NATIONAL PROJECTS CONSTRUCTION CORPORATION LIMITED
(A Government Of India Enterprise)
ISO 9001:2008
Zonal Office: Chattisgarh Zone, Ashok Vihar Colony, Pandri,
Raipur – 492 004 (Chattisgarh),
www.npcc.gov.in

TENDER FOR CONSTRUCTION OF BANK BUILDING FOR PUNJAB & SIND BANK at MUMBAI ON DESIGN & BUILD BASIS

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NPCC
PROJECT EXCELLENCE SINCE 1957

VOLUME: I

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3) Pre-Qualification Documents
4) General Condition of Contract
5) Special Condition of Contract
6) Forms
7) Drawing

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NIT

NATIONAL PROJECTS CONSTRUCTION CORPORATION LIMITED
(A Government of India Enterprise)
Chhattisgarh Zone,
Ashok Vihar Colony, Pandri, Raipur - 492004
Tele-fax: 0771-4074482
An ISO 9001: 2008 Organisation **WEBSITE: www.npcc.gov.in**

NOTICE INVITING TENDER

NIT No.: 731003/PSB/888 **Date: 4th September, 2012**

National projects Construction Corporation Limited (NPCC) invites sealed turnkey rate tender under two bid systems (One envelope for technical bid and other for financial bid) from the experienced and financially as well as technically sound agencies of International/National repute for the construction (complete in all respect) of Punjab & Sind Bank Building at Mumbai on design & Build pattern as detailed below:

S. No.	Description	
1.	Name of Building / Work	Bank Building for Punjab & Sind Bank at 27/29, Ambalal Doshi Marg, Mumbai.
2.	Approximate Plot Area / Built up Area	308 / 800 Sq. m.
3.	Scope of Work	Architectural drawings with green building concept, its approval & clearances from local authorities, Structural designs, Design for MEP services including HVAC & fire fighting, Construction of building including MEP services, Approval of Completion & submission of as built drawings. Defect Liability for One year after handing over of Project to Owner.
4.	Completion time	10 (Ten) months including rainy season
5.	Approx. estimated cost	Rs. 500 Lakhs (Rupees Five hundred lakh)
6.	Earnest money to be deposited in the form of DD/FDR/BG favour of NPCC Ltd. payable at Raipur. In case of BG it must be from Banks as per list of banks annexed only.	Rs. 10 Lakhs (Rupees Ten Lakhs only)
7.	Cost of Tender documents in the form of Demand Draft in favour of NPCC Ltd. Payable at Raipur (Non-refundable)	Rs. 10,000/- (Ten thousand only)
8.	Validity of Tender	120 days from last date of submission of tender
9.	Sale of Tender Documents on any working day	06.09.2012 to 24.09.2012
10.	Receipt of Tenders	28.09.2012 up to 14:30 Hrs.
11.	Opening of Technical bid	28.09.2012 at 15:00 Hrs.

PRE-QUALIFICATION CRITERIA:

The intending Bidder should fulfill the following minimum pre-qualifying criteria

1. **Turnover**:

   Average Annual Financial Turnover on construction works during the last three years, ending 31st March of the previous financial year i.e. 2011-12, should be at least 30% of the estimated cost.

2. **Experience**:

   Bidder should have the experience of completion of similar works on Design and Build basis during last 7 years ending last day of month previous to the one in which tenders are invited should be either of the following.

   (a) Three similar completed works each costing not less than the amount equal to 40% of the estimated cost,

   or

   (b) Two similar completed works each costing not less than the amount equal to 50% of the estimated cost,

   or

   (c) One similar completed work costing not less than the amount equal to 80% of the estimated cost.

3. **Similar works mean**:

   Construction of Multi-storied framed structure building including services like electrification, Sanitary & Water Supply, Drainage, Road works, Fire fighting, HVAC & Site development etc. Institutional Buildings including its Architectural and Engineering Design work.

4. **Profitability:**

   The applicant should be a profit (net) making firm duly certified by Chartered Accountant.

5. **EPF Registration:**

   On award of work agency has to obtain EPF registration failing which NPCC will deduct EPF & deposit as per EPF norms.

6. **Joint Venture**: Joint Ventures are not permitted.

7. **Bid Capacity:**

   Agencies who meet the minimum qualification criteria will be qualified only if their available bid capacity is more than the total bid value. The available bid capacity will be calculated as under:-

   Assessed available bid capacity = A x N x 2 - B

   N = Number of years rounded up to first decimal prescribed for completion of the subject contract.

   A = Maximum value of works executed in anyone year during last five years (up dated to the price level of current financial year with 5% percentage per annum).

   B = Value at current price level of existing commitments and on going works to be completed in the next 'N' years.

8. **Credit Facility/Solvency:**

Agency shall have Un-utilized credit facility of 10% (minimum) of Estimated cost put to tender issued on last day of month previous to last date of submission of tender duly certified by Bank.

Or

Agency must be solvent for minimum 20% of estimated cost put to tender. In this regard solvency certificate issued with in the current financial year i.e. 2012-13 from Nationalized/ RBI Scheduled bank (except Co-operative banks) has to be submitted.

9. NPCC reserve the right to reject any or all applications without assigning any reason thereof.

10. **Request for Tender document:**

The application for issue of Tender Document is to be submitted along with the following documents without fail.

1) Cost of Tender document as per NIT.

2) Copy of EPF/ PF Registration certificate

3) Performance certificate in support of experience of similar works as per para 2.0 and 3.0 of NIT.

4) Details of Turn over for last 5 years duly certified by Chartered Accountant along with Profit and loss Statement of each financial year.

The issuance of tender document on the basis of above documents does not mean the agency has been technically qualified. Hence agencies/bidders are advised to submit all the relevant documents/ credentials required in tender for technical qualification along with their bid.

Tender documents for the above works can be had from the office of the Zonal Manager, Chhattisgarh Zonal Office, NPCC Ltd., Ashok Vihar Colony, Pandri, Raipur – 492004 , Tele-fax 0771- 4074482**,** on any working day between 11.00A.M. to 4.00 P.M. Tender documents can be viewed at our official website www.npcc.gov.in and the agencies fulfilling the requirements may submit the application along with the details/documents stated in para 10.0 of NIT to purchase the documents on payment of Rs.(As specified in above table at S. no. 7 (Non refundable) by DD in favour of NPCC Limited, payable at Raipur. Tender documents will not be sent by post or courier.

Tender documents can be seen at our official website www.npcc.gov.in which is only for viewing not for quoting.

Tender documents duly completed in all respect shall be received up to date & time as specified in above table at s. no. 10 at the same office and Technical bid shall be opened at date & time as specified in above table at s. no. 11 at same venue (place of sale/submission of tender). Documents received after the stipulated date & time are liable to be summarily rejected.

Any corrigendum/addendum/errata in respect of the above tender shall be made available only at our official web site www.npcc.gov.in. No further press advertisement will be given. Hence prospective bidders are advised to visit NPCC web site regularly for above purpose.

Zonal Manager
Chhattisgarh Zone, Raipur.

CORRIGENDUM / ADDENDUM

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PQ

1. Qualifying criteria

The intending Bidder should fulfill the following minimum pre-qualifying criteria:-

i. Turnover:

Average Annual Financial Turnover on construction works during the last three years, ending 31st March of the previous financial year i.e 2011-12, should be at least 30% of the estimated cost.

ii. Experience:

Bidder should have the experience of completion of similar works on Design and Build basis during last 7 years ending last day of month previous to the one in which tenders are invited should be either of the following.

a. Three similar completed works each costing not less than the amount equal to 40% of the estimated cost,

or

b. Two similar completed works each costing not less than the amount equal to 50% of the estimated cost,

or

c. One similar completed work costing not less than the amount equal to 80% of the estimated cost.

iii. Similar works mean:

Construction of Multi-storied framed structure building including services like electrification, Sanitary & Water Supply, Drainage, Road works, Fire fighting, HVAC & Site development etc. Institutional Buildings including its Architectural and Engineering Design work.

iv. Profitability:

The applicant should be a profit (net) making firm dul certified by Chartered Accountant.

v. EPF Registration:

On award of work agency has to obtain EPF registration ailing which NPCC will deduct EPF & deposit as per EPF norms.

vi. Joint Venture: Joint Ventures are not permitted.

vii. Credit Facility/Solvency:

Agency shall have Un-utilized credit facility of 10% (minimum) of Estimated cost put to tender issued on last day of month previous to date of submission of tender duly certified by Bank.

Or

Agency must be solvent for minimum 20% of estimated co t put to tender. In this regard solvency certificate issued with in the current financial year i.e. 2012-13 from Nationalized/ RBI Scheduled bank (except Co-operative banks) has to be submitted.

viii. The applicant must have adequate organizational setup s well as having sufficient number of experienced personnel, technical know-how, and infrastructure to complete the project well within time frame.

ix. The applicant must have experience working with reputed National/ International Organization for the work as per clause (iii) above.

x. NPCC is free to get documents verified and agency shall have no objection to it. In case if it is found at any stage that that the agency as made any false information will be disqualified and black listed.

xi. Agency must have Architect of at least 5 years experie e with valid registration from Council of Architect and Structural & MEP design Enginee s either in house or out sourced with reputed and relevant experienced Architects, Structural & MEP design Engineers. In this regard credentials of Archit ts & design Engineers are to be submitted.

xii. Request for Tender document:

The application for issue of Tender Document is to be ted along with the following documents without fail.

1) Cost of Tender document as per NIT.

2) Copy of EPF/ PF Registration certificate, if presently available.

3) Performance certificate in support of experience of similar works as per para 2.0 and 3.0 of NIT.

4) Details of Turn over for last 5 years duly certified by Chartered Accountant along with Profit and loss Statement of each financial year.

1.1 Bid Capacity:

Agencies who meet the minimum qualification criteria will be qualified only if their available bid capacity is more than the total bid valu . The available bid capacity will be calculated as under:-

Assessed available bid capacity =A x N x 2 - B

N =Number of years rounded up to first decimal prescribed for completion of the subject contract.

A =Maximum value of works executed in anyone year during years (up dated to the price level of current financial year wit 5% percentage per annum).

B = Value at current price level of existing commitments and on going works to be completed in the next 'N' years.

