directed. The pipes shall be fixed perfectly vertical or in approved alignment. The spigot end shall about the shoulder of the socket and leave no annular space in between. All soil and waste water pipes shall be carried up above the roof parapet wall and shall have vent cowl.

Connections between main pipe and the branch pipes shall be made by using appropriate branches and bends invariably with access doors for cleaning.

NAHANI OR FLOOR TRAPS:

The traps shall be of self-cleansing, design deep seal type with a minimum seal of 5 cm. (2”). If directed, 25 mm. puff pipe shall be provided. The other specifications for these shall be the same as those for C.I. soil, waste and vent pipes and fittings.

PAINTING :

All exposed C.I. pipes and fittings shall be painted externally to match the colour of the surroundings with two coats of flat / enamel paint over a coat of approved primer. If directed, additional coats shall be given at no extra cost.

LEAD PIPE :
All lead pipes shall be hydraulic drawn and of equal substance throughout conforming to IS:404-1962. Weights and wall thickness of pipes shall be as under:

Nominal dia.		Wall thickness	Wt. in Kgs.
In mm.	In inches	In mm.	Per meter.
32	1.1/4	2.6	3.28
40	1.5	2.6	3.95
50	2	2.7	5.07
75	3	2.7	7.48
100	4	2.7	9.88

When not supported on bearers, all led pipe shall be supported by strong lead stacks at least 40 mm. (1.5") wide soldered on to the pipes at suitable intervals.

WIPED SOLDER JOINTS:

All joints of lead pipe shall be wiped solder joints as described below.

The pipe ends to be jointed shall be cleaned with a wire brush and freed from oxide, if any. Chalk shall then be rubbed to kill the greasy nature of lead. After this, plumbers black shall be applied. The length of the joint as given below shall then be marked on the pipe. A fine shaving of lead shall be removed from this length with shave hook. Tallow shall then be smeared over the prepared surface. The molten solder, an alloy composed of three parts of tin and seven parts of seven parts of lead, shall be poured in a thin stream from a ladle moved in an elliptical direction over the joint position including a portion of the soil pipe at each end beyond the mark. When sufficient solder has long continuous movements in one direction only so as to leave a neatly formed elliptical shaped joint. Surplus solder remaining on the joint shall be removed.

The length of the wiped solder joint shall be as follows :

No	Size of pipe		Length of Joint			
			Minimum		Maximum	
	In mm.	In inches	In mm.	In inches	In mm.	In inches
1	15	1/2	60	2.1/4	70	2.3/4
2	20	3/4	65	2.5	70	2.3/4
3	25	1	70	2.3/4	75	3
4	32	1.1/4	70	2.3/4	80	3.1/4
5	40	1.5	70	2.3/4	80	3.1/4
6	50	2	75	3	90	3.5
7	75	3	75	3	90	3.5
8	100	4	80	3.1/4	90	3.5

The joints shall be watertight, airtight and shall be free from tears, burrs, strings, ribbons or droppings.

LEAD PIPE CONNECTION:

The joints between lead pipe and C.I. or stoneware pipe shall be made as follows :
One end of Brass thimble or ferrule shall be slipped into or over the lead pipe and jointed to it by means of a wiped solder joint. The other end of the ferrule shall then be inserted into the socket of the C.I. or stoneware pipe. In case of former the joint shall be made with molten lead (lead caulked) and in case of the latter with cement mortar as in stoneware pipe drains.

The joints between outgo of a W.C. Pan and a lead pipe shall be made as under :

The lead pipe shall be slipped into Brass socket and jointed to it by a wiped solder joint. The outgo of a W.C. pan shall then be inserted into the socket and jointed by using cement mortar as in stoneware pipe drain.

PAINTING:

All exposed lead pipes shall be painted as in H.C.I. pipes and fittings, externally.

ASBESTOS CEMENT PIPES:

Where specified, asbestos cement pipes and fittings may be used for soil, waste and vent pipes and rain water pipes. Asbestos cement pipes shall be of the best quality conforming to IS:1629-1960.
Pipes shall be of painted as described for C.I. pipes, with two coats of approved quality and shade cement paint.

V. INTERNAL WATER SUPPLY:

G.I. PIPES AND FITTINGS:
The pipes shall be of the class specified in the Schedule of Quantities and shall be of galvanised welded or seamless, screws and socketed and shall conform to IS: 1239. They shall be manufactured by a firm of repute. All fittings shall be malleable iron galvanised fittings of approved best Indian make.

The details of pipes regarding nominal bore thickness and weight are given below.

Approx outside dia.	Nominal Bore		Screwed and Socketed wt. per meter			Screwed and Socketed meter per 1000 kgs.		
In mm.	In mm.	In nearest inch.	Light kgs.	Medium kgs.	Heavy kgs.	Light kgs.	Medium kgs.	Heavy kgs.
10.2	6	1/8	0.364	0.410	0.496	2747	2439	2016
13.5	8	¼	0.521	0.654	0.773	1919	1529	1294
17.2	10	3/8	0.680	0.858	1.03	1470	1166	971
21.3	15	½	0.961	1.23	1.46	1040	813	685
26.9	20	¾	1.42	1.59	1.91	704	629	524
33.7	25	1	2.03	2.46	2.99	493	407	334
42.4	32	1.1/4	2.61	3.17	3.87	383	316	258
48.3	40	1.5	3.29	3.65	4.47	304	274	224
60.3	50	2	4.18	5.17	6.24	239	193	160
76.1	65	2.5	5.92	6.63	8.02	169	151	125
88.9	80	3	6.98	8.64	10.3	143	116	98
101.6	90	3.5	8.92	9.90	11.8	112	101	84.7
114.3	100	4	10.2	12.4	14.7	98	80.6	68.0
139.7	125	5	--	16.7	18.3	--	59.9	54.6
165.1	150	6	--	19.8	21.8	--	50.5	45.9

Note : The above weights are for black pipes and theoretical weights of galvanized pipes are 6% higher.

LAYING AND FIXING:

Where pipes have to be cut or re-threaded, ends shall be carefully filled out so that no obstruction to bore is offered. For internal work all pipes and fittings shall be fixed truly vertical and horizontal, either by means of standard pattern holder-bat clamps keeping the pipes 12 mm. (1/2") clear of the wall everywhere or concealed as directed.

For external work, G.I. pipes and fittings shall be laid in trenches. The width of the trench shall be of minimum width required for the working. The pipes laid underground shall not be less than 60 cm. (2 ft.) from ground level. They shall be painted with hot asphalt and wrapped with Hessian cloth and again painted with two coats of hot asphalt (pipe embedded in masonry / concrete shall be treated similarly). They shall be surrounded with 15 cm. thick sand of approved quality all around. The work of excavation and refilling shall be done as directed.

PAINTING:

All exposed pipes and fittings shall be painted with two coats of approved shade of flat / enamel paint over a coat of approved primer and if directed, additional coat of paint shall be given without any extra cost.

TESTING:

All G.I. pipes and fittings shall be tested in an approved manner to ensure that pipes have proper threads and those proper materials such as white lead and hemp have been used in jointing. All leaky joints must be made leak proof by tightening or redoing at Contractors expenses.

BRASS WATER FITTINGS:

All Brass water fittings shall be of approved quality and design and shall generally comply with the latest I.S. Specifications. They shall be fixed in the pipeline in a workmanlike manner and care shall be taken to see that joints shall be tested in an approved manner to ensure that the joint is leak proof. The defective fittings and the joints shall be repaired or redone / replaced at Contractor expenses.

VI. EXTERNAL WATER SUPPLY:

CAST IRON PIPES AND SPECIALS:

All pipes and special for water supply shall be of cast or spun iron straight with spigot and socket ends and shall conform to the latest edition of the I.S. Specification for Class "B" pipes. Heavier quality pipes and specials shall be used when the water pressure exceeds 122 meters (400 ft.) of head, flanged end pipes may also be used where required and specifically approved.

Details of nominal bore and weights for Class "B" pipes shall be as specified below:

	Barrel				Total weight for one working length in meters			
Nominal dia. meter	Outside dia.	Wall thick-ness	Wt. per meter (approx.)	Socket weight (approx.)	3.66	4.00	4.88	5.5
In mm.	In mm.	In mm.	In kgs.	In kgs.	In kgs.			
80	98	8.6	17.3	5.5	69	74.5	--	--
100	118	9.0	22.0	7.1	88	95	--	128
125	144	9.5	28.7	9.2	114	124	--	167
150	170	10.0	35.9	11.5	143	125	--	209
200	222	11.0	52.1	16.8	207	255	271	304
250	274	12.0	70.6	22.9	281	305	368	411
300	326	13.0	91.4	29.8	364	395	476	533
350	378	14.0	114.5	37.5	457	495	596	667

Note : Specification and specials shall be coated inside and outside while hot with Dr. Angus Smith's solution or other approved anti-corrosive paint, if not painted initially by the manufacturer.

TRENCHES FOR C.I. PIPES AND SPECIALS:

Trenches shall be excavated as described under "Drainage" for S.W. pipes.

LAYING:
Before laying the pipes, they shall be examined to see that there are no cracks or defects. Subject to the approval of the Architects the damaged portion of the cracked pipe may be cut at a point not less than 15 cm. beyond the visible extremity of the cracks with diamond pointed chisel.

The pipes shall be thoroughly cleaned of all dust and dirt. Special care shall be taken to clean the insider of the sockets and the outside of the spigots before lowering the pipes into the trenches. Holes to receive the sockets shall be scooped out in the trench bed so as to firmly bed the full length of the pipe.

The pipes shall be lowered into the trench by means of suitable pulley blocks, shear-legs, chains, ropes etc. In no case the pipes shall be rolled and dropped into the trench. After lowering the pipes, they shall be arranged to coincide the center line of pipes with the center line of alignment. The spigot of the one pipe shall be carefully centred into the socket of the next pipe and driven to the full distance to the full distance that it can go and pipe line laid to levels required, being kept in position be earth filling, well-watered and rammed at two or more places in its length.
Special shall also be laid in their proper position as stated above. The pipes shall be laid with socket facing the direction of flow of water facing uphill.
Any deviation either in plan or elevation of less than 11.1/4 shall usually be affected by laying the straight pipes round a flat curve of such radius that minimum or lead at the face of the socket shall not be reduced below 12 mm. or the opening between spigot and socket increased beyond 12 mm. at any joint. Deviation of about 2.1/4 can be affected at each joint in this way. At the end of each day's work, the last pipe to be laid shall have its open end securely closed with a wooden plug, to avoid rats and other small animals getting in.

Cement concrete thrust blocks of suitable design shall be provided at 45 to 90-degree bends of the pipes so as to withstand dynamic and static forces likely to be developed due to water running through the pipes. The thrust blocks shall be made after the joints have been caulked with lead and these shall be paid for separately, unless otherwise specified.

LEAD CAULKED JOINTS:

1) Lead for joints: It shall be bluish grey in colour, very soft and malleable, readily melted, free from mixture of zinc or tin.

2) Spun yarn for joints: This shall be of best quality preferably white, it shall be free from dust etc. It shall be soaked into hot coal tar or bitumen and dried before use.

3) Jointing: The spigot shall be carefully centered in the socket by two or three laps of treated spun yarn, twisted into ropes of uniform thickness, well caulked into the back of the socket, leaving the requisite depth for the lead. The laps of the yarn must be longer than the circumference of the pipe. No making up of the pieces shall be allowed.

4) The leading of the pipes etc., shall be done by means of ropes covered with clay or by using special leading rings. The lead shall be rendered thoroughly fluid and each joint shall be filled in one pouring.

5) Approximate weight of lead and yarn required for joints for various sizes of C.I. pipes and specials shall be as under:

Dia. of pipe		Lead		Yarn		
In mm.	In inches	In kgs.	In lbs.	In kgs.	In lbs.	In ozs.
75	3	1.8	4	0.114	0	4
100	4	3.0	6.5	0.170	0	6
125	5	3.6	8	0.199	0	7
150	6	4.2	9.5	0.227	0	8
180	7	4.8	10.5	0.255	0	9
200	8	5.5	12	0.298	0	10.5
230	9	6.4	14	0.340	0	12
250	10	6.6	14.5	0.397	0	14
300	12	8.0	17.5	0.539	1	3

6) Caulking : After the joints have been run they must be thoroughly caulked until they are perfectly watertight. Caulking of joints will be done after a convenient length has been laid and leaded. The leading rings shall first be removed with a flat chisel and then the joint caulked round three times with caulking tools of increasing thickness and a hammer of 2 to 3 kgs. (4 to 6 lbs) weight. Lead joints shall not be covered till the pipeline has been tested under pressure but the rest of pipeline may be covered to prevent expansion and contraction due to variation in temperature.

7) When it is inconvenient or dangerous to use molten lead for joints, they may be made with lead wool inserted in strings not less than 6 mm. (1/4") thick and thoroughly caulked.

8) Testing : The lead joints shall be tested to a pressure of 7 kgs. per sq.cm. (100 lbs. per sq. inch.) or such head as otherwise, specified after being caulked and should any leakage occur, the leaky joint or joints shall be remade and section retested at Contractor's own expenses, until satisfactory results are obtained.

SLUICE VALVES, FIRE HYDRANTS AND MASONRY CHAMBERS:

1) Sluice Valves: The valve shall be of the specified size and shall be approved quality.

2) The body and cover of the valve shall be of tough, homogeneous cast iron, the spindle of forged bronze, the nut and the valve seats of high grade gun metal and machine-faced. It shall be fitted with a C.I. Wheel or a cap of standard type, marked with a show the direction of turn for opening of the valve. It shall have flanged ends drilled to Indian Standard Specification.

3) The valves shall work easily and smoothly under all conditions and shall be watertight when closed under the working pressure as stipulated as in the relevant I.S.S. unless otherwise specified, valves shall be Class II type as in IS:778:1971.

4) The diameter of the waterway, when the valve is fully opened shall not be less than the diameter of the pipe.

5) Fixing : Fixing of the valve shall be done by means of bolts nuts and 3 mm. (1/8") rubber insertions with the flanges of the spigot and socket tail pieces drilled to the same specifications. The tail pieces shall be jointed to the pipe line by means of lead caulked joints.

6) **APPURTENANCE**

The other appurtenances of the pipeline are mentioned below:

1) Air valves: These are placed at every summit in the pipe line to permit the escape of air when the main is filled, and afterwards air, if any is carried into the main (they are also placed on long stretches of nearly level main).

2) Scour valves: These are placed at the bottom of all depressions for emptying the main or letting out sediment.

3) Reflux valves: These are fixed on the ascending parts of the main which open in the direction of flow, but automatically close if a burst occurs and the water flows back. They diminish damage done by the escape of water at a burst.

4) Safety or relief valves: these are fixed at the downstream ends of long lengths of mains or where water hammer may take place so as to reduce to the normal any excessive pressure that may occur.

5) Fire hydrants: These shall be of approved design and be fixed as shown in the drawings and as per Architects direction. The cost of hydrant shall include cost of valve and masonry chamber as shown on the drawings with C.I. cover etc., complete with two coat of enamel paint over a coat of enamel paint over a coat of primer.

6) Water meter: It shall consist of meter, "Y" strainer and other accessories shall be fixed as per requirement of the Local Water Supply Authority. The cost of meter shall include the cost of testing and sealing by Municipal Authorities and fixing including a masonry chamber as shown on the drawing, C.I. cover and locking arrangement complete as directed.

7) Manhole chambers and surface chambers for housing valves etc., shall be constructed as per standard drawing.

SECTION – D -MODE OF MEASUREMENT

General :

The description of each item in the Bill of Quantities shall be read in conjunction with its specifications for materials and work and unless otherwise stated shall be held to include for necessary conveyance and delivery, handling, unloading, storing, fabrication, hoisting, lowering, all labour for finishing to the required shape and size, setting, fitting and fixing in position, straight cutting and waste and other incidental operations. Any item not mentioned hereunder shall be measured and paid for as per IS 1200 for the respective item.

External Drainage:

a) Pipes shall be classified according to their diameter. The measurement shall be taken along the center lines of pipes between the inner faces of 2 manholes. The rates shall be inclusive of cutting, jointing, testing and commissioning.

b) Excavation for trenches for laying drainage lines shall be paid as per volumetric measurements. The length of the trench shall be measured along its center line between the outside faces of 2 manholes. The width shall be the average of the width measured at the top and bottom of the trench. The depth shall be arrived at by measuring the depths at, at least 3 places in the trench, and finding the average of the same. If the ground is undulating, then more than 3 readings shall be taken. The volumetric measurements shall be arrived at by length x Average width x Average depth.

c) Excavation in rock shall be paid on volumetric measurements of the stack after deducting 40% of the volume for voids. Volume of the stack shall be arrived at by using Simpson's Rule.

d) Manholes, chambers, septic tank shall have enumerated and paid per number as described under:

1) Unless otherwise stated, net length of all pipes shall be measured including all fittings such as bends, junction etc., in running meters. The length shall be taken along the center line of the pipes and fittings.
2) Length of fittings viz. taps, valves, traps, etc., which are paid under appropriate items shall not be measured under liner measurements as enumerated above.
3) Soil waste and vent pipes shall be measured along the center line of the stack including the connecting bends / tees to W.C. Pan, Nahani trap, etc., and shall be paid as enumerated above.
4) W.C. Pans, Lavatory basins, Sinks, Drain Boards, Urinals, Mirrors, Glass shelf, Toilet Paper Holder, shall be measured by number and shall include all accessories as enumerated in detail specification under each item.
5) Unless otherwise specified, all types of taps, valves, etc., shall be measured by number and paid separately.
6) Manholes, Inspection Chambers, Gully Traps, etc., shall be constructed according to detail specification, and measured by number and paid separately. The depth of Manhole shall mean the vertical distance from the top of the Manhole cover to the Outgoing invert of the main drain channel.
7) Water meter shall include "Y" strainer and other appurtenances required by the local bodies and shall include brick masonry chamber, with lockable cover etc., as per detailed specifications and items shall be measured by number and paid for accordingly or as or Schedule of Quantity.