Note: 1. The Bidder shall furnish statements showing the value xisting commitments and on-going works as well as the stipulated period of completion remaining for each of the works preferably countersigned by the Nodal officer or his nominee-in-charge in the format available in documents.

2. Financial Turn Over and cost of completed works of previous years shall be given weightage of 5% per annum (compounded) based on rupee value to bring them to current financial year price level.

2. Instruction to bidders

2.1 Bidders are required to submit full bio-data giving details about their organization, experience, technical personnel & manpower available in their organization, Equipment holding, PF registration number from RPFC (if presently available), Balance sheet and turnover details for last 5 years duly certified by CA, Litigation history etc. in order to asses their financial and technical capabilities etc. in the enclosed forms which will be kept confidential.

2.2 While deciding upon the technical qualification of applicant great emphasis will be given on the ability and competence of applicants to do good qu y works within the specified time schedule and in close coordination with other agencies.

2.3 Each page of the documents shall be signed by power of attorney holder or authorized signatory. The documents shall be signed by person(s) on behalf of the organization having necessary authorization/power of attorney to do so (certified copies to be enclosed).

2.4 If the space in the proforma is in sufficient for furnishing full details, such information may be supplemented on separate sheets of paper, stating therein the part of the proforma and serial number. Separate sheets shall be used for each part. However, the format shall be as per proforma.

2.5 Applications containing false / incomplete and / or in quate information are liable to be rejected. Also mere fulfillment of eligibility criteria does not guarantee for selection.

2.6 Clarification, if any required, may be obtained from the office of the Zonal Manager, Chattisgarh Zone, Ashok Vihar Colony, Pandri, Raipur – 492 004 (Chattisgarh), Telefax 0771 - 4074482, on any working day between 11.00A.M. to 4.00 P.M.

2.7 Canvassing in any form in connection with pre-qualifications is strictly prohibited and the application of such persons/organizations who resort to canvassing will be liable to rejection.

2.8 Additional Requirement -

Even though the bidders meet the above qualifying criteria, they are liable to be disqualified if they have

(a) Made misleading or false representation in the forms, tatements and attachments in proof of the qualification requirements;

(b) Records of poor performance such as abandoning the work, properly completing the contract, inordinate delays in completion, litigat or financial failures etc.

(c) their business banned by any Central Govt. Department/Public Sector Undertakings or Enterprises of Central Govt.

(d) not submitted all the supporting documents or not furn shed the relevant details as per the prescribed format.

2.9.1 A declaration to the above effect should be submitted as per Proforma-IX.

2.9.2 Bidder shall submit the general information about bidder as per Proforma No- III.

2.9.3 Bidder shall submit the list of major plant & machinery available with the firm as Proforma No.– IV.

2.10 Site Visit

a. The bidder is advised to visit and examine the Site of Works and its surroundings and obtain for itself on its own responsibility and co information that may be necessary for preparing the bid and entering into a contract for construction of the Works.

b. The bidder and any of its personnel or agents will be ranted permission by the Employer/Owner to enter upon its premises and lands for the purpose of such visit, but only upon the express condition that the bidder, i personnel, and agents, will release and Indemnify the Employer/Owner and its personnel and agents from and against all liability in respect thereof, and will be esponsible for death or personal injury, loss of or damage to property, and any other loss, damage, costs, and expenses incurred as a result of the inspection.

c. Before submitting a Bid, the Bidder shall be deemed to have satisfied himself by actual inspection of the site and locality of the works, that all conditions liable to be encountered during the execution of the works are taken into account and that the rates entered in the Price Bid document are adequate and all inclusive for the completion of work to the entire satisfaction of the Employer/Owner.

2.11 Bid Opening

2.11.1 Bids will be opened at the address mentioned in “Notic ing Tender” in presence of Bidders or authorized representatives of Bidders who wish to attend the opening of Bids.

2.11.2 The Price bid shall be opened on the date and time, which will be intimated later on to the technically qualified bidders. NPCC will not be respon ible for any postal delay or loss of communication. NPCC will try to give intimation through available phone no. and E-mail ID.

2.12 Process to be Confidential

2.12.1 Information relating to the examination, clarification, evaluation and comparison of bids, and recommendations for bid shall not be disclosed to bidders or any other persons not officially concerned with such process until the process is finalised.

2.13 Examination of Bids and Determination of Responsiveness

2.13.1 The Employer shall examine the bids to determine whether they are complete, whether the documents have been properly signed and whether the bids are generally in order, and all documents as per Tender document have been submitted.

2.13.2 Prior to the detailed evaluation, Employer shall deter ne whether each bid is of acceptable quality, is generally complete and is subst ially responsive to the Tender documents. For purposes of this determination, a substantially responsive bid is one that conforms to all the documents as specified in the Tend r document without material deviations, objections, Conditionality or reservation. A material deviation, objection, conditionality or reservation is one;

a) That affects in any substantial way the scope, quality or performance of the contract.
b) That limits in any substantial way, inconsistent with the bidding documents, the Employers' rights or the successful Bidder's obligations under the Tender document or
c) Whose rectification would unfairly affect the competitive position of other Bidders who are presenting substantially responsive bids.

2.13.3 If a bid is determined to be not substantially respons ve, the Employer shall reject the bid.

3. MODE OF SUBMISSION

The tender should be submitted in 2 Envelope system.

3.1 The Envelope No.1 TECHNICAL BID will contain the requisite EMD in INR {as per NIT} in the form of DD/FDR/Bank Guarantee in favour of NPCC Limited payable at Raipur (in case of BG it must be issued from nationalized / scheduled bank as per list annexed only) and the unconditional acceptance letter on the letterhead in respect of the tender conditions as per proforma available in the tender document. The EMD shall be valid for 150 days from the last date of submission of tender. The EMD in any other form shall not be accepted. This envelope No. 1 will also contain the tender document (without Price Bid) duly signed without any conditions. This shall contain all information asked vide condition no. 1.1 and Conditional tenders shall be treated as non-responsive and rejected.

The Envelope No.2 Price BID will contain the unconditional Price Bid duly signed by authorized signatory.

Both the Envelopes shall be sealed separately and shall be marked/written respectively as Technical Bid and Price Bid. These 2 sealed envelopes hall be submitted in an outer sealed envelope clearly mentioning the name of work fo which the tender is offered.

The Envelope No. 1 shall be opened on its due date & time in presence of the bidders or their representatives who wish to be present. On veri ation of the Envelope No.1 contents as detailed above, the envelope no. 2 of qualified bidders will be opened on the date intimated separately. Conditional tenders will be summarily rejected.

If the contents/requirements of the envelope No.1 are found in order, the envelope No. 2 shall not be opened and offer of that bidder wil rejected.

The rates for the items are to be quoted both in words & figures in the BOQ enclosed. The rates in words shall supersede the rates in figures an shall be treated as the final rates quoted.

All envelopes / packets shall be individually sealed as well as marked as given below and kept in an outer envelope marked as :

{Name & Description of work as mentioned in NIT}

NIT No : Due on :

From (Name of the Company)

The envelope thus sealed shall be submitted at the pla of submission of tender before the stipulated time and date fixed for receipt of tender. The tenders received after the stipulated time and date of tender receipt shall not be considered as well as the same shall be returned to the tenderer unopened. NPCC shall not be responsible for any kind of communication delays whatsoever may be. Each and every envelope is to be addressed to the Zonal Manager, Chattisgarh Zone, Ashok Vihar Colony, Pandri, R r – 492 004 (Chattisgarh), Telefax 0771 – 4074482.

3.2 Once the bidder has given an unconditional acceptance o the terms and contract conditions, bidder will not be permitted to put any re ark(s)/conditions(s) (except unconditional rebate on price quoted, if any) in/along with the tender document.

3.3 In case the conditions 3.2 mentioned above is found violated at any time after opening of tender, the tender shall be summarily rejected and NPC shall, without prejudice to any other right remedy, be at liberty to forfeit the Earne t Money Deposit as specified above.

4. EARNEST MONEY DEPOSIT :

The agency has to submit the requisite EMD as mentioned in NIT. Tenders Received without EMD will be treated as non responsive and summarily rejected.

5. NPCC reserves the right to reject any or all the tende n part or full without assigning any reason whatsoever thereof. NPCC does not bind itself t accept the lowest tender. NPCC also reserves the right to split up the work among two or more agencies.

6. QUOTING OF RATES & AMOUNTS:

6.1 The tenderers should quote in figures as well in words the rates and amounts tenders by them. The amount for each item should be worked out an the requisite totals and page totals be given.

6.2 Special care should be taken to write the rates and am in figures as well in words in such a way that any alteration is not possibl total amount should be written both in figures and in words. In case of figures; the word 'Rs.' Should be written before the figure of Rupees and word 'P' a ter the decimal *figure e.g. Rs. 2.15p. Rs. 2.15 shall be written as Rupees two and fifteen paisa only*. Unless the rate/amount is in whole Rupees it should invariably be up to two decimal places. While quoting the rates in Bill of quantities, the wor "only" should be written closely following the amount and it should not be written in the next line.

6.3 Over writing should be avoided, in case of any correction/alteration is required, same should be cross and re-written neatly duly signed with company seal.

6.4 In case of any discrepancy between the rates/percentag quoted in figures and words, , then the rate/percentage quoted by the contractor in words shall be taken as correct.

7. The tenders shall be strictly as per the conditions of contract. Tenders with any additional condition(s)/modifications shall be rejected.

8. The witnesses to the Tender/Contract Agreement shall be other than the tenderer/ tenderers competing for this work and must indicate full name, address, status/oc upation with dated signatures.

9. The tenders for works shall remain open for acceptance for a period of *120(One hundred twenty) days from the date of opening* of the tenders. If any tenderer withdraws his tender before the said period or makes any modification in terms and conditions of the tender to his benefit which are not acceptable to NPCC then NPCC shall without prejudice to any other right or remedy, be at liberty to forfeit the EMD.

10. The acceptance of tender will rest with NPCC who does not bind itself to accept the lowest tender and reserves to itself the right to reject any or all tenders received without assigning any reason thereof. Tenders in which any of he prescribed conditions are not fulfilled or found incomplete in any respect are liable to be rejected.

11. Canvassing whether directly or indirectly in connection with tenders is strictly prohibited and the tenders submitted by the contractors who resort to canvassing will be liable for rejection.

12. PERFORMANCE GUARANTEE:-

Within 15 days from the date of issue of LOA / LOI, th tenderer shall submit Performance Guarantee amounting to 5% (Five percent) of the awarded value of work in the form of Demand Draft/fixed deposit in favour of NPCC LTD. or Bank Guarantee from the Nationalized /Scheduled Bank (as per list enclosed) of equivalent value for the due and proper execution of the contract. This bank guarantee shall remain valid up to 90 (ninet) days after the end of defects liability period. No interest will be paid under any circumstances. On receipt and verification from concerned Bank of the performance guarantee in the form of DD/FDR/BG, the EMD will be refunded. An amount is to be deposited equivalent to 0.01% per day of the amount of Performance guarantee for extended period of submission of Performance guarantee. In no case the extension for submission of performance guarantee will be granted for more than 15 days. In case of non submission of performance guarantee with in stipulated /extended period, the LOA/LOI will be treated as cancelled and EMD will be forfeited.

13. SECURITY DEPOSIT:-

The security deposit will be deducted from the successful contractor at the rate of 10% from the Gross value of each R/A bills till it reaches 5% of the contract value. No i terest will be paid on the Security Deposit under any circumstances. The total security deposit will be refunded only after expiry of defect liability period. However after successful completion of work 50% of the security deposit can be released against ank guarantee from the Nationalized / Scheduled Bank (as per list enclosed) as per approved format.

14. On acceptance of tender, the name of the authorized re sentative(s) of the contractor who would be responsible for taking instructions from Engineer-in-charge or his authorized representative shall be intimated by the contractor within 07 days from the date of issue of telegram/letter/telex/fax of intents by NPCC.

15. The tenderer shall not be permitted to tender for works if his near relative is posted as an Accountant or an Assistant Engineer or any higher ranks in the p ject office or concerned Zonal office of the NPCC. The contractor shall also intimate the names of persons who are working with him in any capacity or are subsequently employ by him and who are near relatives to any of the officers in NPCC. Any breach of this condition by the tenderer would render him liable to the withdrawal of the work awarde to him and forfeit of Earnest Money and Security Deposit. This may also debar the contractor from tendering for future works under NPCC.

16. Sales tax/VAT or any other tax on materials as also the Turnover Tax, Work Contract Tax, Service tax, Construction cess or similar, if any, in respect of contract shall be payable by the contractor and NPCC will not entertain any claim whatsoever, on such grounds. In the event of non payment/default in payment of any octroi, royalty, cess, turnover tax, sales tax, including the purchase tax, consignment tax, work contract tax or any labour dues E.P.F. etc. by contractor/supplier, the NPCC reserves right to with-hold the dues/payments of contractor and make payment to local state/ Central Government authorities or to labours as may be applicable. The contractor should submit along with the tender, the Registration Certificates with sales tax o works contract authority and EPF Authorities other wise appropriate recovery shall be m e from his bills.

17. Tenderer should quote all prices, including the liability of taxes etc covered under Clause 16.0 or any other levy as applicable in the respective s ate.

18. The tenderer shall be deemed to have gone through the ous conditions and clauses of the tender and visited the site before quoting their rates, once they make an offer for this work. No claim shall be entertained on this account.

19. The Tentative Conceptual Plan drawing for the work is available with Zonal Manager, Chattisgarh Zone, Ashok Vihar Colony, Pandri, Raipur – 492 004 (Chattisgarh), Telefax 0771 - 4074482 which can be viewed (for reference only) on any working day between 10 AM to 4 PM.

20. Tenderer can purchase the tender documents from any of the offices mentioned in NIT. However, the documents can be viewed on our website www.npcc.gov.in .

21. ESCALATION/PRICE VARIATION:

21.1 There will be no escalation on account of any increase in price index n the price of materials or labours, imposition of sales tax or enactment of any new law or imposition of levies etc. No price escalation shall be applicable even during the extended period for completing the works. No extra claim in this regard wi be entertained.

22. NPCC reserves its right to accept or reject any or all tenders without assigning any reason thereof.

23. The scope of work includes the Engineering Consultancy work (Architectu l and Structural & MEP Design), for which the details are given in the Annexure "A".

24. Details of documents to be submitted: Following documents are to be submitted with Technical bid (Envelop No. 1) duly supported with credentials/certificates as directed in the respective proforma.

S.No.	Details	Proforma No.	To be executed on
1.	Acceptance of Tender Conditions	PROFORMA- I	Tenderer's letter head
2.	Form of Tender	PROFORMA- II	Tenderer's letter head
3.	General Information	PROFORMA - III	
4.	List of Major Plant and Machinery in Possession of the Firm	PROFORMA - IV	
5.	Annual Turn Over For The Last Five Years	PROFORMA-V	
6.	Details of the Similar Works Completed in Last Five Years	PROFORMA-VI	
7.	Certificate of Credit Facility	PROFORMA -VII	Banker's letter Head
8.	Details of on-going/existing works	PROFORMA-VIII	
9.	Past contractual performance	PROFORMA – IX	On Non-judicial stamp paper of value not less than Rs. 10/-

Annexure "A"

ARRANGEMENT OF ENGINEERING CONSULTANT

(A) The successful bidder must have Architect of at least 5 years experience wit valid registration from Council of Architect and Structural MEP design Engineers either in house or out sourced with reputed and relevant experienced Architects, Structural & MEP design Engineers. In case of Out sourced the successful bidder shall engage an Engineering Consultancy firm of repute on approval from Owner/NPCC on the following basis :-

(B) The successful bidder shall engage an architect and/or design firm who is capable in handling this type of work. The architect and/or design firm should have in-house capabilities for similar types of jobs. The architect and/or design engineer should have satisfactory completed similar works in one project for value more than Rs. 4.0 crores or two projects of Rs. 2.5 crores or three projects of Rs.2.0 crores in last 5 years in Govt. Semi Government/Undertaking/Private Organization of National & International repute. The architect should have sufficient number of technical and administrative employees for proper execution of the project. The architect and/or design firm shall submit a list of employees stating clearly how this should be involved in this project. The In-house capability of the firm should be brought out cle rly indicating the discipline for which the firm will take the consultanc rk in-house.

The architect and/or design firm shall submit the followings:

a)	List of similar projects successfully completed since inception with mile stone achieved
b)	List of project under execution
c)	List of other major/important projects designed by the firm since inception

The particulars of completed projects and performance f the architect duly authenticated/certified by an Officer not below the rank of Executive Engineer for equivalent shall be furnished separately.

Organization Information

a)	Name & Postal Address, Telephone & Fax Number, e-mail etc.
b)	Year of Establishment
c)	Copies of original document defining legal status, place of gistration and principal places of business
d)	Name & Title of Directors and Officers to be concerned with the Project with designation of individuals authorized to act for the Organization

All architectural/engineering drawings are to be submitted in six sets.

The Engineer-in-Charge of NPCC shall be the final authority in deciding and giving approval for the drawings. The scope under this Engineering consultancy works shall be as under:

a)	Soil Investigation/Exploration, if required
b)	Preparation of architectural drawings with 3 to 4 alternative proposals & presentations indicating general requirement of Owner and NPCC
c)	Discussions with Owner and NPCC as & when required
d)	Structural drawings along with design calculations sheets neatly documented
e)	Preparation of working drawings and plans and workshop drawings
f)	Getting clearances from legal bodies/local authorities as per statutory requirement
g)	Getting approval for sewer, storm water, electrical connections, airport authorities, environment/forest clearance etc. from concerned authorities on completion of work
h)	The architects will prepare and submit three sets as b drawings of the buildings and services.

The cost for site survey and the work involves in scope of Engineering Consultancy as above is includes with the rate/cost of Construction as tendered by the bidder.

However the cost for Soil investigation is to be paid a as per the quoted/negotiated rates.

The stage payment for Engineering Consultancy part shall be as under:

Sl. No.	Details of Stages	%age Cumulative fee payable
01(A)	Site Survey, Contouring, Preparation of the conceptual/layout plans etc. & the digital preparation to the Owner/NPCC	10%
01(B)	Detailed Survey and Soil Investigation and submission of drawings with 4-5 alternatives	20%
02	On completion of sketch stage & approval from NPCC/Client including preparation of Model (one no.)	30%
03	On completion of preliminary stage including getting approval from local authorities	40%
04	Preparation of structural/MEP designs and submission to NPCC in presentation form for approval	55%
05	Preparation of construction drawings good for construction	70%
06	On completion of work on prorate basis.	90%
07	Approval of Completion & submission of as built drawings	100%

PROFORMA- I

(On the letter head of the Tenderer)

To,

General Manager,
Contract Marketing & Works Division,
Corporate Office, NPCC Ltd.,
Plot no. 67 – 68, Sector – 25,
Faridabad – 121 004

Sir

ACCEPTANCE OF TENDER CONDITIONS

The tender documents for the work "Construction of Bank Building for Punjab & Sind Bank at 27/29 Ambalal Doshi Marg, Mumbai.)" on design & build pattern been sold to me/us by National Project Construction Corporation ited and I/We hereby unconditionally accept the tender conditions and tender documents in its entirety for the above work.

1. The contents of clause 3.2 and 3.3 of the Tender documents (Instructions to bidders) have been noted wherein it is clarified that after u conditionally accepting the tender condition in its entirety, it is not permis ible to put any remark(s)/conditions(s) (except unconditional rebate o e, if any) in the tender enclosed in "Envelope-2 and the same has been followed in the present case. n case this provision of the tender is found violated at any time after opening of the Envelope 2 , I/we agree that the tender shall be summarily rejected and NPCC shall, without prejudice to any other right or remedy be at liberty to forfeit the full said earnest money absolutely.

2. The required earnest money for this work is enclosed herewith.

3. If I/we will not fulfill the minimum qualifying criter a of the tender I/we not lodge any claim for opening of envelope 2 of the tender.