THEORETICAL MINIMUM CEMENT CONSUMPTION STATEMENT (BASE CPWD)

No	Description of item of work.	Quantity of cement to l used per Unit Quantity work.	Unit.
1	Cement Concrete (Cast in Situ) Plain or Reinforced.		
a.	1:1:2 (1 Cement : 1 Sand : 2 Graded Aggregate).	12.20 Bags.	Cubic Meter
b.	1:1.5:3 (1 Cement : 1.5 sand : 3 Graded Aggregate).	8.00 Bags.	Cubic Meter
c.	1:2:4 (1 Cement : 2 Sand : 4 Graded Aggregate).	6.40 Bags.	Cubic Meter
d.	1:3:6 (1 Cement : 3 Sand : 6 Graded Aggregate).	4.40 Bags.	Cubic Meter
e.	1:4:8 (1 Cement : 4 Sand : 8 Graded Aggregate).	3.40 Bags.	Cubic Meter
f.	1:5:10 (1 Cement : 5 Sand : 10 Graded Aggregate).	2.60 Bags.	Cubic Meter
g.	Providing and laying cement concrete 1:2:4 (1 Cement: 2 Coarse Sand: 4 Graded Aggregate of 20 mm. nominal size) including finishing exposed surface with 6 mm. thick cement mortar 1:3 (1 Cement: 3 Fine Sand). Kerbs, Steps, and the like.	7.02 Bags.	Cubic Meter
h.	String or lacing courses, parapets, coping, bed blocks, anchor blocks, plain window sills and the like moldings in cornices, window sills etc.	7.62 Bags.	Cubic Meter
2.	Cement Mortar		
a.	1:1 (1Cement: 1 Sand)	20.40 Bags.	Cubic Meter
b.	1:2 (1Cement: 2 Sand)	13.60 Bags.	Cubic Meter
c.	1:3 (1Cement: 3 Sand)	10.20 Bags.	Cubic Meter
d.	1:4 (1Cement: 4 Sand)	7.60 Bags.	Cubic Meter
e.	1:5 (1Cement: 5 Sand)	6.20 Bags.	Cubic Meter
f.	1:6 (1Cement: 6 Sand)	5.00 Bags.	Cubic Meter
g.	1:2 (1Cement: 2 Stone Dust)	13.60 Bags.	Cubic Meter
h.	1:2 (1Cement: 2 Marble Dust)	13.60 Bags.	Cubic Meter
i.	1:5 (1Cement: 5 Marble Dust)	6.20 Bags.	Cubic Meter
j.	1:1:3 (1Cement: 1 Marble Dust: 3 Stone Dust)	7.60 Bags.	Cubic Meter
k.	White Cement Mortar 1:2 (1 White Cement : 2 Marble Dust)	13.60 Bags.	Cubic Meter
l.	White Cement Mortar 1:3 (1 White Cement : 3 Marble Dust)	10.20 Bags.	Cubic Meter
m.	White Cement Mortar 1:5 (1 White Cement : 5 Marble Dust)	6.20 Bags.	Cubic Meter
3.	Cement Lime Mortar		
a.	1:1:3 (1 Cement:1 Lime putty:3 Sand)	8.20 Bags.	Cubic Meter
b.	1:1:6 (1 Cement:1 Lime putty:6 Sand)	5.00 Bags.	Cubic Meter

4.	Brick Work in All Classes		
a.	In Cement Mortar 1:3 (1 Cement:3 Sand)	2.56 Bags.	Cubic Meter
b.	In Cement Mortar 1:4 (1 Cement:4 Sand)	1.90 Bags.	Cubic Meter
c.	In Cement Mortar 1:5 (1 Cement:5 Sand)	1.56 Bags.	Cubic Meter
d.	In Cement Mortar 1:6 (1 Cement:6 Sand)	1.24 Bags.	Cubic Meter
5.	Half Brick Work in All Classes		
a.	In Cement Mortar 1:3 (1 Cement:3 Sand) With or without hoop iron.	28.56 Bags per 100 Square Meter	
b.	In Cement Mortar 1:4 (1 Cement:4 Sand)	21.28 Bags per 100 Square Meter	
c.	In Cement Mortar 1:5 (1 Cement:5 Sand)	14.50 Bags per 100 Square Meter	
d.	Molding and cornices in brick masonry in cement mortar 1:4 Cement:4 Sand) Joining old brick work with new brick work.	0.18 Bags per 100 Square Meter per cm. girth	
	a) Old Brick in metric or FPS. System with new brick work in metric system in cement mortar 1:4 (1 Cement : 4 Sand).	4.20 Bags per 100 Square Meter	
	b) Old Brick work in FPS. System with new brick work in cement mortar 1:4 (1 Cement: 4 Sand).	5.44 Bags per 100 Square Meter	
6.	Random Rubble Masonry		
a.	Cement Mortar 1:6 (1 Cement : 6 Sand)	1.70 Bags.	Cubic Meter
b.	Cement Lime Mortar 1:1:8 (1 Cement : 1 Lime Putty : 8 Sand)	1.32 Bags.	Cubic Meter
7.	Coursed Rubble Masonry		
a.	Cement Mortar 1:6 (1 Cement : 6 Sand)	1.50 Bags.	Cubic Meter
8.	Ashlar Masonry In plain ashlar punched (ordinary) in superstructure in cement mortar 1:6 (1 Cement : 6 Sand) including pointing with cement mortar 1:2 (1Cement:6 Stone dust) with an admixture of pigment matching the stone shade.	1.08 Bags.	Cubic Meter
9.	Stone Veneering Work For wall lining etc., average thickness 40 mm. to 170 mm. in cement lime mortar 1:1:6 (1Cement:1 Lime Putty:6 Sand) including pointing in White cement mortar 1:2 (1 White Cement : 2 Stone Dust) with an admixture of pigment matching the stone shade.	17.50 Bags per 100 Square Meter	
10	Marble work in steps jambs, walls, pillars and other plain work in cement mortar 1:4 (1 Cement : 4 Sand) including pointing in White cement mortar 1:2 (1 Cement : 2 Marble dsust).	0.136 Bags per 1.52 Bags per	Cubic Meter (Grey Cement) Cubic Meter (White Cement)
11	Marble work in steps jambs, walls, pillars and other	1.66 Bags per	Cubic Meter

	plain work in cement mortar 1:4 (1 Cement : 4 Sand) including pointing in cement mortar (1 Cement : 2 Marble dsust).		
12	Marble work for wall lining (Veneer) work) 2.5 cm. thick in cement mortar 1:3 (1 Cement : 3 Sand) including pointing in White cement mortar 1:2 (1 Cement : 2 Marble dust).	14.28 Bags per 100 Square Metre (Grey Cement) 3.40 Bags per 100 Square Metre (White Cement)	
13	Marble work for wall lining (Veneer) work) 2.5 cm. thick in cement mortar 1:3 (1 Cement : 3 Sand) including pointing in cement mortar 1:2 (1 Cement : 2 Marble dust).	17.68 Bags per	Square Meter
14	Marble work for wall lining (Veneer) work) 4 cm. thick in cement mortar 1:3 (1 Cement : 3 Sand) including pointing in White cement mortar 1:2 (1 Cement : 2 Marble dust).	20.40 Bags per 100 Square Metre. (Grey Cement) 3.40 Bags per 100 Square Metre (White Cement)	
15	Marble work for wall lining (Veneer) work) 4 cm. thick in cement mortar 1:3 (1 Cement : 3 Sand) including pointing in cement mortar 1:2 (1 Cement : 2 Marble dust).	23.80 Bags per 100 Square Metre.	
16	Cement Concrete Flooring Flooring 1:2:4 (1 Cement : 2 Sand : 4 Graded Stone Aggregate) finished with a floating coat of neat cement including cement slurry rounding of edges and strips etc., but excluding cost of nosing of steps etc., complete.		
a.	25 mm. thick with 20 mm. nominal size stone aggregate.	0.244 Bags	Square Meter
b.	40 mm. thick with 20 mm. nominal size stone aggregate.	0.34 Bags	Square Meter
c.	50 mm. thick with 20 mm. nominal size stone aggregate.	0.404 Bags	Square Meter
d.	75 mm. thick with 20 mm. nominal size stone aggregate.	0.564 Bags	Square Meter
17	Cement Plaster Skirting (upto 30 cm. height) with cement mortar 1:3 (1 Cement : 3 Coarse Sand) finished with a floating coat of neat cement including rounding of junctions with floor, including slurry complete.		
a.	18 mm. thick.	0.32 Bags	Square Meter
b.	21 mm. thick.	0.35 Bags	Square Meter
18.	Pavement (25 to 50 mm. thick) with 1:2:4 (1 Cement : 2 Coarse Sand : 4 Graded Stone Aggregate 20 mm. nominal size) including finishing complete.	6.80 Bags	Cubic Meter
19.	Terrazo Flooring 40 mm. thick marble chips flooring rubbed and polished to granolithic finish, under layer 34 mm.		

	thick cement concrete 1:2:4 (1 Cement: 2 Coarse Sand : 4 Graded Stone Aggregate 12.5 mm. nominal size) and top layer 6 mm. thick with white, black or white and black marble chips of size 1 mm. to 4 mm. nominal size laid in cement marble powder 3:1 mix. (3 Cement : 1 Marble Powder) by weight in proportion of 4:7 (4 Cement marble powder) by weight in marble powder mix:7 Marble chips) by volume including cement slurry etc., complete.		
a.	Dark shade / Light shade pigment with ordinary cement.	0.339 Bags per	Square Meter
b.	Light shade pigment with white cement.	0.258 Bags per 0.081 Bags per	Square Meter (Grey Cement) (White Cement)
c.	Medium shade pigment with approximately 50% white cement and 50% ordinary cement.	0.298 Bags 0.0440 Bags per	Square Meter (Grey Cement) (White Cement)
20	40 mm. thick marble chips flooring rubbed and polished to granolithic finish, under layer 31 mm. thick cement concrete 1:2:4 (1 Cement: 2 Coarse Sand : 4 Graded Stone Aggregate 12.5 mm. nominal size) and top layer 9 mm. thick marble chips, chips, size 4 to 7 mm. size, laid in cement marble powder mix. 3:1) (3 Cement : 1 Marble Powder) by volume in proportion of 4:7 (4 Cement marble powder mix. 7 Marble chips) by volume including cement slurry etc., complete.		
a.	Dark shade / Light shade pigment with ordinary cement.	0.357 Bags	Square Meter
b.	Light shade pigment with white cement.	0.241 Bags 0.116 Bags	Square Meter (Grey Cement) Square Meter (White Cement)
c.	Medium shade pigment with approximately 50% white cement and 50% ordinary cement.	0.299 Bags 0.058 Bags	Square Meter (Grey Cement) Square Meter (White Cement)
21	40 mm. thick marble chips flooring rubbed and polished to granolithic finish, under layer 28 mm. thick cement concrete 1:2:4 (1 Cement: 2 Coarse Sand : 4 Graded Stone Aggregate 12.5 mm. nominal size) and top layer 9 mm. thick marble chips, chips, sizes 7 mm to 10 mm. nominal size, laid in cement marble powder mix. 3:1) by weight in proportion of 2:3 (2 Cement Marble Powder mix. 3 Marble Chips) by volume including cement slurry etc., complete.		
a.	Dark or Light shade pigments with grey cement.	0.381 Bags	Square Meter
b.	Light shade pigment or without any pigment with	0.219 Bags	Square Meter

	white cement.	0.162 Bags	(Grey Cement) Square Meter (White Cement)
c.	Medium shade pigment with approximately 50% grey cement and 50% white cement.	0.300 Bags 0.081 Bags	S.M. (Grey Cement) S.M.(White Cement)
22	Marble chips skirting (up to 300 mm high) rubbed and polished to granolithic finish top layer 6 mm. thick marble chips of sizes from smallest to 4 mm. nominal size laid to cement marble powder mix. 3:1 (3 Cement: 1 Marble Powder mix. By weight in proportion of 4:7 (4 Cement Marble Powder mix: 7 marble chips) by volume including cement slurry complete.		
a.	18 mm. thick with under layer 12 mm. thick cement plaster 1:3 (1 Cement: 3 Course Sand) dark or light shade pigment with grey cement.	0.298 Bags	Square Meter
b.	Light shade pigment or no pigment with cement.	0.217 Bags Square Meter (Grey Cement) 0.081 Bags Square Meter (White Cement)	
c.	Medium shade colour pigment with 50% grey cement and 50% white cement.	0.258 Bags Square Meter (Grey Cement) 0.0406 Bags Square Meter (White Cement)	
d.	21 mm. thick with under layer 15 mm. thick cement plaster 1:3 (1 Cement: 3 Course Sand) dark or light shade pigment with grey cement.	0.327 Bags	Square Meter
e.	Light shade pigment or no pigment with white cement.	0.246 Bags Square Meter (Grey Cement) 0.081 Bags Square Meter (White Cement)	
f.	Medium shade pigment with 50% grey cement and 50% white cement.	0.286 Bags Square Meter (Grey Cement) 0.04 Bags Square Meter (White Cement)	
23	Tile Flooring :		
a.	Precast terrazzo tiles 20 mm. thick white black or white and black marble chips of size up to 6 mm. laid in floors treads of steps and landings jointed with neat cement slurry mixed with pigment to match the shade of the tile including rubbing polishing with precast tiles of 30 mm. thick bed of lime mortar 1:1.2 or 1:3 light shade using white cement.	0.088 Bags Square Meter (Grey Cement) 0.088 Bags Square Meter (White Cement)	
b.	Medium shade colour pigment with 50% white cement and 50% grey cement.	0.132 Bags Square Meter (Grey Cement) 0.044 Bags Square Meter (White Cement)	
c.	Dark shades using ordinary cement precast terrazzo tiles 20 mm. thick with marble chips of size 6 mm. in skirting and risers of steps not exceeding 30 cm. in height on wall, laid on 12 mm. thick cement plaster 1:3 mix. (1 Cement: 3 Sand) joint with neat cement slurry, light shades using white cement.	0.235 Bags Square Meter (Grey Cement) 0.044 Bags Square Meter (White Cement)	
d.	Medium shade colour pigment with 50% white cement and 50% ordinary cement.	0.257 Bags Square Meter (Grey Cement) 0.022 Bags Square Meter (White Cement)	
e.	Dark shades using ordinary cement.	0.279 Bags	Square Metre
24	Chequered Terrazzo Tile Flooring		

a.	Chequered Terrazzo Tile 22 mm. thick with marble chips of sizes upto 6 mm. in floors, jointed with neat cement slurry mixed with pigment to match the shade of the tiles including robbing, polishing complete on 28 mm. thick bed of lime mortar 1:1.2 or 1:3.	
a.	Light shade using white cement.	0.088 Bags Square Meter (Grey Cement) 0.096 Bags Square Meter (White Cement)
b.	Medium shades using 50% grey cement and 50% white cement.	0.136 Bags Square Meter (Grey Cement) 0.048 Bags Square Meter (White Cement)
c.	Dark shade using grey cement.	0.184 Bags Square Meter (Grey Cement)
d.	Chequered Terrazzo Tile 30 mm. thick with marble chips of sizes up to 6 mm. in stairs, treads, jointed with neat cement slurry mixed with pigment to match the shade of the tiles including rubbing polishing rounding of nosing etc., complete on 20 mm. bed of : Lime mortar 1:1:1 (1 Lime putty:1 Surkhi:1 Coarse Sand) :	
i.	Light shade using white cement.	0.088 Bags Square Meter (Grey Cement) 0.136 Bags Square Meter (White Cement)
ii.	Medium shades using 50% grey cement and 50% white cement.	0.154 Bags Square Meter (Grey Cement) 0.066 Bags Square Meter (White Cement)
iii.	Dark shade using grey cement.	0.220 Bags Square Meter (Grey Cement)
e.	Cement mortar1:4 (1 Cement:4 Coarse Sand)	
i.	Light shade using white cement.	0.258 Bags Square Meter (Grey Cement) 0.132 Bags Square Meter (White Cement)
ii.	Medium shades using 50% grey cement and 50% white cement.	0.324 Bags Square Meter (Grey Cement) 0.066 Bags Square Meter (White Cement)
iii.	Dark shade using grey cement.	0.39 Bags Square Meter (Grey Cement)
25	White Glazed Tiles.	
	White Glazed Tiles 5,6 or 7 mm. thick in flooring treads risers of steps skirting and dado on 12 mm. thick cement plaster 1:3 (1 Cement : 3 sand) in base and cement joined with white cement slurry etc. complete.	0.188 Bags Square Meter (Grey Cement) 0.050 Bags Square Meter (White Cement)
26	Marble Stone Flooring	
	Marble Stone slab flooring over 20 mm. thick base of lime mortar 1:1:1 (1 Lime putty:1 Surkhi:1 Sand) and jointed with grey cement slurry etc. (all marble slabs).	
a.	20 mm. thick	0.098 Bags Square Meter
b.	30 mm. thick	0.102 Bags Square Meter
c.	40 mm. thick	0.107 Bags Square Meter
	Marble stone slab flooring over 20 mm. thick base of cement mortar 1:4 (1 Cement:4 Sand) and	