Yours faithfully,

(Signature of the tenderer)
With rubber stamp

Dated : _____

PROFORMA- II

FORM OF TENDER
(On the letterhead of the Tenderer)

To
Zonal Manager,
Chattisgarh Zone,
Ashok Vihar Colony, Pandri,
Raipur – 492 004.
(Chattisgarh)

1. I/We, _____ [*Name and address of the Bidder*]_____ have read the various terms and conditions of the Bid documents together with Addendum no(s)/Errata no(s) attached here with duly signed by me/us and agree to abide by the same.

2. I/We hereby declare that we are aware of the site of work and have made ourselves fully conversant of the conditions therein and including the topography of area, soil strata at site of work, sources and availability of construction materials, rates of construction materials, water, electricity, all local taxes, royalties, octrois etc., availability of local labour (both skilled and unskilled), relevant labour rates and labou laws, the existing road and approaches to the site of work, requirements for further service roads / approaches to be constructed by me / us, the availability and rates of private land etc. that may be required by me / us for various purposes, climatic conditions, law and order situation and availability of working days.

3. I/We hereby tender for execution of "Construction of Bank Building for Punjab & Sind Bank at 27/29 Ambalal Doshi Marg, Mumbai.)" on design & build pattern as per tender documents within the time schedule of co pletion of work as per separately signed and accepted rates in the bill of quantities quoted by me/us for the whole work in the accordance with the Notice Inviting enders, conditions of Contract. Specifications of materials and workmanship, bill of q antities. Drawings, time schedule of completion of jobs and other documents and papers, l as in tender documents.

4. It has been explained to me/ us that the time stipulated for jobs and completion of works in all respects and in different stages mentioned in the "Tim schedule for Completion of jobs and signed and accepted by me/us is the essence of the contract. I/We agree that in case of failure on my/our part to strictly observe the time of completion mentioned for jobs or any of them and the final completion of works in all respects according to the schedule sat out in the said "Time Schedule for completion of stipulations contained in the contract the recovery being made as specified therein. In exceptional circumstances extensions of time which shall always being in writing way, however be granted by the NPCC at its entire discretion for some items and I/we gree that such extension of time will not be counted for the final completion of work as stipulated in the said "Time Schedule of Completion of jobs."

5. I/we agree to pay the earnest Money deposit, performance guarantee and Security Deposit and accept the terms and condition as laid down in the memorandum below in this respect.

MEMORANDUM

S.No.	Description	GCC Clause No.	Values/Description to be applicable for relevant clause(s)
1.	Name of Work		Construction of Bank Building at 27/29 Ambalal Doshi Marg, Mumbai .
2.	Client/Owner		Punjab & Sind Bank
3.	Type of Tender		Turnkey for Design & Build on Area (Sq.m) basis.
4. 5.	Earnest Money deposit Estimated Cost	As per NIT As per NIT	Rs. 10.00 Lakhs (Rupees Ten Lakhs only) Rs. 500 Lakhs (Rupees Five hundred lakh)
6.	Time for completion	As per NIT	Total work is to be completed with in 10 (Ten) months including rainy season
7.	Mobilization Advance	8.0	Mobilization advance is payable maximum up to 10 (Ten) % of contract value subject to conditions stipulated in clause no. 8 of GCC.
8.	Interest rate on Mobilization Advance	8.0	Simple interest Rate of 12% (Twelve percent only) per annum.
9.	Schedule of Rates applicable	46.0	Refer clause No. 46 of GCC in conjunctions with BOQ
10.	Validity of Tender	4.0	120 (One hundred twenty) days
11.	Performance Guarantee	9.0	5% of contract value to be submitted within 15 days from the date of issue of LOI/LOA.
12.	Security deposit/ Retention Money	10.0	To be deducted @ 10% of each RA bill and will be restricted upto 5% of the contract value.
13.	Time allowed for starting the work	43.0	Date of start of contract shall be reckoned 10 days after the date of issue of letter/FAX/E-mail of intent/acceptance of tender.
14.	Defect liability period	74.0	12 (Twelve Months from the date of handing over of works to Owner.
15.	Recovery rate of work force supplied by NPCC to Contractor	28.5	Rs. 20000/- (Rupees Twenty Thousand only) each man power per month.

6. Should this tender be accepted, I/We agree to abide by and fulfill all terms and conditions referred to above and in default thereof, to forfeit, and pay NPCC or its successors or its authorized nominees such sums of money as are stipulated in the notice inviting tender documents.

7. If I/We fail to commence the work immediately on issue of LOI, or I/We fail to submit the performance guarantee as per Clause 09 of General conditions of contract I/We agree that NPCC shall, without prejudice to any other right or remedy, be at liberty to forfeit the said earnest money deposited with NPCC besides any other action as per terms of registration with NPCC. The NPCC shall also be at liberty to cancel the notice of acceptance of tender if we fail to deposit the performance guarantee as contained elsewhere in the tender documents.

8. I/We are also enclosing herewith the Acceptance letter on the prescribed pro-forma as referred to in condition of NIT.

Dated the_____ day of _____

SIGNATURE OF TENDERER
NAME IN CAPITAL LETTERS _____
ADDRESS _____ ____
_____

TELEPHONE & FAX NO.

E-mail ID _____

SEAL OF TENDERER

WITNESS

OCCUPATION._____

PROFORMA - III

GENERAL INFORMATION

All individual firms and each partner of a joint venture participating in this Bid are requested to complete the information in this form.

1	Name of Bidder	
2	Head Office Address	
	Tel. No	
	Mobile no.	
	Fax No	
	E-mail address	
3	Address on which Correspondence should be done	
	Tel. No	
	Mobile no.	
	Fax No	
	E-mail address	
4	Place of incorporation / registration	
5	Legal status of the applicant (attach copies of original documents defining the legal status)	
i)	Specify, if the bidder is	
	a) An individual	
	b) A proprietary firm c) A firm in partnership	
	d) A Limited Company or Corporation	
	e) A group of firms / joint venture (if yes, give complete information in respect of each member)	Not Applicable
ii)	Attach a copy of Proprietorship or Partnership Deed or Article of Association or Incorporation of Company or JV Agreement as the case may be	
6	Name of Proprietor / Partners / Directors with their addresses, Mobile & Telephone numbers, Fax no., E-mail address.	
7	Designation of individuals authorized to act for the organization with the address, Mobile & Telephone numbers, Fax, E-mail address. (Enclose legal Power of Attorney).	
8	Was the applicant ever required to suspend any construction for a period of more than six months continuously after commencement of the construction? If so, give the name of the project & reasons of suspension of work.	

9	Has the applicant of 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.		
10	Has the applicant, or any constituent partner in case of partnership firm ever been debarred / black listed for tendering in any organization at any time? If so, give details.		
11	Has the applicant or any constituent partner in case of partnership firm, ever been convicted by a court of Law? If so, give details.		
12	Bank solvency		
13	Turn Over / Net Profit for the years given below: Copies of Audited balance sheets are to be enclosed with proforma V.	Turn Over in Lakhs	Profit in Lakhs
	2007-08 2008-09		
	2009-10		
	2010-11		
	2011-12		
14	Other details: (Copies to be enclosed)		
	a) EPF No. valid up to: b) Sales Tax No. valid up to		
	c) Clearance of sales Tax up to		
	d) PAN No.		
	e) Service tax registration No.		
15	Give particulars of registration with Govt./Semi Govt./Public Sector Undertakings/Local Bodies.		

Note: Use separate sheets for providing more information if any.

Date & Place

Signature & seal of the applicant

PROFORMA - IV

List of major Plant and Machinery in possession of the firm

S.No.	Name of Plant & Machinery/equipment	Available Owned	*Other than col. No. C
A	B	C	D
1.	Excavator		
2.	Dozer		
3.	Dumper		
4. 5.	Truck Tractor with trolley		
6.	Water Tanker		
7.	Batching Plant : Capacity-------[if proposed to be installed or work is to be done with Ready mix concrete (RMC)]		
8.	Transit Mixer		
9.	Site Mixers with weigh batcher		
10.	Skip Hoist		
11.	Dewatering / Water Pumps		
12.	Survey equipments:		
	a) Total Stn,		
	b) Theodolite		
	c) Level instruments		
13. 14.	Details of Shuttering & Staging materials Any other information**		

Signature & seal of the applicant

Date & Place

Note:

* In case of any arrangement for getting the equipment o lease, etc., authenticated proof of the same is to be submitted.

** Use separate sheets for providing more information.

PROFORMA-V

Date:_____

ANNUAL TURN OVER FOR THE LAST FIVE YEARS			
S. No.	YEAR	Turnover from Engineering construction works (Rs in lacs) Net Profit (In Rs lacs)	Remarks (if any)
1	2007-08		
2	2008-09		
3	2009-10		
4	2010-11		
5	2011-12		

Note:

1 The bidder shall submit the attested copies of the audited balanc sheets along with Profit and loss statements and Auditors report and schedules duly certifie e bidder and Chartered Accountant. Certificate from the Chartered A countant, wherever the Annual Turnover is Certified for the relevant financial year which the minimum criteria of Annual Turnover is satisfied should also be submitted.

PROFORMA-VI

DETAILS OF THE SIMILAR WORKS COMPLETED IN LAST FIVE YEARS

S. No.	Descrip-tion of the Work with Contract No.	Name and address of the Employer with Contact No.	Date of award	Stipulated date of completion	Date of actual completio n	Value of completed work (In Rs lacs)	Reasons for delays, penalty if any	Any other relevant information
1								
2								
3								
4								
5								
6								

Note:

1. The Bidder shall submit the attested Copies of the Completion Certificates from the Client.
2. The value of work executed should be inclusive of the alue of free supply items.

PROFORMA - VII

Certificate of Credit Facility

(On Banker's letter Head)

This is to certify that M/s _____, is a reputed firm/company with a good financial standing.

The firm/company is enjoying a fund/non-fund based credit facility of Rs _____ to meet its working capital requirements.

The firm/company is having un-utilized fund/non-fund based credit facility of Rs _____ as on 31st August 2012.

Signature

Name

Designation

Address of Bank

BANK'S SEAL

NOTE: The above certificate shall be from the RBI Scheduled Bank.

PROFORMA-VIII

DETAILS OF ON-GOING/EXISTING WORKS

S. No.	Description of the Work with Contract No.	Name and address of the Employer	Date of award	Stipulated date of completion	Value of work as per order (In Rs. lacs)	Value of work completed so far (In Rs. lacs)	Anticipated date of completion of work	Any other relevant information
1								
2								
3								
4								
5								
6								
7								
8								
9								

Note:-
The copies of certificates of ongoing-awarded works issued by the owner shall be attached. Only those works shall be considered for evaluation for which copies of the certificates issued by the owner are attached.

PROFORMA – IX

PAST CONTRACTUAL PERFORMANCE

(Affidavit on non-judicial stamp paper of Rs 10/- duly attested by Notary/Magistrate)

This is to certify that We, M/s _____*[Name of the Bidder with address]*, in submission of the Bid, _____*[Name of Bid with Bid no.]*

i) have not made any misleading or false representation in the forms, statements and attachments in proof of the qualification requirements;

ii) do not have records of poor performance such as abandoning the work, not properly completing the contract, inordinate delays in completion, litigation history or financial failures etc.;

iii) have never been banned by any Central/State Govt. Depa tments/Public Sector Undertakings or Enterprises of Central/State Govt. ;

iv) have submitted all the supporting documents and furnished the relevant details as per the prescribed format.; and

v) have submitted all the information and the requisite d cuments with the Bid and further certify that we are fully responsible for the correctness of the information and documents submitted by us.

SIGNATURE OF THE BIDDER

SEAL

Note:
Exceptions of the above, if any, shall be clearly mentioned with details by the bidder for evaluation/consideration if any.

GCC

National Projects Construction Corporation Limited

(A Govt. of India Enterprise)

GENERAL CONDITIONS OF CONTRACT

1.0 GENERAL

The Contract means the documents forming the tender and acceptance thereof and the agreement executed between the competent person on behalf of NPCC and the contractor, together with the documents referred to therein including these conditions, the specifications, designs, drawings and instructions issued from time to time by the Engineer-in-Charge and all these documents taken together, shall be deemed to form one contract and shall be complementary to one another.

1.1 National Projects Construction Corporation Limited, hereinafter called 'NPCC' proposes to get the works executed as mentioned in the Contract on behalf of Owner/ Client.

1.2 The work will be executed as per drawings "GOOD FOR CONSTRUCTION" to be approved by NPCC unless otherwise specified elsewhere in the tender documents.

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

1.4 **DEFINITIONS**

a) **ENGINEER-IN-CHARGE** means the PROJECT MANAGER or an officer nominated by Zonal Manager of NPCC who shall supervise and be in-charge of the work from time to time.

b) **WORKS OR WORK**: The expression works or work shall unless there be something either in the subject or context repugnant to such construction, be construed and taken to mean the works by or by virtue of the contract contracted to be executed whether temporary or permanent, and whether original, altered, substituted or additional.

c) **CONTRACTOR** means the individual, firm or company, whether incorporated or not, undertaking the works and shall include the legal representative of such individual or the persons composing such firm or company, or the successors of such firm or company and the permitted assignees of such individual, firm or company.

d) **DRAWINGS** mean the drawings approved by Owner/NPCC which has prepared by the Architect deployed by Contractor and the drawings supplied by manufacturers for brought out items

e) **SITE** means the lands and other places on, under, in or through which the works are to be executed or carried out and any other lands or places provided by NPCC or used for the purpose of the agreement.

f) **APPROVAL** means approved in writing including subsequent written confirmation of previous verbal approval.

g) **WRITING** means any manuscript typed, written or printed statement under or over signature and/or seal as the case may be.

h) **MONTH** means English Calendar month 'Day' means a Calendar day of 24 Hrs each.

i) **CONTRACT VALUE** means the sum for which the tender is accepted as per the letter of intent.

j) **LANGUAGE**: All documents and correspondence in respect of this contract shall be in English Language.

k) **BILL OF QUANTITIES** or **SCHEDULE OF QUANTITIES** means the priced and completed Bill of Quantities or Schedule of Quantities forming part of the tender.

l) **OWNER** means Punjab & Sind Bank who has awarded the work to NPCC as Implementing agency.

m) **IMPLEMENTING/ EXECUTING AGENCY** means **National Projects Construction Corporation Limited (A Govt. of India Enterprise)** referred as NPCC who has been retained as implementing agency Punjab & Sind Bank, construction of Bank Building.

n) **TENDER** means the Contractor's priced offer to NPCC for the execution and completion of the work and the remedying of any defects therein in accordance with the provisions of the Contract, as accepted by the Letter of Intent or Award letter. The word TENDER is synonymous with Bid and the word TENDER DOCUMENTS with "Bidding Documents" or "offer documents".

The headings in the clauses/ conditions of tender documents is for convenience only and shall not be used for interpretation of the clause/ condition.

Words imparting the singular meaning only also include the plurals and vice versa where the context requires. Words imparting persons or parties shall include firms, companies and other organizations having legal capacities.

2.0 SITE VISIT AND COLLECTING LOCAL INFORMATION

Before tendering, the tenderer is advised to visit the site, its surroundings to assess and satisfy themselves about the local conditions such as the working and other constraints at site, approach to the site, availability of water & power supply, application of taxes, cess duties and levies as applicable, nature of ground, soil and sub-soil condition, underground water table level, accommodations they may require etc., river regime, river water levels, other details of river, streams & any other relevant information required by them to execute complete scope of work.

The tenderer may obtain all necessary information as to risks, weather conditions, contingencies & other circumstances (insurgencies etc.), which may influence or affect their tender prices. Tenderer shall be deemed to have considered site conditions whether he has inspected it or not and to have satisfied himself in all respect before quoting his rate and no claim or extra charges whatsoever in this regard shall be entertained / payable by the NPCC at a later date.

2.1 ACCESS BY ROAD

Contractor, if necessary, shall build temporary access roads to the actual site of construction for the works at his own cost to make the site accessible. The Contractor shall maintain the same in motor able condition at all the times as directed by Engineer-in-Charge at his own cost. The contractor shall be required to permit the use of any roads so constructed by him for vehicles of

NPCC or any other agencies/ contractors who may be engaged on the project site, free of cost. Non-availability of access roads or approach to site, for the use of the contractor shall in no case condone any delay in the execution of work nor be the cause for any claim for compensation.

2.2 HANDING OVER & CLEARING OF SITE

2.2.1 The Contractor should note that area for construction may be made available in phases as per availability and in conjunction with pace of actual progress of work at site. The work may be required to be carried out in constrained situations. The work is to be carried out in such a way that the traffic, people movement, if any, is kept operative and nothing extra shall be payable to the contractor due to this phasing / sequencing of the work. The contractor is required to arrange the resources to complete the entire project within total stipulated time. Traffic diversion, if required, is to be done and maintained as per specification by the contractor at his own cost and the contractor shall not be entitled for any extra payment, whatsoever, in this regard.

2.2.2 The efforts will be made by the NPCC to handover the site to the Contractor free of encumbrances. However, in case of any delay in handing over of the site to the Contractor, the NPCC shall only consider suitable extension of time for the execution of the work. It should be clearly understood that NPCC shall not consider any revision in contract price or any other compensation whatsoever viz. towards idleness of Contractor's labour, equipment etc.

2.2.3 The Contractor shall be responsible for removal of all over-ground and under-ground structures (permanent, semi-permanent and temporary) and constructions from the site. The cost to be incurred in this regard shall be deemed to be included in the quoted rate of Bill of Quantities items and contractor shall not be entitled for any extra payment whatsoever, in this regard. The contractor, if required, shall demolish old structures on the proposed site, properly. The useful material obtained from demolition of structures & services shall be the property of the owner/NPCC and these materials shall be stacked in workmanship like at the place specified by the Engineer- in-charge.

2.2.4 If required, the contractor has to do site clearance, enabling work, barricading, diversion of Roads, shifting/ realignment of existing utility services, drains, nallahs etc. at his own cost as per direction of Engineer-in-charge and the contractor shall not be entitled for any extra payment whatsoever in this regard.

2.2.5 Necessary arrangements including its maintenance are to be made by the contractor for temporary diversion of flow of existing drain and road, as the case may be. The existing drain, road would be demolished, wherever required, with the progress of work under the scope of proposed project. The existing Road and Drain, which are not in the alignment of the said project but are affected and/ or need to be demolished during execution for smooth progress of the project, shall be rehabilitated to its original status and condition (including black topping) by the contractor at his own cost. The cost to be incurred by contractor in these regards shall be deemed to be included in the quoted rates of the Bill of Quantities items and contractor shall not be entitled for any extra payment whatsoever, in these regards.

2.2.6 The Contractor shall be responsible to co-ordinate with service provider/ concerned authorities for cutting of trees, shifting of utilities and removal of encroachments etc. and making the site un-encumbered from the project construction area required for completion of work. This shall include initial and frequent follow up meetings/ actions/ discussions with each involved service provider/ concerned authorities. The contractor shall not be entitled for any additional compensation for delay in cutting of trees, shifting of utilities and removal of encroachments by the service provider/ concerned authorities.

2.2.7 The information about the public utilities (whether over ground or underground) like electrical/ telephone/ water supply lines, OFC Cables, open drain etc. is the responsibility of contractor to ascertain the utilities that are to be affected by the works through the site investigation and collection of information from the concerned utility owners.

2.2.8 The contractor shall be responsible to obtain necessary approval from the respective authorities for shifting/ re-alignment of existing public utilities. NPCC shall only assist the contractor for liasoning in obtaining the approval from the concerned authorities. Take all measures reasonably required by the various bodies to protect their services and property during the progress of works. It shall be deemed to be the part of the contract and no extra payment shall be made to the contractor for the same. Shifting/ re-alignment of public utilities should be done without disturbing the existing one. New service lines should be laid and connected before dismantling the existing one. Fees to local authorities for obtaining such approvals shall be reimbursed and NPCC shall assist by way of correspondence to this effect.