	jointed with grey cement slurry etc., (all marble slabs).		
d.	20 mm. thick	0.268 Bags Square Meter	
e.	30 mm. thick	0.273 Bags Square Meter	
f.	40 mm. thick	0.277 Bags Square Meter	
g.	Extra if white cement slurry is used instead of grey cement slurry in joints of marble stone flooring.	0.015 Bags Square Meter (White Cement)	
h.	Marble slabs 30 mm. thick in risers of steps, skirting dado, wall and pillars, laid on 12 mm. thick cement mortar 1:3 (1 Cement : 3 Sand) and jointed with grey cement slurry.	0.246 Bags Square Meter (White Cement)	
27	Kotah Stone Flooring		
	Kotah stone slab flooring over 20 mm. thick base of lime mortar 1:1:1 (1 Lime putty:1 Surkhi:1 Sand) and jointed with neat cement slurry etc.		
a.	25 mm. thick	0.128 Bags Square Meter	
b.	30 mm. thick	0.136 Bags Square Meter	
c.	40 mm. thick	0.152 Bags Square Meter	
	Kotah Stone slab flooring over 20 mm. thick base of cement mortar 1:4 (1 Cement:4 Sand) and jointed with neat cement slurry etc.		
d.	25 mm. thick	0.298 Bags Square Meter	
e.	30 mm. thick	0.306 Bags Square Meter	
f.	40 mm. thick	0.322 Bags Square Meter	
g.	Kotah stone slab 25 mm. thick risers of steps, skirting, dado and pillar laid on 12 mm. thick cement mortar 1:3 (1 Cement:3 Sand) and jointed with neat cement slurry etc.	0.275 Bags Square Meter	
28	Sand Stone Flooring		
a.	40 mm. thick sand stone flooring over 20 mm. thick base of cement mortar 1:5 (1 Cement :5 Sand) with joints finish flush.	0.155 Bags Square Meter	
b.	40 mm. thick sand stone flooring over 20 mm. thick base of cement mortar 1:5 (1 Cement :5 Sand) including pointing with cement mortar 1:2 (1 Cement : 2 Stone Dust).	0.186 Bags Square Meter	
c.	40 mm. thick sand stone flooring over 20 mm. thick base of lime mortar 1:1:1 (1 Lime :1 Surkhi:1 Sand) including pointing with cement plaster 1:2 (1 Cement :2 Stone Dust).	0.031 Bags Square Meter	
d.	40 mm. thick fine dressed and rubbed stone flooring over 20 mm. thick base of cement mortar 1:5 (1 Cement :5 Sand) with joints 5 mm. thick finished flush.	0.166 Bags Square Meter	
e.	40 mm. thick fine dressed and rubbed stone flooring over 20 mm. thick base of lime mortar 1:5 (1 Cement : 5 Sand) with joints 5 mm. thick including pointing with cement mortar 1:2 (1 Cement : 2 Stone Dust).	0.196 Bags Square Meter	

f.	25 mm. thick cast iron grid flooring using grid tiles of required size weighing 47 kg. per square metre on bed of 12 mm. thick cement concrete 1:2 (1 Cement : 2 Stone Aggregate 6 mm. nominal size) including filling the hollows with cement concrete same mix and tamping with 10 mm. dia. iron bars and grouting the joints with neat cement slurry complete.	0.025 Bags Square Meter
g.	Filling cement concrete 1:2:4 (1 Cement :2 Coarse Sand : 4 Graded Stone Aggregate 12.5 mm. nominal size) in gaps of A.C.Sheet corrugations and wings of ridges.	3.82 Bags Square Meter
29	Cement Plaster	
a.	12 mm. 1:3 (1 Cement : 3 Sand).	14.68 100 Square Metre
b.	12 mm. 1:4 (1 Cement : 4 Sand).	10.94 100 Square Metre
c.	12 mm. 1:5 (1 Cement : 5 Sand).	8.92 100 Square Metre
d.	12 mm. 1:6 (1 Cement : 5 Sand).	7.20 100 Square Metre
e.	15 mm. 1:3 (1 Cement : 3 Sand).	17.54 100 Square Metre
f.	15 mm. 1:4 (1 Cement : 4 Sand).	12.08 100 Square Metre
g.	15 mm. 1:5 (1 Cement : 5 Sand).	10.66 100 Square Metre
h.	12 mm. 1:6 (1 Cement : 6 Sand).	8.60 100 Square Metre
i.	20 mm. 1:3 (1 Cement : 3 Sand).	22.84 100 Square Metre
j.	20mm. 1:4 (1 Cement : 4 Sand).	17.02 100 Square Metre
k.	20 mm. 1:5 (1 Cement : 5 Sand).	13.88 100 Square Metre
l.	20 mm. 1:6 (1 Cement : 6 Sand).	11.20 100 Square Metre
30	Cement Plaster with a Floating Coat of neat cement	
a.	12 mm. 1:3 (1 Cement: 3 Sand).	19.08 100 Square Metre
b.	12 mm. 1:4 (1 Cement: 4 Sand).	15.34 100 Square Metre
c.	12 mm. 1:3 (1 Cement: 3 Sand).	21.94 100 Square Metre
d.	12 mm. 1:4 (1 Cement : 4 Sand).	17.48 100 Square Metre
e.	15 mm. 1:3 (1 Cement : 3 Sand).	27.24 100 Square Metre
f.	15 mm. 1:4 (1 Cement : 4 Sand).	21.42 100 Square Metre
31	Cement Plaster in two coats	
a.	20 mm. Cement Plaster in two coats under layer 12 mm. cement plaster 1:4 (1 Cement :4 Sand) finished with a top layer 8 mm. thick cement plaster 1:3 (1 Cement : 3 Sand)	20.00 Bags per 100 Square Metre
b.	18 mm. thick Cement Plaster in two coats under layer 12 mm. thick cement plaster 1:5 (1 Cement :5 Sand) finished with a top layer 6 mm. thick cement plaster 1:3 (1 Cement : 3 Sand)	16.26 Bags per 100 Square Metre
32	6 mm. Cement Plaster	
a.	6 mm. Cement Plaster to ceiling 1:3 (1 Cement :3 Sand)	7.34 Bags per 100 Square Metre
b.	6 mm. Cement Plaster to ceiling 1:4 (1 Cement :4 Sand)	5.48 Bags per 100 Square Metre
c.	6 mm. Cement Plaster to ceiling 1:3 (1 Cement :3 Sand) finished with a floating coat of neat cement.	11.74 Bags per 100 Square Metre
d.	Neat Cement Punning.	4.40 Bags per 100 Square Metre

33	Sand Cement Neeru Finished Plaster	
a.	Sand cement smooth neeru finished plaster for ceiling in cement mortar mix 1:4 (1 Cement :4 Sand), 10 to 15 mm. thick average, finished top smooth with neeru.	13.00 Bags per 100 Square Metre
b.	Sand cement smooth neeru finished plaster for walls in cement mortar mix 1:4 (1 Cement :4 Sand), 18 to 20 mm. thick average, finished top smooth with neeru.	19.00 Bags per 100 Square Metre
34	Rough Cast Plaster	
	Rough Cast Plaster with a mixture of sand and gravel or crushed stone from 2.36 mm. to 12.5 mm. nominal size dashed over and including the fresh plaster in two layers, top layer 10 mm. cement plaster 1:3 (1 Cement: 3 Sand) mixed with 10% finely grounded hydrated lime by volume of cement and under layer 12 mm. cement plaster : 1:4 (1 Cement: 4 Sand)	
a.	With ordinary cement finish or cement pigment finish.	23.18 Bags per 100 Square Metre
b.	With white cement and pigment finish.	10.94 Bags 100 Sqm.(Grey Cement) 12.24 Bags 100 Sqm. (White Cement)
	1:5 Cement Sand (1 Cement:5 Sand)	
c.	With ordinary cement finish or cement and pigment finish.	21.16 Bags 100 Sqm.(Grey Cement)
d.	With white cement and pigment finish.	8.92 Bags 100 Sqm.(Grey Cement) 12.24 Bags 100 Sqm. (White Cement)
35.	Pointing on Stone Work	
a.	Flush or ruled pointing on stone work with cement mortar 1:3 (1 Cement : 3 Sand)	2.34 Bags per 100 Square Metre
b.	Raised and cut pointing in stone work with cement mortar 1:3 (1 Cement : 3 Sand)	3.88 Bags per 100 Square Metre
36	Waterproofing	
a.	Proprietary waterproofing treatment to the terrace with brick-bat coba, cement base.	55.00 Bags per 100 Square Metre
b.	Proprietary waterproofing treatment to the canopy with brick-bat coba, cement base.	45.00 Bags per 100 Square Metre
c.	Waterproofing chajja with sand cement plaster average 25 mm. thick in cement mortar 1:3 (1 Cement :3 Sand)	25.00 Bags per 100 Square Metre
d.	Proprietary waterproofing treatment to the sunk portion of toilet, cement base.	30.00 Bags per 100 Square Metre

THEORETICAL CEMENT CONSUMPTION STATEMENT (BASE CPWD)

No	Description of item of work.	Quantity of cement to be used per Unit Quantity of work.	Unit.
1.	Cast Iron Pipes		
	Providing and fixing on wall face C.I. rain water pipes including filling the joints with spun yarn soaked in neat cement slurry and cement mortar 1:2 (1 Cement : 2 Sand)		
a.	75 mm. dia pipe	0.132 Bags per 100 Metre	
b.	105 mm. dia pipe	0.176 Bags per 100 Metre	
c.	150 mm. dia pipe	0.264 Bags per 100 Metre	
2.	Cast Iron Accessories		
	Providing and fixing on wall face C.I. Accessories for rain water pipes including filling the joints with spun yarn soaked in neat cement slurry and cement mortar 1:2 (1 Cement : 2 Fine Sand)		
a.	75 mm. dia pipe C.I. Plain bend.	0.0052	Each
b.	100 mm. dia pipe C.I. Plain bend.	0.0062	Each
c.	150 mm. dia pipe C.I. Plain bend.	0.010	Each
d.	75 mm. dia C.I. head flat or corner type.	0.003	Each
e.	100 mm. dia C.I. head flat or corner type.	0.003	Each
f.	150 mm. dia C.I. head flat or corner type.	0.0052	Each
g.	75 mm. dia C.I. plain shoe.	0.003	Each
h.	100 mm. dia C.I. plain shoe.	0.003	Each
i.	150 mm. dia C.I. plain shoe.	0.0052	Each
j.	75 mm.dia C.I. single branch (plain)	0.0052	Each
k.	100 mm. dia C.I. single branch (plain)	0.0062	Each
l.	150 mm. dia C.I. single branch (plain)	0.0010	Each
m.	75 mm.dia C.I. double branch (plain)	0.008	Each
n.	100 mm. dia C.I. double branch (plain)	0.009	Each
o.	150 mm. dia C.I. double branch (plain)	0.0052	Each
p.	C.I. off-sets (plain) 75 mm. dia. 55 mm. projection.	0.0052	Each
q.	C.I. off-sets (plain) 75 mm. dia. 150 mm. projection.	0.0052	Each
r.	C.I. off-sets (plain) 100 mm. dia. 55 mm. projection.	0.0052	Each
s.	C.I. off-sets (plain) 100 mm. dia. 55 mm. projection.	0.0062	Each
t.	C.I. off-sets (plain) 100 mm. dia. 75 mm. projection.	0.0062	Each
3.	A.C. Fittings & Pipes		

	Providing and fixing on wall face asbestos cement rain water pipes including jointing with spun yarn soaked in bitumen and cement mortar 1:2 (1 Cement 2 Coarse Sand) complete.		
a.	50 mm. dia.	0.150	100 Metre
b.	80 mm. dia.	0.250	100 Metre
c.	100 mm. dia.	0.300	100 Metre
d.	150 mm. dia.	0.320	100 Metre
e.	Providing and fixing A.C. Pipe (or any diameter) wall plugs and standard holder bat clamps comprising of two semi-circular halves of flat and cast iron base screwed on wooden plugs.	0.0004	100 Metre
f.	Providing and fixing on wall face asbestos cement rain water pipes including jointing with spun yarn soaked in bitumen and cement mortar 1:2 (1 Cement 2 Coarse Sand) complete.		

		50 mm. (2")	80 mm. (3")	100 mm. (4")	Unit
g.	Bend of required degree with door or without door.	0.0072	0.012	0.015	Each
h.	Off-set 52.2 mm. projection.	0.0058	0.0090	0.0116	Each
i.	Off-set 76.2 mm. projection.	0.0058	0.0090	0.011	Each
j.	Off-set 114.3 mm. projection.	0.0058	0.0090	0.0116	Each
k.	Off-set 152.4 mm. projection.	0.0058	0.0090	0.0116	Each
l.	Off-set 228.6 mm. projection.	0.0058	0.0090	0.0116	Each
m.	Off-set 304.8 mm. projection.	--	0.0090	0.0116	Each
n.	Off-set 457.2 mm. projection.	--	0.0090	0.0116	Each
o.	Off-set 609.6 mm. projection.	--	--	0.0116	Each
p.	Junction equal single of required degree with or without door.	0.0072	0.0116	0.0146	Each
q.	Junction equal double with or without door or required degree.	0.0108	0.0174	0.0220	Each
r.	Standard shoe.	0.00400	0.0058	0.0058	Each

4.	Sanitary Fittings		
a.	Fixing long pan pattern or Orissa pattern squatting pan or pedestal type water closet 12.5 litres or 15 litres flushing cistern and brackets, telescopic flush pipe or bend with fittings and clamps, overflow pipe with specials and mosquito proof coupling complete including cutting and making good the walls and floors.	0.10	Each
	Fixing flat back or wall corner type, lipped front, urinal basin of 430 x 260 x 350 mm. and 340 x 430 x 265 mm. size respectively, white glazed earthenware with automatic C.I. flushing cistern with fittings, brackets, standard size flush pipe and spreaders with brass union and G.I. clamps complete including painting of cistern and fittings, cutting and making good the walls and floors.	0.050	Each

b.	One urinal basin with 5 litres C.I. automatic flushing cistern.	0.050	Each
c.	Range of two urinal basins with 10 litres C.I. automatic flushing cistern.	0.08	Each
d.	Range of three urinal basins with 10 litres C.I. automatic flushing cistern.	0.134	Each
e.	Range of four urinal basins with 15 litres C.I. automatic flushing cistern.	0.190	Each
	Fixing white glazed fire clay stall urinal with automatic C.I. flushing cistern with fittings R.S. or C.I. brackets standard size C.P. brass flush pipe and spreaders with unions and clamps, C.I. trap with outlet grating and other coupling in C.P. brass including painting of cistern and fittings, cutting and making good the walls and floors.		
f.	Single stall urinal with 5 litres C.I. automatic flushing cistern.	0.102	Each
g.	Range of two urinal basins with 10 litres C.I. automatic flushing cistern.	0.204	Each
h.	Range of three urinal basins with 10 litres C.I. automatic flushing cistern.	0.306 Bags	Each
i.	Range of four urinal basins with 15 litres C.I. automatic flushing cistern.	0.406 Bags	Each
	Fixing one-piece construction white squatting plate urinal with an integral longitudinal flushing pipe 100 mm. dia. half round channel automatic C.I. flushing cistern with fittings R.S. or C.I. brackets, standard size. G.I. flush pipe for back and front flush with standard spreader pipes with fittings G.I. clamps, white vitreous tiling 1200 mm. high to the front and side walls with white vitreous china corners and angles set in neat cement, standard urinals C.I. trap 65 mm. diameter with vent arm and outlet grating and coupling in C.P. brass complete, including painting the cistern and fittings and making good the walls and floors.		
j.	Single squatting plate with 5 litres C.I. automatic flushing cistern.	0.102 Bags	Each
k.	Range of two squatting plates with 10 litres C.I. automatic flushing cistern.	0.204 Bags	Each
l.	Range of three squatting plates with 10 litres C.I. automatic flushing cistern.	0.306 Bags	Each
m.	Range of four squatting plates with 15 litres C.I. automatic flushing cistern.	0.406 Bags	Each
n.	Fixing lavatory basin with brackets, pillar taps, rubber plug, waste of standard pattern, trap and unions complete including cutting and making good the walls.	0.050 Bags	Each
o.	Fixing white pedestal for wash basin completely recessed at the back for reception of pipes and	0.032 Bags	Each

	fittings.		
p.	Fixing sink with brackets, 40 mm. rubber plus, brass chain, waste, trap with necessary unions complete including cutting and making good the walls.	0.050 Bags	Each
q.	Fixing teal-wood draining board with skirting and beading, wax polished with brackets painted white complete including making good the walls.	0.028 Bags	Each
5.	Sanitary Fittings (Items separately ordered)		
a.	Fixing long pan pattern or Orissa pattern squatting, or pedestal type W.C. pan.	0.050 Bags	Each
b.	Fixing a pair of white glazed earthenware or vitreous china foot rests of standard pattern for Indian type W.C. pan.	0.010 Bags	Each
c.	Fixing flat back or wall corner type lipped front urinal basin of 430 x 260 x 350 mm. and 340 x 430 x 265 mm.	0.020 Bags	Each
d.	Fixing white glazed fire clay stall urinal of standard size.	0.04 Bags	Each
e.	Fixing white squatting plate urinal with integral longitudinal flush pipe. .	0.040 Bags	Each
f.	Fixing wash basin including making all connections excluding cost of fittings.	0.030 Bags	Each
g.	Fixing kitchen sink including making all connections complete.	0.030 Bags	Each
h.	Fixing in position 32 mm. diameter glavanised steel telescopic flush pipe complete including cutting and making good the walls and floor.	0.020 Bags	Each
6.	Sand Cast Iron Pipe and Fittings		
a.	Fixing M.S. holder bat clamp to 100 mm. dia. sand cast iron pipe embedded in cement concrete blocks 10 x 10 x 10 cm. of cement concrete 1:2:4 (1 Cement : 2 Sand : 4 Stone Aggregate) including cost of cutting holes and making good the walls etc.	0.010 Bags	Each
b.	Fixing M.S. stays and clamps for 100 mm. diameter sand cast iron pipe.	0.010 Bags	Each
c.	Fixing M.S. holder bat clamps for 50 mm. diameter sand cast iron pipe embedded in cement concrete block 10 x 10 x 10 cm. of 1:2:4 (1 Cement : 2 Sand : 4 Stone Aggregate) including cost of cutting holes and	0.010 Bags	Each
	making good the walls etc.		
d.	Fixing M.S. stays and clamps for 50 mm. diameter sand cast iron pipe.	0.010 Bags	Each
e.	Fixing sand cast iron trap 100 mm. inlet 100 mm. outlet of self-cleaning design with sand cast iron screwed down or hinged grating with or without vent arm complete including cost of cutting without	0.050 Bags	Each

	and making good the walls and floor.		
f.	Fixing 100 mm. inlet and 50 mm. outlet sand cast iron floor trap of self cleaning design with sand cast iron screwed down or hinged grating with or without vent arm complete including cost of cutting and making good the walls and floors.	0.050 Bags	Each
7.	Asbestos Cement Soil, Waste and Vent Pipes and Fittings		
	Providing and fixing on wall face asbestos cement soil waste and vent pipe including jointing with spun yarn soaked in bitumen and cement mortar 1:2 (1 Cement: 2 Sand) complete.		
a.	For 100 mm. diameter.	0.300 Bags	100 Metre
b.	For 50 mm. diameter.	0.150 Bags	100 Metre
	Fixing wooden plugs and standards holder bat clamps comprising of two semicircular halves of flat iron and cast iron base screwed on wooden plugs.		
c.	For 100 mm. diameter.	0.0004 Bags	Each
d.	For 50 mm. diameter.	0.0004 Bags	Each
	Providing and fixing A.C. bends of required degree with access door insertion rubber washer 3 mm. thick, bolts and nuts or plain bend of heel rest unitary bend including jointing with spun yarn soaked in bitumen and cement mortar 1:2 (1 Cement : 2 Sand)		
e.	For 100 mm. diameter.	0.0020 Bags	Each
f.	For 50 mm. diameter.	0.0010 Bags	Each
	Providing and fixing double equal or unequal A.C. junctions of required degree plain or with access door, insertion, rubber washer 3 mm. thick bolts and nuts, including jointing with spun yarn cement mortar 1:2 (1 Cement : 2 Sand) complete.		
g.	100 x 100 x 100 x 100 mm. double equal junctions or 100 x 100 x 50 x 50 mm. double unequal junctions.	0.004 Bags	Each
h.	50 x 50 x 50 50 mm. double equal junctions.	0.002 Bags	Each
	Providing and fixing single equal or unequal A.C. junctions of required degree plain or with access door, insertion, rubber washer 3 mm. thick bolts and nuts, including jointing with spun yarn cement mortar 1:2 (1 Cement : 2 Sand) complete.		
i.	100 x 100 x 100 x 100 mm. single equal junctions or 100 x 100 x 50 x 50 mm. single unequal junctions.	0.0030 Bags	Each
j.	50 x 50 x 50 50 mm. single equal junctions.	0.0016 Bags	Each
	Providing and fixing plain A.C. invert branch of required degree including jointing with spun yarn soaked in bitumen and cement mortar 1:2 (1 Cement : 2 sand).		