2.2.10 Shifting/ re-alignment of existing public utilities shall be done by the contractor as per technical requirement of respective bodies or as per direction of Engineer-in-Charge. Shifting/ re-alignment of public utilities include all materials, labours, tools and plants and any other expenses whatsoever for the same. The cost to be incurred in this regard shall be deemed to be included in his quoted rates of BOQ items and the contractor shall not be entitled for any extra payment, whatsoever, in this regard. In case any of these services are shifted by the State Govt/ local authorities themselves for which deposit as per their estimates is to be made to them, the contractor shall deposit the same and the contractor shall be paid only at the rates quoted by them in BOQ for quantity specified in the BOQ, if such items are included in the BOQ irrespective of amount paid by him to the State Govt./ local authorities for execution of these works. In case such provision is not made in the BOQ or the quantity exceeds those specified in the BOQ, the same is deemed to be included in the rates quoted by him for other items in BOQ and nothing extra shall be payable to contractor on this account.

3.0 SCOPE OF WORK

3.01 The scope of work covered in this tender shall be as per the Bill of Quantities, specifications, drawings, instructions, orders issued to the contractor from time to time during the work. The drawings for this work, which may be referred for tendering, provide general idea only about the work to be performed under the scope of this contract. These may not be the final drawings and may not indicate the full range of the work under the scope of this contract. Drawings released as “GOOD FOR CONSTRUCTION” from time to time by the Architect and approved by Engineer-in-charge of NPCC and according be executed according to any additions/ modifications/ alterations/ deletions made from time to time, as required by any other drawings that would be issued to the contractor progressively during execution of work. It shall be the responsibility of the contractor to incorporate the changes that may be in this scope of work, envisaged at the time of tendering and as actually required to be executed.

3.2 The quantities of various items as entered in the “BILL OF QUANTITIES” are indicative only and may vary depending upon the actual requirement. The contractor shall be bound to carry out and complete the stipulated work irrespective of the variation in individual items specified in the bill of quantities.

4.0 VALIDITY OF TENDER

The tender for the works shall remain open for acceptance for a period of **one hundred twenty** days from the last date of submission of tenders. The earnest money will be forfeited

without prejudice to any right or remedy, in case the contractor withdraws his tender during the validity period or in case he changes his offer to his benefits, which are not acceptable to NPCC. The validity period may be extended on mutual consent.

5.0 ACCEPTANCE OF TENDER

5.1 The NPCC reserves to itself the authority to reject any or all the tenders received without assigning any reason. The acceptance of a tender shall be effective w.e.f. the date on which the telegram/ e-mail, letter of intent of acceptance of the tender is put in the communication by the NPCC. NPCC also reserves the right to Split the work among two or more parties at lowest negotiated rate without assigning any reason thereof. The contractor is bound to accept the portion of work as offered by NPCC after split up at the quoted/-negotiated rates.

5.2 The employer reserve the rights to restrict the bidder(s) for opening the price bid in case there are number of packages in the vicinity and the employer does not want to award more than its specified number of packages as matter of strategy to one bidder, the bid in such case will be returned unopened as mentioned in the "Tender document" in such case. Order of Opening of bids shall be in order of decreasing value of packages.

6.0 SET OF CONTRACT DOCUMENTS

1. Notice Inviting tender
2. Corrigendum(s) and Addendum (s).
3. Pre-qualification documents
4. General Conditions of contract
5. Special conditions and formats
6. BOQ/schedule of rates
7. Technical Specifications
8. Tender drawings, if any

7.0 EARNEST MONEY DEPOSIT

7.1 Earnest Money Deposit of amount as mentioned in "Memorandum to Form of Tender'' required to be submitted along with the tender shall be in the form of Demand Draft, or FDR payable at place as mentioned in "NIT/ Instructions to Tenderer" in favour of NPCC Limited from any Nationalized / scheduled Bank of India, or Bank Guarantee in enclosed format from any Nationalized / Scheduled Bank as per list annexed. **The EMD shall be valid for minimum period of 150 days (One hundred fifty Days) from last day of submission of Tender**

7.2 EMD shall accompany the offer and placed in the sealed envelope cover of the offer as detailed in the Instruction to tenderer. Any tender not accompanied with the requisite Earnest Money Deposit along with Letter of Acceptance shall be rejected and such tenderer(s) will not be allowed to attend the opening of bids. Conditional tenders will be summarily rejected.

7.3 The date of opening of envelope no. 2 i.e. Price bid shall be intimated telephonically or through e-mail to the technically qualified bidders only to depute their representative. The Envelope No. 2 shall be opened on intimated date & time in presence of the bidders or their representatives who wish to be present.

7.4 The EMD will be returned to all unsuccessful or technically unqualified tenderers after opening of price bid and to the technically qualified tenderers other than lowest (L-1) within ten (10) days of the Award of the Contract to successful bidder. EMD of successful tenderer shall be refunded after submission of Performance Guarantee/ initial security deposit duly confirmed from issuing bank by him.

7.5 Once the tenderer has given an unconditional acceptance to the tender conditions in its entirety, he is not permitted to put any remark(s)/conditions(s)(except unconditional rebate on price, if any) in/ along-with the tender.

7.6 In case the condition 7.5 mentioned above is found violated at any time after opening of tender, the tender shall be summarily rejected and NPCC shall, without prejudice to any other right or remedy, be at liberty to forfeit the full said Earnest Money absolutely.

7.7 No interest shall be payable by the NPCC on the said amount covered under EMD/Other security deposits.

8.0 MOBILISATION ADVANCE

8.1 Mobilization advance up to maximum of amount as mentioned in the "Memorandum to the Form of Tender" shall be paid to the contractor on submission of non-revocable Bank Guarantee for an amount of 110% (One hundred ten percent) of an amount of mobilization advance demanded, from a nationalized / Scheduled Bank as per list annexed in enclosed Performa. The Mobilization Advance shall be at the **Interest rate of 12% simple interest** as mentioned in the "Memorandum to the Form of Tender".

This advance shall be paid in two installments as follows-

i. First Installment of 50(Fifty) percent of total mobilization advance against Bank Guarantee shall be paid after the agreement is signed and upon submission of performance guarantee and its confirmation from issuing bank.

ii. 2nd installment of balance 50(Fifty) percent of total mobilization advances against Bank Guarantee will be paid after the setting up of site office and facilities to NPCC as per contract, completion of mobilization of Plant and machinery, scaffolding & shuttering materials etc. to the satisfaction of Engineer-in-charge nominated by Project Manager / Zonal Manager and on completion of 10 (Ten) percent of work in terms of cost.

8.2 The mobilization advance bear simple interest at the rate as mentioned in the MEMORANDUM and shall be calculated from the date of payment to the date of recovery (365 days in a year) both days inclusive, on the out standing amount of advance. Recovery of such sums advanced shall be made by the deduction from the contractor's bills commencing after first 10 (ten) percent of the gross value of the work is executed and paid, on pro-rata percentage basis to the gross value of the work billed beyond 10% in such a way that the entire advance is recovered by the time 80 (eighty) percent of the gross value of the contract is executed and paid, together with interest due on the entire outstanding amount up to the date of recovery of the installment.

The Mobilization Advance bank guarantee shall essentially be made atleast for the 110% (One hundred ten percent) of total mobilization advance payable and valid for the contract period, and be kept renewed from time to time to cover the balance amount and likely period of complete recovery together with interest. However, the contractor can submit part bank guarantees against the mobilization advance in as many numbers as the proposed recovery installments equivalent to the amount of each installment.

8.3 Notwithstanding what is contained in clause No. 8.1 & 8.2, no mobilization advance whatsoever shall be payable, if payment of mobilization advance is not mentioned in the memorandum to the form of tender.

9.0 PERFORMANCE GUARANTEE

Within 15 days from the date of issue of LOA / LOI, the tenderer shall submit Performance Guarantee amounting to 5% (Five percent) of the awarded value of work in the form of Demand Draft/fixed deposit in favour of NPCC LTD. or Bank Guarantee from the Nationalized /Scheduled Bank (as per list enclosed) of equivalent value for the due and proper execution of the contract. This bank guarantee shall remain valid up to 90 (ninety) days after the end of defects liability period. No interest will be paid under any circumstances. On receipt and verification from concerned Bank of the performance guarantee in the form of DD/FDR/BG, the EMD will be refunded. An amount is to be deposited equivalent to 0.01% per day of the amount of Performance guarantee for extended period of submission of Performance guarantee. In no case the extension for submission of performance guarantee will be granted for more than 15 days. In case of non submission of performance guarantee with in stipulated /extended period, the LOA/LOI will be treated as cancelled and EMD will be forfeited.

10.0 SECURITY DEPOSIT

The security deposit will be deducted from the successful contractor at the rate of 10% from the Gross value of each R/A bills till it reaches 5% of the contract value. No interest will be paid on the Security Deposit under any circumstances. The total security deposit will be refunded only after expiry of defect liability period. However after successful completion of work 50% of the security deposit can be released against bank guarantee from any Nationalised Bank as per approved format.

11.0 MOBILISATION OF MEN, MATERIALS AND MACHINERY:

11.1 All expenses towards mobilisation at site and de-mobilization including bringing in equipment, work force, materials, dismantling the equipments, clearing the site etc. shall be deemed to be included in prices quoted and no separate payment on account of such expenses shall be entertained.

11.2 It shall be the responsibility of the Contractor to provide, operate and maintain all necessary construction equipments, scaffoldings and safety, gadget, lifting tackles, tools and appliances to perform the work in a workman like and efficient manner and complete all jobs as per the specifications and within the schedule time of completion of work. Further, contractor shall also be responsible for obtaining temporary electric and water connection for all purposes. The contractor shall also make standby arrangement for water & electricity to ensure un-interrupted supply.

11.3 It shall be the responsibility of the contractor to obtain the approval for any revision and/ or modification of work desired by him from NPCC before implementation. Also such revisions and/or modifications if accepted / approved by the NPCC shall be carried at no extra cost to NPCC.

11.4 The procurement and supply in sequence and at the appropriate time of all materials and consumable shall be entirely the contractor's responsibilities and his rates for execution of work shall be inclusive of supply of all these items.

11.5 It is mandatory for the contractor to provide safety equipments and gadgets to its all workers, supervisory and Technical staff engaged in the execution of the work while working. The cost of the above equipments/ gadgets are deemed to be included in the rates quoted by the contractor for the items & works as per Bill of Quantities and contractor shall not be entitled for any extra cost in these regard. The above norm is to be strictly complied with at site. In case the contractor is found to be deficient in providing Safety Equipments/ Gadgets in the opinion of

Engineer-in-charge, the Engineer-in-charge at his option can procure the same at the risk & cost of contractor and provide the same for the use of worksite and shall make the recoveries from the bills of the contractor for the same. The decision of the Engineer-in-charge shall be final and binding on contractor in this regard.

11.6 All designs, drawings, bill of quantities, etc.,shall be supplied to the contractor for works by NPCC in phased manner as the works progress. However it shall be the duty and responsibility of the contractor to bring to the notice of the NPCC in writing as to any variation, discrepancy or any other changes required and to obtain revised drawings and designs and / or approval of the NPCC in writing for the same.

11.7 One copy of contract documents including drawings furnished to the contractor shall be kept at the site and the same shall at all reasonable times be available for inspection.

11.8 All materials, construction plants and equipments etc. once brought by the contractor within the project area, will not be allowed to be removed from the premises without the written permission of the NPCC. Similarly all enabling works built by the contractor for the main construction undertaken by him, shall not be dismantled and removed without the written authority of the NPCC.

12.0 INCOME TAX DEDUCTION

Income tax deductions shall be made from all payments made to the contractor including advances against work done, as per the rules and regulations in force, in accordance with the Income Tax Act prevailing from time to time.

13.0 TAXES AND DUTIES

13.1 The contractor shall be responsible for the payment, wherever payable, at his own cost of all taxes such as excise duty, custom duty, sales tax, including the purchase tax, consignment tax, work contract tax, service tax or any other similar tax in the state concerned, turnover tax, toll tax, octroi charges, royalty, cess, levy and other tax (es) or duty (ies) which may be specified by local/ state/ central government from time to time on all materials, articles which may be used for this work or are otherwise payable. The rates quoted by him in the tender in bill of quantities shall be inclusive of all such taxes, duties, cess etc. The imposition of any new and/ or increase in the aforesaid taxes, duties, levies, cess (including fresh imposition of Work Contract Tax, Turnover Tax, Sales Tax on Work Contract or any other similar Tax) etc. during the currency of the contract shall be borne by contractor and shall not be paid or reimbursed to the contractor by NPCC.

In the event of non-payment/default in payment of any octroi, royalty, cess, turnover tax, sales tax, including the purchase tax, consignment tax, work contract tax or any other similar tax in the state concerned, customs, excise or any other levy/tax including labour dues etc. by contractor/ supplier, NPCC reserves the right to with-hold the dues/ payments of contractor and make payment to local/state/ Central Government authorities or to labourers as may be applicable. The contractor should submit along with the tender, the" Registration certificates for Sales Tax on works contract" from the authorities concerned, otherwise appropriate recovery shall be made from his bills.

13.2 The rates quoted by the contractor shall be deemed to be inclusive of Sales Tax, Turnover Tax on works contract or any similar tax as per the Sales Tax Act applicable in the State and it shall not be reimbursed by NPCC. Tax deductions at source shall be made as per laws prevalent in the State.

13.3 The stamp duty and registration charges, if any, on the contract agreement levied by the Government or any other statutory body, shall be paid by the contractor.

13.4 It will be incumbent upon the Contractor to obtain a registration certificate as a dealer under the Local Sales Tax Act and the Central Sales Tax Act and necessary evidence to this effect shall be furnished by the Contractor to NPCC. Sales Tax on the transactions between the Contractor and his Sub-contractor/Vendors etc. shall not be reimbursed by NPCC. The Contractor shall be responsible for any taxes that may be levied hereunder on the transaction between Contractor and NPCC.

13.5 The bidder shall quote his rates inclusive of Turnover Tax/ Sales Tax on Works Contract payable to State Govt. along-with other taxes, duties, cess, levies etc. in conjunction with other terms and conditions.

13.6 **VALUE ADDED TAX (VAT)**

"The consideration agreed for the execution of said contract shall include the tax, duties, cess, etc. such as excise duty, service tax, VAT, which is leviable or may be levied in future under any State Law or the Central Law on execution of said contract, such taxes shall be borne by the contractor and shall not be reimbursed by NPCC. Further, if due to any variance in such tax, duties, cess etc. there is any increase in the taxes, the same shall also be borne by the contractor. Where under any of the State or the Central Law, there is requirement of deduction of tax at source, the same shall be deducted from the amount paid or payable to the contractor pursuant to this contract and shall be deposited to the Government authorities by NPCC. NPCC shall issue the documents/forms/ certificate as prescribed under the relevant law, in respect of the amount so deducted from the amount paid or payable to the contractor. NPCC shall have full rights to withhold the amount payable to the contractor in pursuant to this contract, if contractor does not fulfill his obligation under any State or Central Law relating to execution of said contract, in case the amount has already been paid, NPCC has the right to recover such payments from the contractor."

14.0 **ROYALTY ON MATERIALS:**

The contractor shall deposit royalty and obtain necessary permit for supply of bajri, stone, kankar, sand etc. from the local authorities and quoted rates shall be inclusive of royalty on any account whatsoever.

15.0 **RATES TO BE FIRM**

15.1 The Percentage / Item rates quoted by the tenderer shall be firm and fixed for the entire period of completion and till handing over of the work. No revision to Percentage /Item rates or any escalation shall be allowed on account of any increase in prices of materials, labour, POL and Overheads etc or any other statutory increase during the entire contract period or extended contract period.

15.2 The contractor shall be deemed to have inspected the site, it's surrounding and acquainted with the nature of the ground, accessibility of the site and full extent and nature of all operations necessary for the full and proper execution of the contract, space for storage of materials, constructional plant, temporary works, restrictions on the plying of heavy vehicles in area, supply and use of labour, materials, plant, equipment and laws, rules and regulations, if any, imposed by the local authorities.

15.3 The rates and prices given in the bill of quantities are for completed and finished items of works and complete in all respects. It will be deemed to include all constructional plant, labour, supervision, materials, transport, all temporary works, erection, maintenance, contractor's profit and establishment/ overheads, together with preparation of designs & drawings pertaining to casting yard, shop drawing, fabrication drawing (if required), staging form work, stacking yard, etc. all general risk, taxes, royalty ,duties, cess, octroi and other levies, insurance liabilities and obligations set out or implied in the tender documents and contract.

15.4 Unless otherwise specified in the Bill of Quantities (BOQ), the contractor has to make his own arrangement for dewatering/ bailing out of water, effluent including strutting, shoring etc at every stage of work wherever required including working under foul condition as per direction of Engineer-in-Charge at his own cost and the contractor shall not be entitled for any extra payment, whatsoever, in this regard.

15.5 If required to make work site suitable for execution, contractor shall have to clear jungle including of rank vegetation, grass, trees etc., clear & clean existing drains/ canals (including strutting, shoring and packing cavities) and dispose them out of the site up-to any lead and lift as per direction of Engineer-in-charge. The contractor should inspect the site of work from this point of view. Unless otherwise specified in the Bill of Quantities, the cost to be incurred in this regard shall be deemed to be included in his quoted rates of BOQ items and the contractor shall not be entitled for any extra payment in this regard.

15.6 If any temporary/ permanent structure is encountered or safety of such structure in the vicinity is endangered due to execution of the project, the contractor has to protect the structures by any means as per the directions of the Engineer - in – Charge. If any damage caused to any temporary or permanent structure(s) in the vicinity is caused due to execution of the project, the contractor has to make good the same by any means as per directions of the Engineer - in – Charge. The contractor should inspect the site of work from this point of view. The cost to be incurred in this regard shall be deemed to be included in his quoted rates of BOQ items and the contractor shall not be entitled for any extra payment in this regard.

16.0 ESCALATION/ PRICE VARIATION

No claim on account of any price variation / Escalation on whatsoever ground shall be entertained at any stage of works. All Percentage / item rates as per Bill of Quantities (BOQ) quoted by Contractor shall be firm and fixed for entire contract period as well as extended period for completion of the works. No escalation/price variation clause shall be applicable on this contract.

17.0 INSURANCE OF WORKS ETC.

Contractor is required to take **contractor's all risk policy** or erection all risk policy (as the case may be) from an approved insurance company in the joint name with NPCC and bear all costs towards the same for the full period of execution of works including the defect liability period for the full amount of contract against all loss of damage from whatever cause arising other than excepted risks for which he is responsible under the terms of the contract and in such manner that the NPCC and the contractor are covered during the period of construction of works and/or also covered during the period of defect liability for loss or damage:

a. The work and the temporary works to the full value of such works.
b. The materials, constructional plant, centering, shuttering and scaffolding materials and other things brought to the site for their full value.

Whenever required by NPCC, the contractor shall produce the policy or the policies of insurance and the receipts for payment of the current premiums.

18.0 INSURANCE UNDER WORKMEN COMPENSATION ACT

Contractor is required to take insurance cover under the Workman Compensation Act, 1923 amended from time to time from an approved insurance company and pay premium charges thereof. Wherever required by NPCC the contractor shall produce the policy or the policies of Insurance and the receipt of payment of the current premiums.

19.0 THIRD PARTY INSURANCE

Contractor is required to take third party insurance cover for an amount of 5% (five percent) of contract value from an approved insurance company for insurance against any damage, injury or loss which may occur to any person or property including that of NPCC, arising out of the execution of the works or temporary works. Wherever required by NPCC the contractor shall produce the policy or the policies of Insurance and the receipt of payment of the current premiums. In case of failure of the contractor to obtain contractors all risk policy, insurance under workman compensation act and third party insurance as described above within one month from the date of commencement of work, running account payments of the contractor shall be withheld till such time the contractor obtains the aforesaid insurance covers.

If the Contractor could not effect a comprehensive insurance cover against risks which he may be required to effect under the terms of the contract, then he shall give his attention to get the best insurance cover available and even in case of effecting a wider insurance cover than the one which the subsidiary of the General Insurance Company could offer, such an insurance is ought to be done after the NPCC's approval, by or through the subsidiary of the General Insurance Company.

20.0 INDEMNITY AGAINST PATENT RIGHTS

The contractor shall fully indemnify the NPCC from and against all claims and proceedings for or on account of any infringement of any patent rights, design, trademark or name or other protected rights in respect of any construction plant, machine, work or material used for in connection with the works or temporary works.