l.	50 x 50 x 50 x 50 mm.	0.002 Bags	Each
m.	50 x 50 x 50 x 50 mm.	0.0016 Bags	Each
	Providing and fixing A.C. offset including jointing with spun yarn soaked in bitumen and cement mortar 1:2 (1 Cement : 2 Sand)		
n.	100 mm. dia. A.C. offset with any projection.	0.002 Bags	Each
o.	50 mm. dia. A.C. offset with any projection.	0.0010 Bags	Each
	Providing and fixing A.C. loose socket including jointing with spun yarn soaked in bitumen and cement mortar 1:2 (1 Cement : 2 Sand) complete.		
p.	100 mm.	0.002 Bags	Each
q.	50 mm.	0.0010 Bags	Each
	Providing and fixing A.C. Terminal guard including jointing with spun yarn soaked in bitumen and cement mortar 1:2 (1 Cement : 2 Sand).		
r.	100 mm.	0.002 Bags	Each
s.	50 mm.	0.0010 Bags	Each
t.	Cutting chase in brick masonry walls for fixing 100 mm diameter sand cast iron pipes and making good the same with brick work in cement mortar 1:3 (1 Cement : 3 Sand)	10.00 Bags	100 Metre
u	Cutting chase in brick masonry walls for fixing 50 mm. diameter sand cast iron pipes and making good the same with the brick work in cement mortar 1:3 (1 Cement : 3 Sand).	6.66 Bags	100 Metre
8.	Drainage		
	Jointing glazed stone ware pipes grade “A” with stiff mixture of cement mortar in the proportion of 1:1 (1 Cement : 1 Sand)		
a.	100 mm. dia.	4.34 Bags	100 Metre
b.	150 mm. dia.	6.46 Bags	100 Metre
c.	200 mm. dia.	8.66 Bags	100 Metre
d.	230 mm. dia.	9.74 Bags	100 Metre
e.	250 mm. dia.	10.80 Bags	100 Metre
f.	300 mm. dia.	12.94 Bags	100 Metre
g.	450 mm. dia.	19.54 Bags	100 Metre
	Laying cement concrete 1:5:10 (1 Cement : 5 Sand : 10 Graded Stone Aggregate 40 mm. nominal size) alround S.W. pipe including bed concrete 15 cm. thick.:		
h.	100 mm. dia. S.W. Pipe.	47.32 Bags	100 Metre
i.	150 mm. dia. S.W. Pipe.	50.70 Bags	100 Metre
j.	200 mm. dia. S.W. Pipe.	58.24 Bags	100 Metre
k.	230 mm. dia. S.W. Pipe.	62.92 Bags	100 Metre
l.	250 mm. dia. S.W. Pipe.	66.04 Bags	100 Metre
m.	300 mm. dia. S.W. Pipe.	73.58 Bags	100 Metre
n.	350 mm. dia. S.W. Pipe.	81.12 Bags	100 Metre
o.	400 mm. dia. S.W. Pipe.	88.40 Bags	100 Metre

p.	450 mm. dia. S.W. Pipe.	96.20 Bags	100 Metre
	Laying cement concrete 1:5:10 (1 Cement : 5 Sand : 10 Graded Stone Aggregate 40 mm. nominal size) upto haunches of S.W. pipe including bed concrete 15 cm. thick.:		
q.	100 mm. dia. S.W. Pipe.	31.72 Bags	100 Metre
r.	150 mm. dia. S.W. Pipe.	34.84 Bags	100 Metre
s.	200 mm. dia. S.W. Pipe.	40.56 Bags	100 Metre
t.	230 mm. dia. S.W. Pipe.	44.20 Bags	100 Metre
u.	250 mm. dia. S.W. Pipe.	46.54 Bags	100 Metre
v.	300 mm. dia. S.W. Pipe.	52.26 Bags	100 Metre
w.	350 mm. dia. S.W. Pipe.	58.24 Bags	100 Metre
x.	400 mm. dia. S.W. Pipe.	62.96 Bags	100 Metre
y.	450 mm. dia. S.W. Pipe.	69.94 Bags	100 Metre
z.	Laying light duty non-pressure NP2 or P1 class R.C.C. pipes with collars jointed with stiff mixture of cement mixture of cement mortar in the proportion of 1:2 (1 Cement : 2 Sand) including joints etc.		
Z1.	100 mm. dia. R.C.C. pipe (NP2) or (P1)	1.00 Bags	100 Metre
Z2.	150 mm. dia. R.C.C. pipe (NP2) or (P1)	1.20 Bags	100 Metre
Z3	250 mm. dia. R.C.C. pipe (NP2) or (P1)	1.80 Bags	100 Metre
Z4.	300 mm. dia. R.C.C. pipe (NP2) or (P1)	2.20 Bags	100 Metre
Z5.	450 mm. dia. R.C.C. pipe (NP2) or (P1)	4.80 Bags	100 Metre
Z6.	500 mm. dia. R.C.C. pipe (NP2) or (P1)	5.20 Bags	100 Metre
Z7.	600 mm. dia. R.C.C. pipe (NP2) or (P1)	6.40 Bags	100 Metre
Z8.	700 mm. dia. R.C.C. pipe (NP2) or (P1)	7.40 Bags	100 Metre
Z9.	800 mm. dia. R.C.C. pipe (NP2) or (P1)	8.40 Bags	100 Metre
Z10	900 mm. dia. R.C.C. pipe (NP2) or (P1)	9.80 Bags	100 Metre
Z11	1000 mm. dia. R.C.C. pipe (NP2) or (P1)	11.00 Bags	100 Metre

SAFETY CODE

01. First aid appliances including adequate supply of sterilized dressing and cotton wool shall be k in a readily accessible place.
02. An injured person shall be taken to a public hospital without loss of time, in case where the inju necessitates hospitalization.
03. Suitable and strong scaffolds should be provided for workmen for all works that cannot safely done from the ground.
04. No portable single ladder shall be over 8 meter in length. The width between the side rails sh not be less than 30 cm (clear) and the distance between two adjacent rungs shall not be more th 30 cm. When a ladder is used an extra mazdoor shall be engaged for holding ladder.
05. The excavated material shall not be placed within 1.5 meters of the edge of the trench or half the depth of trench whichever is more. All trenches and excavations shall be provided w necessary fencing and lighting.
06. Every opening in the floor of a building or in a working platform be provided with suital means to prevent the fall of persons or materials by providing suitable fencing or railing whc minimum height shall be on meter.

07. No floor, roof or other part of the structure shall be so overloaded with debris or materials as render it unsafe.
08. Workers employed on mixing and handling material such as asphalt, cement mortar or concr and lime mortar shall be provided with protective footwear and rubber hand gloves.
09. Those engaged in welding works shall be provided with welder's protective eye-shields a gloves.
10.1 No paint containing lead or lead products shall be used except in the form of paste or readyma paint.
10.2 Suitable face masks should be supplied for use by the workers when the paint is applied in t form of spray or surface having lead paint dry rubbed and scrapped.

TECHNICAL SPECIFICATIONS FOR INTERIOR MATERIALS
SECTION – A - GENERAL

This specification is for work to be done, item to be supplied and materials to be used in the works as shown and defined on the drawings and described herein, all under the supervision and to the satisfaction of the Competent Authority.

Competent authority means Architects / Engineer in charge.

1.1 The workmanship is to be the best and of high standard, use must be made of special trades men in all respects of the work and allowances must be made in the rates for doing so.

1.2 The materials and items to be provided by the contractor shall be approved by the Competent Authority in accordance with any samples which will be submitted for approval by Contractor and generally in accordance with the Specifications Also if products are specified in the catalogue reference, the contractor will be required to obtain the approval of the Competent Authority before using a material. The Contractor shall produce all invoices, vouchers or receipts for any material if called upon to do so by the Competent Authority.

1.3 Samples of all materials are to be submitted to the Competent Authority for approval before the Contractor orders or delivers the materials at site. Samples together with their packing are to be provided free of charge by the Contractor and should any materials be rejected, they will be removed from the site at the Contractor's expense. All samples will be retained by the Competent Authority for comparison with materials, which will be delivered at the site. Also, the Contractor will be required to submit specimen finishes of colours, fabrics etc. for the approval of the Competent Authority before proceeding with the work.

1.4 The contractor shall be responsible for providing and maintaining and boxing or other temporary coverage required for the protection of dresses or finished work if left unprotected. He is also to clean out all shelving's, out ends and other waste from all parts of the works before coverings or in-fillings are constructed.

1.5 Templates, boxes and moulds shall be accurately set out and rigidly constructed so as to remain accurate during they are in use.

1.6 All unexposed surface of timber e. g. false ceiling, backing fillets, backs of door frames, cupboard framing, grounds, etc. are to be treated with two coats of approved timber preservative before fixing or converging.
1.7 Only first-class workmanship will be accepted. Contractor shall maintain uniform quality and consistency in workmanship throughout.

2. JOINERY:

2.1 Joinery is to be prepared immediately after the placing of the contract, framed up, bonded and waged up. Any portions that are wrapped or found with other defects are to be replaced before wedging up. The whole of the work is to be framed and finished in a workmen-like manner in accordance with the detailed drawings wrought and wherever required, fitted with all necessary metal ties, straps, belts, screws, glue etc. Running beaded joints are to be cross-tongued with teak wherever 1½ thick double cross tongued. Joiners work generally to be finished with fine sand/glass paper.

2.2 **Joints:** All joints shall be standard mortise and tenon, dowel, dovetail, and cross-halved. Nailed or glued butt joints will not be permitted, screws, nails etc. will be standard iron or wire of oxidized nettle fold tenon should fit the mortises exactly.

2.3 Nailed or glued butt joints will not be permitted except in exceptional cases with approval of Competent Authority.

2.4 Where screws shown on a finished surface, those will be sunk and the whole plugged with a wood plug of the same wood and grain of the finished surfaces will be neatly punched and the hole filled with wood filler to match the colour.

2.5 Should joints in joiner's work open, or other defects arise within the period stated for defect liability in the contract and the clause thereof, be deemed by the Competent Authority to be due such defective joinery shall be taken down, and refilled, redecorated and/or replaced if necessary and any work disturbed shall be made good at the Contractor's expense.

2.6 Nails spikes and bolts shall be of lengths and weights approved by the Competent Authority. Nails shall comply with is 1959-1960 approved quality sample. Brass-headed nails are to comply with B. S. 1210. Wire staples shall comply with B. S. 1494.

2.7 The contact surface of dowels, tennons wedges etc., shall be glued with an approved adhesive. Where glued, joinery and carpentry works are likely to come into contact with moisture, the glue shall be waterproof.

3.0 HARDWARE AND METALS:

The hardware throughout shall be of approved manufacture or supplier well-made and equal to in every respect to the samples to be deposited with the Competent Authority. The contractor may be required to produce and provide samples from many different sources before the Competent Authority takes decision and he should allow his rates for doing so.

3.1 Fittings generally shall be brass oxidized, unless otherwise specified and shall be suitable for their intended purpose. In any case, it will have to be approved by Competent Authority before the Contractor procures it at site of work.

3.2 Screws are to match the finish of the article to be fixed, and to be round or flat headed or counter sunk as required**.**

3.3 The contractor should cover up and protect the brass and bronze surfaces with a thick grease or other suitable productive material, renew as necessary and subsequently clean off away on connection.

3.4 Aluminum and stainless steel shall be of approved manufacture and suitable for its particular application. Generally, the surface of aluminium shall have an anodized finish and both shall comply with the samples approved by the Competent Authority. All stainless-steel sheets shall be 304 S. S. Japan with gauge as specified but not thinner than 16G.

3.5 All steel, brass, bronze, aluminium and stainless-steel articles shall be subjected to a reasonable test at the Contractor's expense.

3.6 ll brazing and welds are to be executed in a clean and smooth manner rubbed down and left in the flattest and tidiest way, particularly where exposed.

3.7 Chromium plating shall be in accordance with I. S. Standard or as per approved specification for normal outdoor conditions and shall be on a base material of copper or brass.

4.0 GLAZIER:

4.1 All glass to be of approved manufacturer complying with IS 3548-1966 as per approved quality and sample to be of the selective qualities specified and free from bubbles, smoke, air holes and other defects.

4.2 Polished plate glass shall be "glazing glass" (G. G.) quality and that for mirrors shall be "silvering quality" (S.G.) conforming to IS 3438-1965 or as per approved sample and quality.

4.3 The compound for glazing to metal is to be a special non-hardening compound manufactured for the purpose and of a brand and quality approved by the Competent Authority.

4.4 While cutting glass, proper allowance be made for expansion. Each square of glazing to be in one whole sheet. On completion of work clean all glass inside and cut, replace all cracked scratched and broken panes and leave in good condition.

5.0PAINT AND POLISHES:

5.1 All material required for the works shall be of specified and approved manufacturer, delivered to the site in the manufacturer's container's name or trade mark with a description of the contents and colour. All materials are to be stored on the site.

5.2 Spray painting with approved machines will be permitted only if written approval has been obtained from the Competent Authority prior to painting. No spraying will be permitted in the case of priming costs nor where the soiling of adjacent surfaces is likely to occur. The buzzle and pressure to be so operated as to give an even coating throughout to the satisfaction of the Competent Authority. The paint used for spraying is to comply generally with the specification concerned and is to be specially prepared by the manufacturer for spraying. Thinning of paint made for brushing will not be allowed.

5.3 Wood preservative shall be Solignum or other equal and approved impregnating wood preservative and all concealed woodwork shall be treated with wood preservative.

5.4 All brushes, tools, pots kettles etc. used in carrying out the work shall be clean and free from foreign matter and are to be thoroughly cleaned out before being used with a different type of class of materials.

5.5 All iron or steel surfaces shall be thoroughly scraped and rubbed with wire brushes and shall be entirely free from rust, mill scale etc. before applying the priming coat.

5.6 Surfaces of now wood work which to be painted are to be rubbed down, cleaned, down to the approval of the Competent Authority.

5.7 Surfaces of previously painted woodwork which are to be painted are to be cleaned down with soap and water, detergent solution or approved solvent to remove dirt, grease etc. Whilst wet the surfaces shall be flatted down with a suitable abrasive and then rinsed down and allowed to dry. Minor areas of defective paint shall be removed by scraping back to a firm edge and the exposed surface touched in with primer as described and soaked with putty. Where woodwork has been previously painted or polished and it is to be newly polished, with scrapping, burning off or rubbing down and making surface properly.

5.8 Surfaces of previously painted metal which shall be painted are to be cleaned down and flattened down as described in surfaces of any rust and loose scale shall be removed completely by chipping, scrapping and wire brushing back to the bare metal and touched in with primer as described.

5.0 UPHOLSTERY:

5.1 This will be of first class standard workmanship with webbing, no-sag springs, coiled springs, padding and filling as specified on drawing. Covering fabrics will be seen, tufted, and corded as shown on the drawing and as approved by the Competent Authority.

5.2 Cushion Vents: Brass "cushion Vents" should be installed at the back or under side or seat cushions (especially those covered in leather vinyl plastic or very tightly woven fabric) to allow air to escape easily and to prevent torn seems.

5.3 Materials: Finished timber shall be of the type specified. Furnishing fabrics, colour, pattern, substance to be as specified, no variations of this will be permitted unless with prior approval of the Competent Authority.

6.0 POLISH:

6.1 French polish: The basic material shall be shellac dissolved in mentholated spirit.

Preparation:
The timber must be well sanded and cleaned and the grain filled with grain filler. Any staining must be done before applying the polish.

Equipment:
The polishing rubber the most important implement in French polish shall consist of a pad of cotton wool, which acts as a reservoir for the polish, and a cover of soft white linen of cotton fabric, similar to a well-worn handkerchief which acts as a fitter. The rubber must never be dipped into the polish; it should be charged by pouring the polish on to the pad with the cover removed.

Application:
Work evenly over the surface with a slow figure-of-eight motion until the timber is coated with a thin layer of polish. The object is to apply a series of thin coats, allowing only a few minutes for drying between the coats. When a level and even-bodied surface is obtained the work is ready for the second stage i.e. spiriting off.

Allow the work to stand for at least eight hours, then take a fresh rubber with a double thickness of cover material and charge it with mentholated spirit. The object of spiriting off into and remove the rubber marks and to give the brilliance of finish.

Finally, work in the direction of the grain and continue until the surface is free from smears and rubber marks then leave to harden off.

.2 Wax polish:

Wax polish shall contain silicones and driers. A good silicon wax is to be used not a creamy or spray. The timber shall be sealed first with another finish such as Ron seal, before applying wax.

Application:

Apply coat of the sealer by brush or cloth direct to the unfilled timber, working it well in and finishing evenly with the grain. Allow to dry thoroughly then sand lightly with fine abrasive paper. Apply a heavy coat of wax by cloth on flat surfaces, with a stiff brush. Work it well into the timber and finish off by stroking with the grain before leaving to harden. Leave for four hours before rubbing up with a soft brush. Finally, buff the grain with a soft cloth.

7.3 Transparent Coloured Polyurethane (Melamine)

This shall be applied where natural grain of the wood is required to show. Polyurethane gives tough surface which resist chipping, scratching and boiling water.

Application:

Clean off all grease and wax with an abrasive and white spirit, this should not be applied in humid conditions. Apply the first coat, preferably of clear hard glaze with a cloth pad. Leave this to dry for at least six hours, then apply further coats with a paintbrush. If you wait for longer than 24 hours between coats, rub down the previous coat with fine glass paper or a medium grade of steel wool. Obtain a matt finish, if required, by giving a final coat of clear Reseal Matt coat.

8.0 TIMBER:

8.1 Only seasoned Teakwood to be used unless otherwise specified.
8.2 Use of Rose wood wherever specified.
8.3 All the wood shall be properly seasoned, natural growth and shall be free from worm holes, loose or dead knots or other defects, saw die square and shall not suffer warping, splitting or other defects.
8.4 The moisture content shall not exceed 12%.
8.5 All internal frame work shall be treated with approved wood preservative.
8.6 All wood brought to site should be clean shall not have any preservative or other coating/covering.
8.7 All rejected decayed, bad quality wood shall be immediately removed from site.
8.8 All wood brought to site must be stacked-stored properly as per instructions.

9.0 PLYWOOD:

9.1 Plywood/medium density fibre board/teak practical board/ Veneer shall be as specified in the approved list of manufacturers shall be used.
9.2 Commercial ply shall confirm IS-303 of approved make.
9.3 Marine plywood shall generally conform to generally IS-303 BWR or unless specified IS-710-1980(BWP).

1. Particle board shall be phenol formaldehyde bonded and generally conform to IS 3087-1965.

2. Only 3mm to 4mm thick straight-grained groups matching approved veneers shall be used. No extra claim will be entertained for veneer if found of extra thickness.

10.0 RCC/CC WORK (DESIGN MIX CONCRETE)

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

The mix shall be designed with quantities of admixture / plasticizer proposed to achieve required workability & strength. The specifications mentioned here in below shall be followed for Design Mix Concrete.

10.2 The sources of coarse aggregate, fine aggregate & water to be used in concrete work shall be identified by the contractor & he will satisfy himself regarding their conforming to the relevant specification & their availability before getting the same approved by the Engineer-in-Charge.

10.3 Coarse Aggregate:As per CPWD Specifications - 2019 - Vol.I & Vol. II with up to date correction slips.

10.4 Fine Aggregate:As per CPWD Specifications - 2019 - Vol.I & Vol. II with upto date correction slips.

10.5 Water: It shall confirm to requirements laid down in IS:456-2000 / CPWD Specifications - 2019 - Vol.I & Vol. II with upto date correction slips.

10.6 Cement: PPC shall be used for design mix concrete and shall conform to IS-1489 (part-I).
However, if higher grade of cement is used by the contractor nothing extra shall be paid on this account.

10.7 Admixtures / Plasticizers: - The admixture shall confirm to IS:9103, wherein required, the admixture of approved quality and approved make only shall be used to attain the required workability. Nothing extra shall be paid for use of admixtures.

10.8 Grade of Concrete: The compressive strength of various grades of concrete shall be given as below:

Grade Designation	Compressive Strength on 15 cm Cubes at 7 Days (N/mm2)	Specified Characteristic Compressive Strength At 28 Days At (N/ mm2)	Maximum Water Cement Ratio	Minimum Cement to be used in kg per cum
M-25	As Per Design	25	0.50	330
M-30	As Per Design	30	0.45	340
M-35	As Per Design	35	0.45	350
M-40	As Per Design	40	0.40	360

Water cement ratio and slump shall be as per IS:456-2000.

NOTE:
(i) In the designation of a Concrete mix letter M refers to the mix and the number of the specified characteristic compressive strength of 15 cm cube at 28 days expressed in N/mm2.

 Signature & Seal of Contractor

(ii) It is specifically highlighted that in addition to the above requirements, the maximum **cement content for any grade shall be limited to 380 kg /cum**.

(iii) The maximum cement content for design mix concrete shall be maintained as per the quantity mentioned above. In case where the quantity of cement required as per Design Mix is lower than the quantity specified in the respective item in the "schedule of quantity", necessary deduction for less quantity of cement used shall be made from the contractor.

10.9 The contractor shall engage one of the IIT/NIT/Reputed Govt. Engineering Institutions/Approved Laboratories as directed by the Engineer-in-charge at his own expenses for designing the concrete mix in accordance with relevant IS Codes and to conduct laboratory test to ensure the target strength and workability criteria for a given grade of concrete.
10.10 The contractor shall submit the report on design mix from any of above approved laboratories for approval of Engineer-in-Charge within 30 days from the date of issue of letter of acceptance of the tender as envisaged under Clause-5 of Schedule-F of this bid document. No concreting shall be done until the design mix is approved. In case of white Portland cement and the likely use of admixtures in concrete with ordinary Portland/white Portland cement, the contractor shall design and test the concrete mix by using trial mixes with white cement and / or admixtures also, for which nothing extra shall be payable.
10.11 In case of change of source or characteristic properties of the ingredients used in the concrete mix during the work, a revised laboratory mix design report conducted at laboratory established at site shall be submitted by the contractor as per the direction of the Engineer-in-Charge.

10.12 Trial Batches:
10.12.1 The designed mix proportion shall be checked for target mean compressive strength by means of trial batches.

10.12.2 The quantities of materials for each trial mix shall be sufficient for at least six specimens (cubes) and the concrete required for carrying out workability tests.
10.12.3 The workability of trial mix No. 1 shall be measured and mix shall be carefully observed for freedom from segregation, bleeding and its finishing characteristics.
The water content, if required, shall be adjusted corresponding to the required changes in the workability.
10.12.4 With the modified water content, the mix pro-portions shall be recalculated by keeping with water cement ratio unchanged. The mix proportions, as modified, shall form the Trial Mix No. 2 and tested for the specified strength and workability.
10.12.5 In addition, trial mix No. 3 and 4 shall be designed by keeping water contents same as that determined for trial mix 2 but varying the water cement ratio + 10 percent of the specified value and tested for their design characteristics.
10.13 All cost of mix designing and testing connected therewith including charges payable to the laboratory shall be borne by the Contractor including redesigning of the concrete mix wherever required and directed by Engineer-in-Charge.

10.14STANDARD OF ACCEPTANCE:
Standard of acceptance of hardened concrete of batch concrete shall be same asspecified in CPWD Specifications / IS:456.)
(i) In case the test results of all the samples are above the characteristic compressivestrength, the concrete shall be accepted.
(ii) In case the test result of one or more samples fails to meet the requirement (i)above, it shall be accepted if both the following conditions are met:-
a) Any individual test result is not less than (fck - S) N/mm2.
b) The mean of test results from any group of four consecutive samples is morethan (fck + S) N/mm2.

Note:- S - Standard Deviation

iii) Concrete of each grade shall be assessed separately.

iv) Concrete is liable to be rejected, if it is porous or honeycombed, 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.

10.15 The contractor has to arrange at site sufficient centering and shuttering for before two months from stipulated date of start of work. Only MS centering / shuttering and scaffolding material unless & otherwise specified shall be used for all R.C.C. work to give an even finish of concrete surface. However, marine-ply shuttering in exceptional cases as per site requirement may be used on specific request from contractor as approved by the Engineer-in-Charge.

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

10.17 In order to keep the floor finish as per architectural drawings and to provide required thickness of the flooring as per specifications, the level of top surface of RCC shall be accordingly adjusted at the time of its centering, shuttering and casting for which nothing extra shall be paid to the Contractor.

10.18 As per general engineering practice, level of floors in toilet / bath, balconies, shall be kept 25 mm as required lower than general floors shuttering should be adjusted accordingly and slabs should be laid with slope towards the drainage point. Nothing extra is payable
on this account.

10.19 PRODUCTION OF CONCRETE

All concrete shall be produced at site through fully computerized weigh-batching plant of suitable capacity (**not less than 30 cum/hr**) conforming to IS:4925 with the arrangements for automatic dispensing of admixture and having facility of giving print out indicating weight / details of all ingredient of concrete in each lot/ batch and variations from the approved design mix if any. Fully automatic batching and mixing plant having capacity not less than 30 cum/ hour shall be installed at the arranged site by the contractor. The batching and mixing plants shall be dedicated plants for this project. Contractor shall make his own arrangements for the necessary infrastructure for installation of batching plant and other machineries.

However, if due to any reason, contractor wishes to supplement the concrete from Ready Mix Concrete (RMC) supplier, he is permitted to procure the same from the source approved by the Engineer-in-charge at his own cost. In such a situation nothing extra shall be paid to the contractor. All technical requirements such as cement type and minimum cement quantity, w/c ratio, slump, admixture etc. shall be conveyed to RMC supplier by the contractor and contractor shall be wholly responsible for ensuring the property of concrete as required at site, nothing extra shall be paid to the contractor.

The contractor may take some time to install his own batching plants at the arranged site and till the batching plants are installed, the contractor is permitted to procure concrete from approved Ready-Mix Concrete (RMC) supplier for a period of 2 months from date of start of work or the period as agreed by Engineer-in-Charge. Similarly, when the work is nearing completion and daily requirement of concrete is very less, if agreed by the Engineer-in-Charge, the contractor may be permitted to procure the concrete from approved Ready-Mix Concrete (RMC) supplier and nothing extra shall be paid to the contractor on this account.

10.20 TRANSPORTATION, PLACING AND COMPACTION OF CONCRETE

Mixed concrete from the RMC / Batching plant shall be transported to the point of placement by transit mixers and placed in position through concrete pumps and/or steel closed bottom buckets capable of carrying minimum 0.6 cum concrete. In case the concrete is proposed to be transported by transit mixer, the mixing speed shall not be less

than 4 rev/min. of the drum nor greater than a speed resulting in a peripheral velocity of the drum 70 m/minutes at its largest diameter. The agitating speed of the agitator shall be not less than 2 rev/min nor more than 6 rev/min of the drum. The number of revolution of the mixing drum or blades at mixing speed shall be between 70 to 100 revolutions for a uniform mix, after all ingredients, have been charged into the drum. Unless tempering water is added, all rotation after 100 revolutions shall be at agitating speed of 2 to 6 rev/min and the number of such rotations shall not exceed 250. The general construction of transit mixer and other requirement shall conform to IS:5892.

In case concrete is to be transported by pumping, the conduit shall be primed by pumping a batch of mortar through the line to lubricate it. Once the pumping is started, it shall not be interrupted (if at all possible) as concrete standing idle in the line is liable to cause a plug. The operator shall ensure that some concrete is always there in the pump receiving hopper during operation. The lines shall always be maintained clean and shall be free of dents at all stages. Special precaution shall be taken that surrounding temperature during concreting shall not exceed 30 degrees centigrade.
Except where otherwise agreed to by the Engineer-in-Charge, concrete shall be deposited in horizontal layers to a compacted depth of not more than 450 mm. Unless agreed to by the Engineer- in-Charge, concrete shall not be dropped into place from a height exceeding 1.5m. In order to avoid such situations chutes, tremie pipe or closed bottom buckets shall be used. These shall be kept clean and used in such a way as to avoid segregation. Slope of the chute shall be so adjusted that concrete flows without the use of excessive quantity of water. The delivery end of chute shall be as close as possible to the point of deposit. The chute shall be thoroughly flushed with water before and after each working period and the water used for this purpose shall be discharged outside the formwork. The concrete shall be compacted by using immersion type vibrators. When the concrete is being continuously deposited to a uniform depth along a member, vibrator shall not be operated within one meter of free end of the advancing concrete. Every effort shall be made to keep the surface of the previously placed layer of concrete alive so that the succeeding layer can be amalgamated with it by the vibration process. In case the concrete in underlying layer has hardened to such an extent that it cannot be penetrated by the vibrator but is still fresh (that is, just after initial set), unimposed bond shall be achieved between the top and underlying layer by first scarifying the lower layer before the new concrete is placed by systematically and thoroughly vibrating the new concrete. The points of insertion of vibrator in the concrete shall be so spaced that the range of action overlap to some extent and the freshly filled concrete is sufficiently consolidated at all locations. The spacing between the dipping positions of vibrator shall be maintained uniformly throughout the surface of concrete so that concrete is uniformly vibrated. The vibrating head shall be regularly and uniformly inserted in the concrete so that it penetrates of its own accord and shall be withdrawn slowly whilst running so as to allow redistribution of concrete in its way and allow the concrete to flow back into the hole behind the vibrator. The vibrator head shall be kept in one position till the concrete within its influence is completely consolidated. Vibration shall be continued until the coarse aggregate particle have blended into the surface but have not disappeared. The contractor shall keep at least one additional vibrator in serviceable condition to be used in the event of breakdowns and maintenance problems.

The vibrator head shall not be brought more than 200 mm near to the formwork as this may cause formation of water stagnations. The formwork shall be strong and great care shall be exercised in its assembly. It shall be designed to take up increased pressure of concrete and pressure variations caused in the neighborhood of vibrating head, which may result in excessive local stress on the formwork. The joints of the formwork shall be made and maintained tight and close enough to prevent the squeezing out slurry or sucking in of air during vibration. The formwork to receive concrete shall be cleaned and made free from standing water, dust, etc. The contractor shall keep provision for screed and shutter vibrators at site.

No concrete shall be placed in any part of the structure until the approval of Engineer-in- Charge has been obtained. If concreting is not started within 24 hours of the approval being given, it shall have to be obtained again from the Engineer-in-Charge. Concreting shall be don continuously over the area between construction joints. Fresh concrete

shall not be placed against concrete which has been in position for more than 30 minutes unless a proper construction joint is formed. When concreting has to be resumed on a surface which has hardened, it shall be roughened, swept, clean, thoroughly wetted and covered with a 13 mm thick layer of mortar composed of cement and sand in the same
ratio as in the concrete mix itself. The 13 mm layer of mortar shall be freshly mixed and placed immediately before placing of new concrete.

Where concrete is not fully hardened, all latency shall be removed by scrubbing the wet surface with wire or bristle brushes. Care shall be taken to avoid dislodgement of particles of coarse aggregate. The surface shall then be thoroughly wetted, all free water removed and then coated with neat cement grout. Particular attention shall be given to corners and close spots.

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 on 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 b sis of results of individual or combination of these tests. The Contractor shall take remedial measures necessary to retain the structure as approved by the Engineer-in-Charge without any extra cost. However, for payment, the basis of rate
payable to contractor shall be governed by the 28 days cube test results and reduced rates shall be regulated in accordance with para 3.24.2.

11.0 SHUTTERING / FORM WORK

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

11.2 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 whenclosing pieces required to complete the shuttering panels. Dented, broken, cracked,twisted or rusted shuttering plates shall not be allowed to be used on the work.

11.3 The shuttering plates shall be cleaned properly with electrically driven sanders to removeany cement slurry or cement mortar or rust. Proper shuttering oil or debonding compoundshall be applied on the surface of the shutter plates in the requisite quantity beforeassembly of steel reinforcement.

11.4 The joint filler shall be resilient closed cell expanded polyethene and non-tainting asmanufactured by Supreme Industries Ltd.

11.5 Providing joint filler of required thickness in position to substrate using either double sidedfoam adhesive tape or neoprene synthetic rubber adhesive. When forming expansion jointwith the Board in in-situ concrete, joint sealing slots can be readily formed in the followingmatter
a) Before installing, simply cut off a strip of the required depth. Then install the filler flushwith the finished surface.
b) Prior to sealing, the top strip can then be pulled easily from the joint to provide anuncontaminated sealing slot ready for preparation and sealing.

12.0 REINFORCEMENT

12.1 The reinforcement shall be done as per CPWD Specifications - 2019 - Vol.I & Vol. II withupto date correction slips.

12.2 The item of reinforcement of RCC work includes all operations including straightening,cutting, bending, welding, binding with annealed steel or welding and placing in position atall the floors with all leads and lift complete as per CPWD Specification - 2019 - Vol.I &Vol. II with upto date correction slips.

12.3 To avoid displacement of bars in any direction and to ensure proper cover, only factorymade round type/rectangular cover blocks shall be used by the contractor. Nothing extrashall be payable on this account.

13.0 BRICK/AAC BLOCK WORK

13.1 Unless otherwise specified FPS Bricks shall be used in all items of brick work. Theclassification of bricks brought by the contractor shall strictly conform to CPWDSpecifications – 2019 Vol-1 & II with upto date correction slips or as specified. The workshall also include for leaving chases / notches for dowels / cramps for all kinds of claddingto come over brick work.

13.2 The AAC Blocks shall be procured from a reputed manufactures as per approved makelist with the approval of Engineer-in-charge.

13.3 The blocks shall be stored at site in stacks on a level dry surface.

13.4 The mortar used for joining the blocks shall be mixed in the proportion 1:1:6 (1Cement: 1Lime: 6 Sand) by volume or with polymer modified block laying adhesive mortar.

13.5 The thickness of joints in the masonry shall not exceed 10 mm and shall be of uniformthickness.

13.6 Maximum height of wall built on any day shall not be more than 1.2 metres (i.e. 6 layers).

13.7 The joints in the masonry shall be recessed and no flush pointing shall be done.

13.8 A slip membrane with PVC sheet shall be introduced as per the recommendation ofblocks manufacturer before laying the first course on the plinth beam.

13.9 The blocks shall not be soaked in water and instead they shall be dipped in water andtaken out immediately to have only moist surface.

13.10 The vertical joints of the masonry shall be broken to have a minimum overlap of 100 mm.

13.11 Bed joint reinforcement bars may be placed in the joints after every 4th course in twosuccessive layers as per the recommendation of the manufacturers to have good lateralstability.

13.12 It shall be ensured that the lintels are rest at either end of window opening only on fullbocks and not on half or part blocks reinforcement shall be placed in the sill course ofwindow openings in two successive horizontal joints and extend the same at least to 600mm on either side of the jams surface.

13.13 At a RCC column interface an MS anchor (“L” – shape) may be placed and fixed withscrews at every 4th course so as to anchor the wall with RCC column for better lateralstability.

13.14 Curing of the masonry shall be done only by spraying water and no flooding shall be doneby water jets / buckets.

13.15 The chases in the wall surface for electrical conduits shall be done only by means ofelectrically operated saw to cut two parallel lines and the portion between the cuts shall be chiselled carefully. The depth of vertical chases should be limited to 1/3rd of wall thickness and horizontal chases should not be more than 1/6th of wall thickness. The chases have to be properly packed with cement mortar 1:8 (1 cement: 8 sand) between pipes and chases.

13.16 The blocks shall be cut using a carpenter saw to have half blocks or any other suitablesize block to close the masonry course or to break the vertical joint from the bottomcourse. Hammer or a masons trowel shall not be used to cut the blocks.

13.17 The thickness of plaster shall be limited to 12 mm on internal wall surface and 15 mm onexternal wall surface. The mortar for plastering shall be in the proportion 1:1:6 for externalwall surface and 1:2:9 for internal wall surface i.e.1 cement: 2 lime : 9 fine sand.

13.18 Plaster mesh shall be fixed on all column wall and beams wall junctions before taking upthe plaster work.

14.0 SCAFFOLDING

14.1 Double steel scaffolding having two sets of vertical supports shall be provided. Thesupports shall be sound and strong, tied together with horizontal pieces over whichscaffolding planks shall be fixed.

15.0 WOOD WORK/WPC WORK

15.1 The wood work in general shall be carried out as per CPWD Specifications - 2019 Vol.I &II with upto date correction slips.

15.2 The samples of species of timber to be used shall be got approved and deposited by thecontractor with the EE before commencement of the work. The contractor shall producecash vouchers and certificates from kiln seasoning or/and chemicaltreatment plants aboutthe timber section to be used on the work having been kiln seasoned or/and chemically
treated by them.

15.3 Factory made shutter as specified shall be obtained from factories approved by theEngineer in charge. The contractor shall inform well in advance to the Engineer-in-chargethe names and address of the factory from where the contractor intends to get theshutters manufactured. The contractor will place order for manufacture of shutters onlyafter written approval of the Engineer-in-charge in this regard is given. The contractor isbound to abide by the decision of the Engineer-in-charge and recommend a name ofanother factory from the approved list in case the factory already proposed by thecontractor is not found competent to manufacture quality shutters. Shutters will howeverbe accepted only if this meet the specified tests. The contractor will also arrange stagewise inspection of the shutters at factory to the Engineer-in-charge or his authorizedrepresentative. Contractor will have no claim if the shutters brought at site are rejected byEngineer-in-charge in part or in full lot due to bad workmanship / quality even afterinspection of factory. Such shutters will not be measured and paid and the contractor shallremove the same from the site of work within 7 days after the written instruction in thisregard are issued by Engineer in Charge or his authorized representative.

15.4 All fittings and fixtures shall be got approved from the Engineer-in Charge beforeprocurement well in advance and the approved samples shall be kept at site tillcompletion of the work.

15.5 Glazing for toilets shall be of translucent type.

15.6 The shape and size of beading shall be as per drawings. The joints of beading shall bemitred.

15.7 WC door frames work shall be carried out by frame sizes of 45X70mm WPC (WoodPolymer Composite) with 30mm thick WPC (Wood Polymer Composite) shutters as perDSR-2021 item Nos. 26.86.1 and 26.88.1 respectively with PVC corner beading aroundthe frames of matching shade.The frames are to be fixed in prepared openings in thewalls. All civil work and tiling should be completed before the fixing of the frames. Theframes are to be fixed directly on the plastered wall. In case tiling is to be done in theplace the frames are to be fitted, a 50 mm strip should be left untiled at the location wherethe frames are to be fitted. The frames are erected in the prepared opening such that thevertical members of the door frame are embedded 50 mm in the floor. The frame shall befitted truly in plumb. A minimum of three anchor bolts or screws of size 65/100 shall beused to fix each vertical member. One bolt shall be fixed at 200 mm from the top memberand one bolt shall be fixed at 200 mm from the floor. The third anchor bolt shall be fixed inthe center. The top horizontal member shall be fixed using two 65/100 size anchor boltsor screws at a distance of 200 mm from both the corners.

16.0 STEEL WORK

16.1 Work shall be carried out as per CPWD Specifications - 2019 - Vol.I & Vol. II with uptodate correction slips.

16.2 The rate of T- angle iron frame shall include the following.
(a) M.S. sill/tie of 10mm dia bar welded to T-iron frames to keep the frames vertical incorrect position. The sill / tie shall be embedded in floor concrete. No tie is necessaryfor window frames.
(b) Each T – iron frame for doors shall have 4 Nos. M.S. lugs 15x3mm, 10 cm longwelded to each vertical member of the frame.
(c) M.S. flat 6 x 25mm, 100mm long having threaded holes (No. of flats shall correspondto the no. of butt hinges to be fixed to door / window shutters) shall be welded atappropriate places at the back of the T-iron frames for fixing the required butt hingesto the frame with machine screws.

16.3 All welded structural steel work shall be tested for quality of weld as laid down in IS:822-1970 before actual erection if required.

17.0 FLOORING

17.1 All work in general shall be carried out as per CPWD Specifications- 2019 - Vol.I & Vol. IIwith upto date correction slips.
17.2 Whenever flooring is to be done in patterns tiles/ stone, the contractor shall get samplesof each pattern laid and approved by the Engineer-in-Charge before final laying of suchflooring for which nothing extra shall be paid.

17.3 Different stones/ tiles used in pattern flooring as per the approved architectural drawingsand nothing extra for laying pattern flooring shall be paid. No additional wastage if anyshall be accounted for any extra payment.

17.4 The proper gradient shall be given to flooring for toilets, verandah, kitchen, court yard, etc.as per the directions of Engineer-in-Charge. For this there may be extra thickness of drymortar below the tiles/stone slabs. These gradients should be insured in the shutteringitself. Nothing extra shall be paid for this as this shall to be included in the tendered cost.

17.5 The rate of items of flooring is inclusive of providing sunken flooring in bathrooms,kitchen, balcony etc. and nothing extra on this account is admissible. The floor belowwork top shall be raised by 75mm with granite skirting

and flooring. The samples offlooring, dado & skirting as per approved pattern shall be prepared & got approved fromthe Engineer-in-charge before execution of work.

17.6Ceramic Tiles/Vitrified Tiles Work/ Granite stone flooring

17.6.1 Work shall be carried out as per CPWD Specifications- 2019 Vol I & II with up todate correction slips and as per manufactures specifications.

17.6.2 Rates shall be inclusive of all operations including labour, material, T&P,scaffolding etc. complete. Nothing extra shall be payable on any account.

17.6.3 One-piece Granite stone for treads / risers in staircase shall be used andnothing extra shall be paid on this account.

17.6.4 POP protection layer shall be laid on all finished floors for protection fromdamage during execution of other items of work in that area which shall beremoved and cleaned just before handing over of the premises for whichnothing extra shall be paid.

17.6.5 The testing of tiles shall be carried out at prescribed frequency and methodology as per IS 13630.

17.6.6 The testing of granite slabs shall be carried out at frequency of one test for each lot.

17.6.7 PVC beading of required size at all exposed corner of the tile dado has to beprovided in corridor and toilets for which nothing extra shall be paid.

18.0 <u>WATER PROOFING TREATMENT</u>

18.1 Work shall be executed as per CPWD Specifications, 2019 Vol I & II with upto datecorrection slips.

18.2 The contractor shall associate himself with the specialized firm, to be approved by theEngineer-in-charge in writing, for water proofing treatment for basement/lower groundfloor, underground tank and on roofs.

18.3 The brick bats shall be from over burnt bricks. The water proofing compound used inintegral water proofing treatment shall satisfy all the performance requirements indicatedin IS:2645 and shall be got tested before its use. The compound shall be used @ 2% byweight of cement used or as recommended by the manufacturer.

18.4 Total quantity of the water proofing compound required shall be arranged only afterobtaining the prior approved of the Engineer-in-Charge in writing. Materials shall be keptunder double lock and key and proper account of the water proofing compound used inthe work shall be maintained. It shall be ensured that the consumption of the compound is
as per specified requirements.

18.5 The finished surface after water proofing treatment for roof slab shall have smooth slopewith minimum gradient of 1 in 80.

18.6 Before commencement of treatment on roof surface, it shall be ensured that the outletdrain pipes/ spouts have been fixed and the spout opening have been eased and roundedoff properly for easy flow of water.

18.7 The surface where the water proofing is to be done shall be thoroughly cleaned with wirebrushes. All loose scales mortar splashes etc. shall be removed and dusted off. The surface shall be treated with neat cement slurry admixed with proprietary water proof compound to penetrate into crevices and fill up all the pores in the surface.

18.8 This cement slurry shall be applied at the junction of parapet and terrace slab includingthe vertical face of the parapet.

18.9 After the slurry coat is laid, layer of over burnt brick bats shall be laid in cement mortar ofmix as specified by specialist firm but not leaner than 1:5 (1 cement : 5 coarse sand)admixed with proprietary water proofing compound to required gradient and joints filled tohalf the depth. The bricks bat layer shall be rounded at the junction with the parapet andtapered towards top for a height of 300mm. Curing of this layer shall be done for 2 days.

18.10 After curing the surfaces shall be applied with a coat of cement slurry admixed withproprietary water proofing compound.

18.11 Joints of bricks bat layer shall be filled fully with cement mortar of mix as specified by thespecialist firm but not leaner than 1:5 (1 cement : 5 coarse sand) admixed with proprietarywater proofing compound and finally top finished with average 20 mm thick layers ofcement mortar 1:4 (1 cement : 4 coarse sand) and finished smooth with cement slurry
mixed with proprietary water proofing compound. The finished surface shall have markingof 300x300 mm false squares to give the appearance of tiles.

18.12 Curing of water proofing treatment shall be done for a minimum period of two weeks byflooding the water by making compartments etc.

18.13 MESUREMENTS: The measurements shall be taken for plan area of terrace only. Lengthand breadth shall be measured correct to one centimeter and area shall be worked out tonearest 0.01 sqm. No deduction in measurements shall be made for either opening orrecesses for chimneys, stacks, roof lights and the like of areas up to 0.10 sqm noranything extra shall be paid for forming such openings. For similar areas exceeding0.10 sqm, deductions will be made in measurements for full openings and nothing extrashall be paid for making such opening.

18.14 Rates: The rate shall include the cost of all labour and materials involved in all theoperations described above.

18.15 GUARANTEE:
The water proofing work shall carry Ten Years guarantee to be reckoned from the date ofcompletion of the entire work under the contract against faulty workmanship, finishing,unsound materials, efficiency of water proofing treatment and other related problems.**Ten Years Guarantee bond** in prescribed Performa attached herewith as **Annexure-II**shall be submitted by the contractor which shall also be signed by both the specializedagency and the contractor to meet their liability / liabilities under the guarantee bond.However, the sole responsibility about efficiency of water proofing treatment shall restwith the main contractor.
Ten percent of the cost of water proofing work shall be retained as security deposit.This ten percent amount shall be transferred to RBI immidiatly after completion of work.And the amount so transfrred would be released by RBI after ten years from the date ofcompletion of the entire work under the contract, if the performance of the work done isfound satisfactory. If any defect is noticed during the guarantee period, it shall be rectifiedby the contractor within seven days of receipt of intimation of defects in the work. If thedefects pointed out are not attended to within the specified period, the same will be gotdone from another agency at the risk and cost of contractor.However, the security deposit deducted may be released in full against bank guarantee ofequivalent amount in favour of RBI/ Engineer in charge, if so decided by the Engineer incharge.
The Security deposit against this item of work shall be in addition to the security depositmentioned elsewhere in contract form.

19.0 SPECIFICATIONS FOR ALUMINIUM DOOR, WINDOW, VENTILATOR WORKS:

19.1 Extent and Intent:
19.1.1 The work shall be carried out through an approved specialized agency, who shallfurnish all materials, labour, accessories, equipment, tool and plant and incidentalsrequired for providing and installing aluminum doors, windows, claddings, louversand other items as called for on the drawings. The specialized agency for theAluminium work shall be got approved from the Engineer-in-charge, well beforeactual commencement of the item of work. Necessary performance certificates inrespect of agencies proposed to be engaged shall be submitted within 30 daysfrom the date of issue of acceptance letter to substantiate technical capability andexperience of the agency for prior approval of the Engineer-in-charge.

19.1.2 The drawings and specifications cover the major requirement only. The supplyingof additional fastenings, accessory features and other items not mentioned specifically herein, but which are necessary to make a complete installation shall be a part of this contract.

19.2 General:
19.2.1 Work shall be carried out as per CPWD Specifications- 2019 Vol. I & Vol.II withupto date correction slips.
19.2.2 Aluminium doors, windows etc. shall be of sizes, section details as shown on thedrawings. The details shown on the drawings indicate generally the sizes of thecomponents parts and general standards. These may be varied slightly to suit thestandard adopted by the manufacturer. Before proceeding with any manufacturing,the contractor shall prepare and submit complete manufacturing and installationdrawings for approval of the Engineer-in-Charge and no work shall be performeduntil the approval of these drawings is obtained.

19.3 Shop Drawings:
The contractor shall submit the shop drawings of doors. Windows, louvers, cladding andother aluminum work, based on architectural drawings, to the Engineer-in-Charge for hisapproval. The drawings shall show full size sections of doors, windows etc. thickness ofmetal (i.e. wall thickness), details of construction, sub frame/ rough ground profile,anchoring details, hardware as well as connection of windows, doors and other metalwork to adjacent work. Samples of all joints and methods of fastening and joining shall besubmitted to the Engineer-in-Charge for approval well in advance of commencing the work.

19.4 Samples:
Samples of doors, windows, louvers etc. shall be fabricated, assembled and submitted tothe Engineer-in-Charge for his approval. They shall be of sizes types etc. as decided byEngineer-in-Charge. All samples shall be provided at the cost of the contractor.

19.5 Sections:
Minimum doors and windows shall be fabricated from extruded section of profile asdetailed on drawings. The sections shall be extruded by the manufacturers approved bythe Engineer-in-charge. The aluminum extruded sections shall conform to relevant ISdesignation with chemical composition and technical properties as per IS:733 andIS:1285. The permissible dimensional tolerance of the extruded sections shall be such asnot to impair the proper and smooth function/ operation and appearance of doors and windows.

19.6 Fabrication:

Doors, windows, etc. shall be fabricated to sizes as shown at factory and shall be ofsection, sizes combinations and details as shown in the Architectural Drawings. All doors,windows etc. shall have mechanical joints. All members shall be accurately machined and fitted to form hairline joints prior to assembly. The joint and accessories such as cleats,brackets, etc. shall be of such materials as not to cause any bimetallic action. Thefabrication of doors, windows, etc. shall be done in suitable sections to facilitate easytransportation, handling and installation. Adequate provision shall be made in the doorand window members for anchoring to support and fixing of hardware and other fixturesas approved by the Engineer-in-Charge.

19.7 Anodizing:
Wherever specified, Aluminium sections shall be anodized as per IS:7088 and to requiredcolour as specified in the item as per IS:1868 grading, after cutting the members torequisite sizes. Anodizing shall be to the specified grade with minimum average thicknessof 15 microns when measured as per IS:6012. The anodic coating shall be properlysealed by steams or by boiling in deionized water or cold sealing process as per IS:1868 /IS:6057. Polythene tape protection shall be applied on the anodized sections before theyare brought to site. All care shall be taken to ensure surface protection duringtransportation, storage at site and installation. The tape protection shall be removed oninstallation. The sample will be tested in the approved laboratory and cost of samples,cost of testing shall be borne by the contractor.

19.8 Powder Coating:
All aluminum sections shall be powder coated 50 microns to required color as specified inthe item and as per direction of Engineer-in-Charge. Polythene tape protection shall beapplied on the powder coated section before they are brought to site. All care shall betaken to ensure surface protection during transportation, storage at site and installation.The tape protection shall be removed on installation. The samples will be tested in theapproved laboratory and cost of samples, cost of testing, shall be borne by the contractor.

19.9 Protection of Finish:
All aluminum members shall be wrapped with approved self-adhesive non- staining masking tapes.

19.10 Handling and stacking:
19.10.1 Fabricated materials shall be stacking in an approved manner to protect thematerial against any damage during transportation. The loading and unloadingshall be carried out with utmost care, on receipt of materials at site, they shall becarefully examined to detect any damaged pieces. Arrangements shall be madefor expeditious replacement of damaged piece/ parts. Materials found to beacceptable on inspections shall be repacked in crates and stored safely.
19.10.2 In the case of Composite windows and doors, the different units are to beassembled first. The assembled Composite units should be checked for line, level and plumb before final fixing is done. Units may be serial numbered and identifiedas how to be assembled in their final location of situation so warrants.

19.10.3 Where aluminum comes into contact with masonry brickwork, concrete, planter ordissimilar metals, it shall be coated with approved insulation lacquer, paint orplastic tape to ensure that electro- chemical corrosion is avoided. Insulationmaterial shall be trimmed off to a clean flush line on completion.
19.10.4 The contractor shall be responsible for assembling Composite, bedding and fillingthe groove with backup roads polysulphide sealant inside and outside, placing thedoors, windows etc. in their respective opening. After the doors/ windows havebeen fixed in their correct assigned position, the open hollow sections abuttingmasonry concrete shall be fitted with approved polysulphide sealant denselypacked and neatly finished.
19.10.5 The contractor shall be responsible for doors, windows, etc. being set straightplumb, level and for their satisfactory operation after fixing is complete.

19.11 Installation

19.11.1 Just prior to installation the doors, windows etc. shall be uncrated and stacked onedge on level bearers and supported evenly. The frame shall be fixed into positiontrue to line and level using adequate number of expansion machine bolts, anchorfasteners of approved size and manufacturer and in an approved manner. Theholes in concrete/ masonry members for housing anchor bolts shall be drilled withan electric drill.

19.11.2 The doors, windows assembled as shown on drawings shall be placed in correctfinal position in this opening and marks made on concrete members at jambs, sillsand heads against the holes provided in frames for anchoring. The frame shallthen be removed from the opening and laid aside. Neat hole with parallel sides ofappropriate size shall then be drilled in the concrete members with an electric drillat the marking to house the expansion bolts. The expansion bolts shall then beinserted in the holes, struck with a light hammer till the nuts is forced into theanchor shell. The frame shall then be placed in final position in the opening andanchored to the support through cadmium plated machine screws of required sizethreaded to expansion bolts. The frame shall be set in the opening by usingwooden wedges at supported and bar plumbed in position. The wedges shallinvariably be placed at meeting points of glazing bars and frames.

19.12 Neoprene Gaskets:
The contractor shall provide and install Neoprene gaskets of approved size and profile atall locations as shown and as called for to render the doors, windows etc. absolutely airtight and weather tight. The contractors shall produce samples of the gaskets for approvaland procure after approval only.

19.13 Fittings:
Hinges, stays, handles, tower bolts, locks and other fittings shall be of excellent qualityand manufacturers shall be approved by the Engineer-in-Charge.

19.14 Manufacturer's Attendance:
The manufacturer immediately prior to the commencement of glazing shall adjust and setall windows and doors and accept responsibility for the satisfactory working of theopening frames.

19.15 Mastic Cement:
The gaps between frames and supports and also any gaps in the windows section shallbe raked out as directed and filled with mastic cement of approved colour and make toensure complete water tightness. The mastic cement shall be of such colour andComposition that it would not stain the masonry/ concrete work, shall receive paint withoutbleeding, will not sag and shall not set hard or dry out under any conditions of weather.The samples of mastic cement to be used for this purpose shall be got approved by theEngineer-in-Charge before its actual use.

19.16 Sealant:
19.16.1 Use modified silicone for joint subject to movement and in glazing.
19.16.2 Surfaces to receive sealant shall be properly prepared, cleaned, primed andexcess sealant removed from finished surfaces.
19.16.3 Sealed joints shall be neatly tooled and surfaces smoothed.
19.16.4 Follow the instruction of the sealant manufacturers.
19.16.5 Colour of the sealant shall be approved by the Engineer-in-Charge.

19.17 Glazing:
19.17.1 Glazing shall generally be accomplished from the inside of building.
19.17.2 The glazing system shall be designed to this end use a continuous EPDMcompression gasket on both sides (Present Gasket on one side of glazingpocket and roll in gasket on another side). A continuous wet seal shall be employed to ensure a complete water tightness.
19.17.3 Maintain a minimum glazing bite, edge clearance and surface clearance

depending on the glass as recommended by the glass manufacturer.

19.18 Sealant and Gasket Application:
19.18.1 Sealant and gasket shall be provided wherever shown in the drawings orrequired for a permanently weather tight installation. The sealingmechanism is necessary but is not indicated, it shall be of typerecommended by the sub- contractor and approved by the Engineer-in-Charge.

19.18.2 All adjoining surfaces shall be protected to receive sealant against stainingby masking and/ or other methods.

19.18.3 Joints and joint surfaces shall be clean, dry, and free of any material thatmay have an adverse effect on the bonding and/ or seal of the sealant and gasket materials.
19.18.4 Apply sealant and gasket under the conditions recommended by themanufacturer(s). Prime all surface to receive sealant and gasket unlessrecommended otherwise, use no sealant that has started to set in itscontainer or a sealant that has exceeded the self-life published by the manufacturer.
19.18.5 Fill all joints continuously and completely with sealant, forming a neat,uniform, concave bead. Finish the material flush with adjoining surfacesunless shown on the drawings. All sealant surfaces shall be tooled smooth.
19.18.6 Tensile or shear stress in structural silicone sealant joint shall not exceed 1.4 kg/ sqm.

19.19 Protection & Cleaning: The contractor shall adequately protect all components andaccessories from damage during shipments, storage at job site, erection and aftercompletion of the work. At such time as may be directed, the sub-contractor shall removeall protective tapes or coating, thoroughly clean all anodized aluminum and glass surfaceswith suitable cleaning agent, make final adjustments to all ventilators, etc. and hardwareleaving all in first class working order.

19.20 Acceptance Criteria:
The Aluminium sections shall conform to the provisions of the relevant items. Forpayment purpose only, actual weight of sections shall be taken into account. However, ifthe sectional weight of any Aluminium section is higher than the permissible variation thenthe weight payable shall be restricted to the weight of the section including permissible variation.

19.21 Measurement:
Payment by weight shall be made for Aluminium sections including beading only and allfixing angles cleats fittings and fixtures such as handles and hinges etc., shall not beincluded in the weight to be paid.

19.22 Rates:
The rates of the items shall include the cost of all materials, labors and inputs required

19.23GUARANTEE:
Specialized agency/Manufacturer & Contractor to offer a warrantee on the AluminiumDoors/Windows for a period of Five Years to be reckoned from the date after the expiry ofmaintenance period prescribed in the contract of the work against faulty workmanship,finishing, unsound materials, structural instability and other related problems.**Five Years Guarantee bond** in prescribed Performa attached herewith as **Annexure-III**
shall be submitted by the contractor to meet their liability / liabilities under the guarantee bond.**Five percent of the cost of Aluminium Doors/Windows** shall also be retained assecurity deposit and the amount so withheld would be released after Five Years to bereckoned from the date after the expiry of maintenance period prescribed in the contract,if the performance of the work done is found satisfactory. If any defect is noticed duringthe guarantee period, it shall be rectified by the contractor within seven days of receipt ofintimation of defects in the work. If the defects pointed out are not attended to within thespecified period, the same will be got done from another agency at the risk and cost of contractor.

However, the security deposit deducted may be released in full against bank guarantee ofequivalent amount in favour of Engineer in charge, if so decided by the Engineer in charge.The Security deposit against this item of work shall be in addition to the security depositmentioned elsewhere in contract form.

20.0 U-PVC WINDOWS & VENTILATORS

20.1 The scope of work comprises supply, laying, installation, commissioning and testing ofwater supply, sewerage and drainage works including sanitary fixtures and fittings. Theseworks shall be executed as per the specifications of items attached and CPWDspecifications- 2019 Vol. I & II with up-to-date correction slips up to the date of tender submission.

20.2 All openable and fixed window system shall have minimum 3 hollow chambers fromfront to back. The sliding system frames shall have minimum 3 chambers from front toback. The Sliding system Sashes shall have minimum 2 chambers from front to back.The outer profile shall not be less than 56 mm.

20.3 All sections of the frame and sash shall be reinforced in accordance with the systemsupplier's recommendations using galvanized mild steel in a single continuous length.

20.4GENERAL REQUIREMENT

Profile

The profile is to be extruded from a compound that has been blended to ensure qualityand consistency. The material shall be pristine white high impact modified window gradeuPVC and shall be conform to BS EN 12608:2003 as below:

Description	Required Value
Flexural modulus of Elasticity Resistance to impact by falling mass at – 10°C for Class II (falling mass 1000g ; falling height 1500mm –as per BSEN 12608:2003)	Shall not be less than 2200 N/mm2 not more than 1 test specimen shall show rupture in wall
Mean Breaking Stress for welded corners	Shall not be less than 35N/mm2 for compression bending test or 25N/ mm2 for tensile bending test

The profile shall be a hollow 3-chamber (across depth) profile with a outer wall thicknessnot less than 2.2 mm. The profile shall be of first grade/quality uniform and freefrom foreign bodies, cracks or marks.

Fabrication of Window

i) The window units shall be designed with all corner joints, transom joints andmullion joints being mitred and fusion welded.

ii) All excess material is to be neatly trimmed and neatly feature grooved/raised nibfinish at corners, transom joints and mullion joints.

iii) There will be no mechanical joining of the profile.

iv) No polishing flush of any joints will be permitted.

v) The window units shall be designed so that the route of drainage is preventedfrom passing through the reinforcement chamber.
vi) The finished product shall be free from all sharp edges, burrs and the like that maybe hazardous to the user.
vii) The dimensional tolerances on the finished outer frame height and width shallbe +3mm. Frame assemblies shall be such that they can be installedsquare within a maximum difference in the diagonals of 4mm. Minimum overlapof sash on frame shall be 8mm.

viii) In all window units, adequate drainage should be provided to permit theescape of water from platforms or horizontal members beneath each sealedunit. The drainage slots shall not penetrate into the reinforcement chambers. Rainwater Stop to be provided wherever necessary to provide barrier to excess rain water.

Reinforcement
i) Reinforcement shall be made from GI tube of not less then 1.5mm thickness asper strength requirement unless otherwise approved by Engineer in Charge.
ii) Steel reinforcement shall conform to IS 277:2003 or equivalent. Base material ofsteel shall conform to IS 513:2008 – Drawing Grade.

iii) The reinforcement shall be installed in accordance with the recommendedactions. The reinforcement shall conform to the wind load requirements of IS 875:
Part 3. The reinforcement shall be in one continuous length and should beinstalled minimum 5mm and maximum 10mm from the face of the profile to be welded.
iv) The reinforcement shall be secured to the profile so that it does not move or rattleand it maintains the structural integrity of the frame and satisfactory thermalseparation. Reinforcement is to be fixed at a maximum of 100mm from the
ends and then at a maximum of 300mm centers.

Glazing and Weather Seals
GLAZING
i) Window shall be such that glazing or re-glazing on site is possible without theneed to remove the outer frames from the structure of the building.
ii) All glazing is to be packed in accordance with the system supplier'srecommendations to prevent any kind of damage during handling.

WEATHER SEALS
i) The weather seals shall be EPDM/ Silicone seals. ASTM- D412 and ASTM- D2240are standard specifying test methods for Tensile strength and Hardness of thegasket whereas the required value shall be specifiedUltimate tensile strength min >7.5 N/mm2
ii) The weather seals are to be fitted in continuous lengths and grooves. Thejoints in the vent weather seal are to be positioned at the bottom and in the outer frames at the top.

Security and Safety
Fasteners shall be designed so that they cannot be released from the outside by theinsertion of a thin blade.
No opening light shall be openable or removable from the outside, when it is fastened inthe closed position, except by use of special tools or breaking part of the window.

20.5 QUALITY CONTROL AND TESTING OF MATERIALS

Raw Material
The material from which the profiles are made shall consist substantially from whitepolyvinylchloride as per BS EN 12608:20003. Only those additives and pigments may

be used that are needed for the manufacture of the compound and its subsequentconversion into sound, durable extrusions of good surface finish and mechanicalstrength, as assessed by the requirements of this specification.

Profile Properties

Appearance and Finish

The color of the profile shall be uniform and the color of all profiles in a system shall beuniform. The profile shall be free from foreign bodies, cracks or sink marks whenviewed by normal corrected vision at 90o to the surface and at a distance of 1 meter innormal diffused north light.

Dimensions and Weights

The profiles shall be straight such that the longitudinal axis of the profile, as measuredon the face surfaces, may deviate from the straight line by no more than 1mm per meter.The cross section of the profile shall conform in shape and dimensions and may deviateby no more than + 0.5mm; glazing channels and seal grooves may deviate by not more than +0.3mm. The weight of the profile per meter shall not be more than 5% below the nominal value.

Window properties:

U-Value : The total Uw – U value of complete window shall be 3.3 W/ m2 K Resistance towind load:

All load bearing members shall be adequately reinforced so as to resist the windload requirements of IS 875: Part 3. Calculations shall be submitted for all window designs.

Air Tightness:

The air infiltration for windows shall not exceed 1 litres/ second m2 @ 75 Pa for bothpositive and negative pressures (certified for use in air conditioned buildings)

Water Tightness:

The water penetration for windows shall be minimum 15 minutes @ 150 Pa as per AS 4420.5.

Installation of Frame

i) Before installation the Installation Team is to make sure that the opening hasbeen prepared and any repair work has been carried out. Allow a 5mm gapbetween the frame and the opening. The new window shall be set in the prepared

opening. Allow for suitable packing blocks.

ii) The window shall be fixed into the aperture, by drilling and fixing through theouter frame, to the existing structure using 'Fischer' fixings, F8S type bolts.

iii) The fixings shall be no less than 150mm from corners or transoms/mullions andat no more than 600mm centers.

iv) When the frame is securely fixed in position then fit glass and glazing beads.Allow for any necessary glazing blocks and glass lock devices.

v) Check windows for correct operation before proceeding with makinggood.

vi) No fixings are to penetrate the drainage channels.

vii) The windows shall be first treated with Polyurethane Foam (PU Foam) toenhance insulation against heat and Noise.The gap between masonry and theframe is to be filled with Neutral Cure Silicon (exposed to sun surface) and/or

Acrylic Sealant (only for the internal surface). The windows shall be firsttreated with Polyurethane Foam (PU Foam) to enhance insulation against heat and Noise.

viii) The silicone joints should be covered with Architraves/trims as per direction of the Engineer-in-charge.

Making Good

i) Making good to the external surface of the window frame and finish with acompatible approved low modular silicone sealant to BS5889. All trims andquadrants are to be approved by the Engineer- in- Charge prior to fixing.

ii) Allow for making good any disturbed plaster, brickwork and decorations internallyand externally including color wash to brickwork.

iii) Clean off excess material and check fittings and gearing.

iv) Leave installation clean and in good working order.

GENERAL ITEMS
i) This specification is to be read in conjunction with any other relevant documents and drawings.
ii) Sizes are not to be scaled from any drawings or sketches but should be measured on site prior to manufacture.

Window Accessories
i) Window should be designed and reinforced such that it can withstand thewind load requirements by providing suitable strengthening accessories.
ii) The window shall meet the requirements of water tightness.
iii) Trims Shall be used to cover the window to masonry joints.

Window Hardware
i) All slider door/windows are to be provided with multi point lockingarrangement with/without key locking facility as per the requirement. The hardwareshall be provided as per preferred list attached. The slider locking mechanism handles are of projected/flush type.
ii) Casement window friction stays are to be of G-U or Securistyle or equivalentmake of appropriate size and weight bearing capacity, made of SS 304. Thestack height of friction stay is to be 16 + 0.5mm.
iii) The casement windows are to be provided with multi point locking mechanismof shall be provided as per preferred list attached.

iv) Measurement- Area of window shall be measured for payment correct to acentimeter from outer edge of the window frames.
Rate includes all the materials, glazing, window hardware, labour and fixing etc.
all complete.

20.6 GUARANTEE:
Specialized agency/Manufacturer & Contractor to offer a warrantee on the u-PVCDoors/Windows for a period of Five Years to be reckoned from the date after the expiry ofmaintenance period prescribed in the contract of the work against faulty workmanship,finishing, unsound materials, structural instability and other related problems.**Five Years Guarantee bond** in prescribed Performa attached herewith as **Annexure-III**shall be submitted by the contractor to meet their liability / liabilities under the guaranteebond.
Five percent of the cost of u-PVC Doors/Windows shall also be retained as securitydeposit and the amount so withheld would be released after Five Years to be reckonedfrom the date after the expiry of maintenance period prescribed in the contract, if theperformance of the work done is found satisfactory. If any defect is noticed during theguarantee period, it shall be rectified by the contractor within seven days of receipt ofintimation of defects in the work. If the defects pointed out are not attended to within thespecified period, the same will be got done from another agency at the risk and cost of contractor.

However, the security deposit deducted may be released in full against bank guarantee ofequivalent amount in favour of Engineer in charge, if so decided by the Engineer incharge.
The Security deposit against this item of work shall be in addition to the security depositmentioned elsewhere in contract form.

21.0 <u>SANITARY INSTALLATIONS, WATER SUPPLY AND DRAINAGE</u>

21.1 The scope of work comprises supply, laying, installation, commissioning and testing ofwater supply, sewerage and drainage works including sanitary fixtures and fittings. Theseworks shall be executed as per the specifications

of items attached and CPWDspecifications- 2019 Vol. I & II with up-to-date correction slips up to the date of tender submission.

21.2 The work of water supply and sanitary installations shall be got executed by the agencyas approved by Engineer-in-Charge.
(i) The entire plumbing drawing and sanitary installation drawing/ details shall besubmitted by the contractor and got approved by the Engineer-in-Charge before the execution.
(ii) The entire responsibility for the quality of work will however rest with the building contractor only.

21.3 The work of water supply, internal sanitary installations and drainage etc. shall be carriedout as per the bylaws of the Municipal Corporation or any other local body and the contractor shall produce necessary completion certificates from such authority aftercompletion of work.

21.4 All water tanks, taps, sanitary, water supply and drainage pipes fittings and accessoriesetc. shall conform to the bylaws and specifications of the Municipal Body/Corporationwhere CPWD specifications are not available.

21.5 The contractor shall engage licensed plumbers for the work and the materials(fixtures/fittings) tested by the local Municipal Body/Corporation wherever required at hisown cost. Nothing extra shall be paid/reimbursed for the same.

21.6 All sanitary wares and fittings shall conform to IS standards and to be procured fromapproved makes. The contractor shall submit samples of all fittings and fixtures proposedto be used to the Engineer-in-charge for his approval. The approved samples shall remainwith the Engineer-in-charge till the completion of the work.

21.7 P or S and floor traps (long arm upto 90 cm length or more) in WCs shall be of deep sealtype of approved make and shall have a minimum water seal of 75 mm. Floor traps (longarm upto 90 cm length or more) shall have a minimum water seal of 50 mm.

21.8 The pig lead to be used in jointing 100 mm, 75mm, 50 mm SCI pipe joints shall not beless than 0.98 kg, 0.88 kg and 0.77 kg per joint respectively. A variation of 5% is allowedon higher side. However, in case of variation on lower side, the quantity of pig lead lessused shall be recovered from the contractor at market rate to be determined by the
Engineer-in-Charge whose decision in the matter shall be final.

21.9 All fixtures and accessories shall be fixed in accordance with a set pattern matching thetiles or interior finish as per architectural requirements. Wherever necessary the fittingscentered to dimensions and pattern desired.

21.10 The rates shall include the cost of cutting chases, holes in walls, floors, RCC slabs etc.Wherever required and making good the same for which nothing extra shall be paid.Thework in general shall be carried out as per CPWD specifications.

21.11 Rate includes all materials, labour and all the operations mentioned in the respectiveitems unless and otherwise specifically mentioned.

21.12 The SCI pipe wherever necessary shall be fixed to RCC columns, beams etc. with rawlplugs of approved quality and nothing extra shall paid for on this account.

21.13 All the works shall be completely concealed either within shafts or chases or in fills anddropped ceilings, unless specifically shown in drawings or required otherwise.

21.14 All the works shall be adequate protected against corrosion, so that the whole work is freefrom damage throughout.

21.15 The contractor shall give a performance test of the entire installation(s) as per standingspecifications before the work is finally accepted by making his own arrangements forwater supply, electricity etc. and nothing extra whatsoever shall be payable for the same.

21.16 The contractor shall give a satisfactory performance test of the entire installation (s)before the work is finally accepted and nothing extra shall be payable to the contractor on this account.

21.17 The contractor shall be responsible for all the protection of sanitary, water supply fittingsand fixtures against pilferage and breakage during the period of installation until thecompletion / handing over of the work.

21.18 Before the work is handed over, the contractor shall clean all fixtures removing all plaster,stickers, rust stains and other foreign matter, leaving every part in acceptable conditionand ready for use to the satisfaction of the Engineer-in-charge.

21.19 The contractor shall submit completion plans for water supply, internal sanitaryinstallations, electrical ducting, storm water drainage and building drainage work within 30days of the date of completion. These plans are to be submitted on drawings preparedpreferably through computers (2 original copy + 4 photocopies) on suitable scales to showthe general arrangement and desired details.

21.20 INSPECTION AND TESTING

Inspection and testing of water supply sewerage and drainage installations shall becarried out as per National Building Code 2016 with up to date amendments.

22.0 FIRE CHECK DOORS

22.1 The work shall be carried out through an approved specialized agency/manufacturer, whoshall furnish all materials, labour, accessories, equipment, tool and plant and incidentalsrequired for providing and installing Fire Check doors. The specialized agency shall begot approved from the Engineer-in-charge, well before actual commencement of the itemof work. Necessary performance certificates in respect of agencies proposed to beengaged shall be submitted within 30 days from the date of issue of acceptance letter tosubstantiate technical capability and experience of the agency for prior approval of the Engineer-in-charge.

22.2 The fire check door shall not collapse during of hot gases or the flames through the rebateof the gap between the door frame and shutter or through the holes, developed in the shutter during fire.

22.3 Door frame and shutter shall be manufactured as per the nomenclature of the items.

22.4 Door fitting & fixture shall be provided as per the nomenclature of the items.

22.5 Specification: The Fire Check doors shall satisfy:

22.5.1 Stability: The fire check door should not collapse during the rated period of fireunder the specified fire conditions. The fire check doors provide safe access to theescape route in the building namely protected corridors and staircase.

22.5.2 Integrity: The fire check doors should not allow the passage of hot gases or theflames or the flames through the rebate or the gap between the door frame andshutters for the duration of its fire rating.

22.5.3 Insulation: The mean temperature of fire door on unexposed side should notexceed 140 degree C above ambient temperature for the duration of its fire rating.

22.5.4 The fire/smoke check door assembly being offered shall be as proto-type testedby CBRI, Roorkee, for the prescribed fire – rating as per BS: 476 Part 20/22 IS: 3614 Part-II.

22.5.5 A test report from CBRI, Roorkee shall be submitted for approval before executing the work.
22.5.6 The tenderer shall employ specialized agency or manufacturer of the fire checkdoor assembly, having their own manufacturing facilities and such agency shall begot approved by the Engineer-in-Charge.

22.5.7 Door frame and shutter in general, be fabricated as per nomenclature of the itemof the work and recommendation of the specialized agencies as approved by the Engineer-in-Charge.

22.5.8 Fire check doors shall be of 2-hour fire rated and shall satisfy the threeperformance criteria of stability, integrity and insulation as per BS 476 part-22 and IS 3614 part-II.

22.5.9 Tenderer shall be responsible for obtaining "No objection Certification from CFO,Dehradun for the executed work."

22.6 Hermetically Sealed Unit:
Insulating glass shall be a double-glazed unit comprising two sheets of approved glasspanes separated by a spacer, hermetically sealed using primary and secondary sealants.The design of insulating glass system shall consist of:

a) Hollow Spacer Bar - The hollow aluminium spacer bar shall be of required sizeand shape and shall be colour anodized. The spacer bar shall have two lines ofperforations in the inner surface.

b) Desiccant - The desiccant filled in the aluminium spacer bar shall be synthesizedcrystalline compounds of Aluminium Hydroxide, Caustic Soda and SodiumSilicate which absorbs water molecules. The desiccant shall be of 3 A size (Ameans Angstrom). The quantity of desiccant used shall not be less than 35 gm/mlength of spacer bar. Filled spacer bar frame shall not be stored for more than 6hrs. before assembly and sealing of the unit to ensure proper functioning of thedesiccant. The contractor shall submit documentary proof of using the abovematerial in the work.

c) Primary Sealant - The primary sealant BUTYL (NAFTOTHERM BU" or equivalent)shall be single component, thermoplastic solvent free sealing compound basedon polyisobutylene. The sealant surface shall be free from cavities, depressionand other defects. The contractor shall submit documentary proofing of using theabove material in this work.
d) Secondary Sealant - The secondary sealant in double glazed unit shall be siliconesealant. The contractor shall submit documentary proof of using the abovematerial in this work to the entire satisfaction of Engineer-in-Charge. Before
application of silicone/polysulphide, the surface shall be cleaned and free from oil,grease, dust and other loose matter. The surface shall be cleaned with alcohol orother suitable solvents. Detergent or soap shall not be used to clean the surfaces.The polysulphide shall be mixed and applied mechanically using automatic mixingmachine in the manner approved by Engineer-in-Charge.

22.7 Testing:

One door assembly shall be selected at random out of the entire lot, one for single leafand one for double leaf and shall be tested for two hours fire rating. The testing shall begot done from CBRI, Roorkee or any other test laboratory approved by the Engineer-incharge.The cost of materials, for testing and transportation/packing, testing charges andother incidental charges, shall be borne by the contractor. In case the door fails to meetthe requirement, the entire lot shall be rejected.

22.8 **GUARANTEE:**
Specialized agency/Manufacturer& Contractor to offer a warrantee on the Fire Doors for aperiod of Five Years to be reckoned from the date after the expiry of maintenance periodprescribed in the contract of the work against faulty workmanship, finishing, unsoundmaterials, structural instability and other related problems.

Five Years Guarantee bond in prescribed Performa attached herewith as **Annexure-I**shall be submitted by the contractor to meet their liability / liabilities under the guarantee bond.**Five percent of the cost of Fire Doors s**hall also be retained as security deposit and theamount so withheld would be released after Five Years to be reckoned from the date afterthe expiry of maintenance period prescribed in the contract, if the performance of the workdone is found satisfactory. If any defect is noticed during the guarantee period, it shall berectified by the contractor within seven days of receipt of intimation of defects in the work.If the defects pointed out are not attended to within the specified period, the same will begot done from another agency at the risk and cost of contractor.However, the security deposit deducted may be released in full against bank guarantee ofequivalent amount in favour of Engineer in charge, if so decided by the Engineer in charge.The Security deposit against this item of work shall be in addition to the security depositmentioned elsewhere in contract form.

LIST OF APPROVED MATERIAL AND MAKES OF ITEMS

1.	CEMENT (Any Grade)	:	ULTRATECH, AMBUJA, ACC, JK, BIRLA
	WHITE CEMENT	:	BIRLA WHITE, J.K WHITE
2.	STEEL FOR REINFORCEMENT	:	TATA, SAIL, JINDAL/JSW
3.	BRICKS	:	JINDAL, GHOLE BRICKS OF METRICSYSTEM, BHARAT
4.	WOOD	:	FIRST CLASS C.P. TEAK UNLESS OTHER WISE SPECIFIED.
	SOFT WOOD	:	KAIL WOOD, HOLLOCK
5.	ALUMINUM SECTION	:	HINDALCO, INDAL OR JINDAL
6.	SYNTHETIC ENAMEL PAINT	:	APCOLITE, NEROLAC, DULUX, ICI
7.	WATER PROOFING COMPOUND	:	SUNANDA, SIKA, ROFF, FOSROC KRISHNA CONCHEM, BASF.
8.	BUTT HINGES	:	GODREJ, KICH, HETTICH & ISI MAKES
9.	FACTORY MADE SHUTTERS (ANY DOOR)	:	ARCHID, ROYALE TOUCH, CENTURY, ANCHOR, GREEN.
10.	C.I. PIPES AND FITTINGS	:	B.I.C., HEPCO, NECO
11.	G.I. PIPES	:	G.S.I. AMBICA, ZENITH, TATA
12.	BRASS C.P. FITTINGS	:	PLUMBER, L&K, JINDAL, TECHNO
13.	GUN METAL VALVES	:	LEADER, SANT OR EQUIVALENT
14.	E.W.C., O.W.C., PANS	:	AMERICAN STANDARDS, GROHE, KOHLER, TOTO, QUEO.
	WASH BASINS, URINALS		AMERICAN STANDARDS, GROHE, KOHLER, TOTO, QUEO.
15.	E.W.C. SEATS	:	SAME AS EWC BRAND
16.	FLUSHING SYSTEM	:	SAME AS EWC BRAND
17.	WATER METER	:	ANAND, ASAHI, KAYCEL,

			KAPSTAN
18.	PIGMENTS	:	TATA, SHALIMAR
19.	PVC PIPES, uPVC	:	PRINCE, SUPREME, FINOLEX, ASHIRVAD
20.	CPVC PIPES	:	PRINCE, SUPREME, FINOLEX, ASTRAL ASHIRVAD
21.	FIRE FITTING SLUICE & NRV	:	KIRLOSKAR / KALPANA
22.	CEMENT BOARDS / CALCIUM SILICATE BOARD	:	BISON BOARDS. NUWUD, HILUX
23.	MORTICE LOCK, HANDLE HARDWARE OF ANY / ALL TYPES	:	GODREJ, KICH, HETTICH, HAFELE
24.	DOOR CLOSERS, FLOOR SPRINGS:		DORMA, HETTICH
25.	FLOORING TILES	:	KAJARIA, JOHNSON, NITCO RAK
26.	M.S / BRASS SCREWS	:	NATTLE FOLD
27.	MILD STEEL FOR FABRICATION	:	TATA, SAIL
28.	FLUSH DOOR SHUTTERS	:	ARCHID, ROYALE TOUCH, CENTURY, ANCHOR, GREEN.

NOTE:-

a) The contractor shall produce samples before procurement of the material for approval of the Employer for all materials required for works. Samples can be submitted from any of the above makes and they shall conform to specifications. Samples as approved by the Employer shall only be used on the works and the decisions of the Employer regarding sample shall be final.

b) In respect of materials for which approved makes are not specified as above, the same shall be decided by Employer and shall be as per sample got approved from Employer before procurement.

c) The contractor shall submit samples of all materials three months before the date of work for approval from the Employer.

d) In case if the makes are mentioned in the BOQ specifications, in that case the said makes as indicated in the BOQ shall prevail upon the makes indicated herein-above and the preference would be given to the BOQ makes and in case if unavailable, only then any make out of the makes of the items mentionedherein-above would be adopted by the contractor, however with the prior approval of the bank and the Architect.

THE APPROVED MAKELIST		
Sl.No	**Items**	**Approved makes**
1	Kitchen sink	Nirali, Diamond, Carysil,
2	Level Controller &Indicator (Water	Auto Pump,CirrusEngineering,
3	Ball Valve	Zoloto,Leader,Audco.
4	Butterfly Valve	Advance,CRI.
5	Strainer	Zoloto,Leader,Emerald,Sant,DSEngg.,Trishul
6	Pressure Reducing Valve	Leader,Watts,Bermad,Muesco,Singer
7	Float Valve	Muesco,Singer,OCV,Watts,Leader,GG
8	Flexible Connection	Metaflex,Tozen,Mason
9	Automatic Air Vent	Val-matic,Metaflex,APCO
10	Cable	Polycab,Havells,Finolex
11	G.I.PIPES	TATA/JINDAL
12	G.I.FITTINGS	'R'BRAND
13	PIPE BRACKET AND SUPPORTS	HI–TECHORM.S.FABRICATED AS PER DRAWINGS
14	Water Meter	Dasmesh,Sant,Rockwin,Aquamet,Capstan&Kaycee
15	Electronic Flow Meter	Electronet&Krohne(ForbesMarshall)
16	Fire Sealant Material	3M,GE,KBS
17	Butterfly Valve	Audco,Jayahiwa,Zoloto
18	Water heater	Vguard,Racold,Ketco,Bajaj

NOTE:-

Any additional item as per BOQ specifications or as per the instructions of the SBI / Consultants. Any of the above items / other items if any will be as approved by the Consultants & Engineer-in-charge.

In case if the makes are mentioned in the BOQ specifications, in that case the said makes as indicated in the BOQ shall prevail upon the makes indicated herein-above and the preference would be given to the BOQ makes and in case if unavailable, only then any make out of the makes of the items mentioned herein-above would be adopted by the contractor, however with the prior approval of the bank and the Architect.

LIST OF RECOMMENDED MATERIALS – INTERIOR & CIVIL WORKS

S. No	Material / Product	Approved Brand / Manufacturers
1.	Commercial / Marine Plywood B.W.P (710) / B.W.R Grade phenol Bonded	Anchor, Century, Everest Ply, Green, Somani Ply
2.	Particle Board & MDF (Exterior Grade Eco Friendly, Wood free)	Kenwood, Euro Board, ASIS Industries, Archid Ply (Plain & Pre-veneered), Action TESA, Duro, Green
3.	Veneers (Natural)	Duro, Green, Century, Merino
4.	Laminates	Royal Touch, Greenlam, Century, Merino
5.	Hardware, Fittings & Fixtures of any type	Kich, Dorma, Hettich, Hafele India, Godrej
6.	Adhesive	For wood - Fevicol For Stainless Steel, Brass, Glass - Araldite
7.	Paints of all types	Asian Paint, I.C.I. (Deluxe), Nerolac, Berger
8.	Door Closers Floor Springs, Patch fittings	Dorma, Kich, Hettich, Hafele India, Godrej
9.	Locks	Dorma, Kich, Hettich, Hafele India, Godrej.
10.	Wood Preservatives	Asian, Bison - British Paints, ICI
11.	Pest Control	PCI, Godrej, Rentokil PCI
12.	Teak Wood	Best quality teak, Well-seasoned, free from sap, Knots, cracks, Uniform in colour.
13.	Glass & Structural Glazing / Elevational Glazing Or Glass for Internal / Exterior Glazing	Saint Gobain, AIS, PILKINGTON Saint Gobain, AIS MODI Guard (Modi Guard to be used only for Interior Glazing requirements)

14.	LVT Flooring	Forbo, Merino Flooring
15.	Gypsum Board	India Gypsum Ltd, Gyproc,
16.	Mineral Fibre ceiling	Saint Gobain, Armstrong, AMF
17.	Venetian Blinds / Roller Blinds	Hunter Douglas, Vista , Serge Ferrari MAC
18. (a)	Chairs of all types	Godrej, Stanley, Featherlite, Herman Miller, HNI, (Only with the Prior approval of Architect / Engineer in charge)
18 (b)	Sofas	Stanley, Durian, Amber, Featherlite, Godrej (Only with the Prior approval of Architect / Engineer in charge)
19.	Tile adhesives	BASF, Roff, Sunanda Specialty Coatings Pvt. Ltd, Krichna, SIKA
20.	Ceramic & Vitrified tiles	RAK, Johnson, Kajaria, NITCO
21.	Plumbing fixtures-Assessories	Jaguar, Marc, KEUCO, Hindware (Executive type – Italian Collection), BRAVAT
22.	Aluminium Sections/Fittings	Jindal, Hindalco, Indal, Bharat
23.	ACP (Aluminium Composite Panels-Exterior & Interior	Alcobond, AluK-Bond, Alstrong Alu Decor
24.	Special Fittings	Dorma, Kich, Hettich, Hafele India.
25.	All Repair Work chemicals	BASF, Sunanda Specialty Coatings Pvt Ltd, Krishna, SIKA.
26.	Flush Doors & Fire Doors	Metal Doors – Godrej, Shakti&Harman Non metal Fire doors- Royale Touch, Green, Wedge India Wooden Fire Doors –Royal Touch, Green, Century
27.	Fire resistant Board	Bison Board of Bison. HILUX, Promatec
28.	Mineral Fibre board	Knauff Armstrong
29.	Insulation Materials	Rockwool, TWIGA
30.	Compactors / Slotted Angle Racks	Balas, Godrej, Steelage
31.	Signages of all types	3M, Llumar.

32.	Sun Control Film & Reflective films	3M, Llumar, Garware
33.	Glazing Sealants	DOW Corning, GE Sealant
34.	PVC Pipes & fittings	Finolex, Prince, Supreme, Astral
35.	Carpets	Mohawk, Shaw, Interface, Forbo
36.	SS Railing	Kich, Hettich, Dorma kaba
37.	Textured Paint	Oikos, Asian Specialty Textures
38.	Keyboards Trays, CPU Trolleys & Pop up Boxes etc	Ebco, Hettich, Innofitt
39.	Teflon / Tensile Fabric / Membranes	Unique Aesthetics Pvt Ltd, Mansi Membranes.
40.	Acrylic Solid surfaces	Corian, Alu décor Granium,Dupont
41.	External Pavers / Flooring	Pavit Ceramic Pvt Ltd, Shakti
42.	Translucent Panels / Cut Panels/ Paneling	EDGE, Translucent Methacrylate sheet – EDGE CREO, EDGE ARTECH Panels or equivalent approved & (With/Without backlit arrangements) Acryllic Solid surfaces – Neonnex
43.	MDF Designer boards	EDGE Deco Plus, Re-Invent
44.	Wallpaper	Ego Wall Décor, Muraspec, Vescomm,Asian Paints
45.	White Board, Magnetic Board	ALL ARK, Kings India.
46.	Polycarbonate Sheet	Lexan, Tuflite, Spanko.
47.	Cement Paint	Snowcem, Surfacem, Durocem.

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