21.0 LABOUR LAWS TO BE COMPLIED BY THE CONTRACTOR

The contractor shall obtain a valid license under the contract labour (R & A) Act 1970 and the contract labour Act (R&A) Central Rules 1971 and amended from time to time, and continue to have a valid license until the completion of the work including defect liability period. The contractor shall also abide by the provision of the child labour (Prohibition and Regulation) Act. 1986 and amended from time to time. Any failure to fulfill this requirement shall attract the penal provisions of this contract arising out the resultant for non-execution of the work before the commencement of work.

21.1 No labour below the age of 18 years shall be employed on the work.

22.0 LABOUR SAFETY PROVISION

The contractor shall be fully responsible to observe the labour safety provisions.

23.0 OBSERVANCE OF LABOUR LAWS

23.1 The contractor shall be fully responsible for observance of all labour laws applicable including local laws and other laws applicable in this matter and shall indemnify and keep indemnified NPCC against effect or non observance of any such laws. The contractor shall be liable to make payment to all its employees, workers and sub-contractors and make compliance with labour laws. If NPCC or the client/ owner is held liable as "Principal Employer" to pay contributions etc. under legislation of Govt. or Court decision in respect of the employees of the contractor, then the contractor would reimburse the amount of such payments, contribution etc. to NPCC and/ or same shall be deducted from the payments, security deposit etc. of the contractor.

23.2 The Contractor shall submit proof of having valid EPF registration certificate. In absence of the said certificate payment to the extent of 4.70% (four point seventy percent) of the value of the Running Account bill may be withheld by NPCC and shall be released only after the production of the EPF registration certificate from the concerned authorities. If it is incumbent upon NPCC to deposit withhold amount with EPF authorities, the withhold amount shall be deposited by NPCC with EPF authorities. In such a case NPCC hall not refund this withhold amount to the contractor even after the production of EPF registration certificate.

23.3 The contractor shall be liable to pay cess levied under the Building and other Construction Workers Welfare Cess Act, 1996, at such rates as may be notified by the Government from time to time. The NPCC shall deduct at source from every Running Account Bill of the Contractor, the said cess, at such rates for the time being prevailing, which shall not exceed 2% (two percent) but not be less than 1% (one percent) of the cost of construction incurred by the NPCC.

24.0 LAW GOVERNING THE CONTRACT

The Indian Laws shall govern this contract for the time being in force.

25.0 LAWS, BY LAWS RELATING TO THE WORK

The contractor shall strictly abide by the provisions, for the time being in force, of law relating to works or any regulations and bylaws made by any local authority or any water & lighting agencies or any undertakings within the limits of the jurisdiction of which the work is proposed to be executed. The contractor shall be bound to give to the authorities concerned such notices and take all approvals as may be provided in the law, regulations or bylaws as aforesaid, and to pay all fees and taxes payable to such authorities in respect thereof.

26.0 EMPLOYMENT OF PERSONNEL

26.1 The contractor shall employ only Indian Nationals as his representatives, servants and workmen after verifying their antecedents and loyalty. He shall ensure that no personnel of doubtful antecedents and any other nationality in any way are associated with the works.

26.2 The NPCC shall have full power and without giving any reason to the contractor, immediately to get removed any representative, agent, servant and workmen or employees on account of misconduct negligence or incompetence or whose continued employment may in his opinion be undesirable. The contractor shall not be allowed any compensation on this account.

27.0 TECHNICAL STAFF FOR WORK

27.1 The contractor shall employ at his cost the adequate number of technical staff during the execution of this work depending upon the requirement of work. For this purpose the numbers to be deployed, their qualification, experience as decided by NPCC shall be final and binding on contractor. The contractor shall not be entitled for any extra payment in this regard. The technical staff should be available at site, whenever required by NPCC to take instructions.

27.2 Within 15 days of letter of intent, the contractor shall submit a site organizational chart and Resume including details of experience of the Project-in-Charge and other staff proposed by him and shall depute them on the Project after getting approval from Engineer-in-Charge. If desired by the contractor at a later date, the Project-in-Charge and other staff whose resume is approved by NPCC can be replaced with prior written approval of NPCC and replacement shall be with equivalent or superior candidate only. Decision of Engineer-in-Charge shall be final and binding on the contractor.

Even after approving the site organizational chart, the Engineer-in-Charge, due to nature and exigency of work, can direct the contractor to depute additional staff as per the requirement.

The removal of such additional staff from the site shall only be with the prior written approval of Engineer-in-Charge. The contractor shall not be paid anything extra whatsoever on account of deployment of additional staff and decision of the Engineer-in-Charge shall be final and binding on the contractor.

The minimum desired numbers of personnel for the project are as follows:

S.No.	Contract Value	Graduate Engineers		Diploma Engineers	
		Civil	Mechanical/ Electrical	Civil	Mechanical/ Electrical
1.	Up to 5.00 Crores	-	-	02	01
2.	More than 5.00 & Up to 10.00 Crores	01	-	02	01
3.	More than 10.00 & Up to 25.00 Crores	02	01	02	01
4.	More than 25.00 & Up to 50.00 Crores	03	01	03	01
5.	More than 50.00 & Up to 75.00 Crores	04	02	04	02
6.	More than 75.00 & Up to 100.00	05	02	06	03
7.	More than 100.00	06	03	08	04

27.3 In case the contractor fails to employ the staff as aforesaid he shall be liable to pay a reasonable amount not exceeding a sum of Rs. 40,000 (Rupees forty Thousand only) for each month of default in the case of each Graduate Engineer and Rs.25,000(Rupees twenty five Thousand only) in the case of each Diploma Engineer. The decision of the Engineer-in-charge as to the number of Technical Staff to be adequate for the project and the period for which the required technical staff was not employed by the contractor and as to the reasonableness of the amount to be deducted on this account shall be final and binding on the contractor.

28.0 LAND FOR LABOUR HUTS/ SITE OFFICE AND STORAGE ACCOMMODATION

28.1 The contractor shall arrange the land for temporary office, storage accommodation and labour huts at his own cost and get the clearance of local authorities for setting up of labour camp and same is deemed to be included in the rates quoted by the contractor for the works. The contractor shall ensure that the area of labour huts is kept clean and sanitary conditions are maintained as laid down by the local authorities controlling the area. The labour huts shall be so

placed that it does not hinder the progress of work or access to the worksite. Contractor shall give the vacant possession of the land utilised for this purpose back after completion of the work. The security deposit of the contractor shall be released only after contractor demolishes all structures including foundations and gives back clear vacant possession of this land.

28.2 In the event the contractor has to shift his labour campus at any time during execution of the work on the Instructions of local authorities or as per the requirement of the work progress or as may be required by NPCC, he shall comply with such instructions at his cost and risk and no claim whatsoever shall be entertained on this account.

28.3 FURNISHED OFFICE ACCOMMODATION & MOBILITY AND COMMUNICATION TO BE PROVIDED BY CONTRACTOR TO NPCC

On acceptance of tender, the contractor at his own cost will provide a suitable furnished Unit office equipped with all facilities such as telephone(s), fax, internet, photocopier, computer/ laptop & printer(s) along with operator, regular electric & purified drinking water supply etc. and staff carrying vehicles as per the requirement of the project. The contractor shall provide consumable as required and maintain the aforesaid facilities intact / operational during the tenancy of the contract or the defect liability period of the project and settlement & payment of final bill, which ever is later. For any reasons, if the provision of the Unit office is delayed, the NPCC is at liberty to hire a building, which is suitable for this purpose furnish and occupy. The cost of furniture along with the rent, brokerage and advance if any payable to the house owner will be recovered from the contractor. This will be with in a period of One month from the date of LOI/LOA.

The contractor shall also make sufficient arrangement for Photography/ Videography preferably by maintaining a camera/video camera at site so that video photographs can be taken of a specific activity at any point of time. The contractor shall also provide software like MS Project etc. for the purpose of preparing progress report etc.

28.4 The contractor shall make all arrangements for ground breaking ceremony/ inaugural function etc for the project as required and the cost towards it deemed to be included in his rates/offer. Any expenditure already incurred/to be incurred by NPCC, shall be recovered from the contractor.

28.5 UTILISATION OF WORK FORCE OF NPCC BY THE CONTRACTOR

NPCC may supply skilled/semiskilled work force if available in surplus and required by the contractor, like work supervisors, masons, wireman, plumber etc or any other category to assist the contractor in execution of the works at the fixed recovery rate of Rs. 20,000/- per month for each number of workforce (Rupees twenty thousand only per month) or any higher rate mentioned in the “Memorandum to the Form of Tender” against each work force, till handing over of the whole project.

Recoveries, as stated above will be made by NPCC from the monthly running account bills. The contractor shall deploy such work force on the execution of the works as per their trades and deployment shall be for the entire contract period till completion and handing over of works.

Further, the monthly rate per person is for the purpose of recovery only and in no way shall be construed to be the rate applicable for working out analysis, justification of rates, extra items, claims etc.

S.No.	Value of the Project as per agreement (Rs.in crores)	Number of work force of various categories
1.	From Rs.1 crore to 2.5 crore	1
2.	Above Rs.2.5 crore to 5 crore	3
3.	Above Rs.5 crore to 7.5 crore	4
4.	Above Rs.7.5 crore to 10 crore	6
5.	Above Rs.10 crore to 15 crore	8
6.	Above Rs.15 crore to 20 crore	10
7.	Above Rs.20 crore to 30 crore	12
8.	Above Rs.30 crore to 50 crore	15
9.	Above Rs.50 crore to 75 crore	20
10	Above Rs.75 crore up to any value.	25

29.0 WATCHING AND LIGHTING

The contractor shall at his own cost take all precautions to ensure safety of life and property by providing necessary barriers, lights, watchmen etc. during the progress of work as directed by Engineer-in-Charge.

30.0 HEALTH & SANITARY ARRANGEMENTS

In case of all labour directly or indirectly employed in work for the performance on the contractor's part of this contract, the contractor shall comply with all rules framed by Govt. from time to time for the protection of health and sanitary arrangements for workers.

31.0 WORKMEN'S COMPENSATION ACT

The contractor shall at all times indemnify NPCC and Owner against all claims for compensation under the provision of workmen's compensation Act or any other law in force, for any workmen employed by the contractor or his sub-contractor in carrying out the contract and against all costs and expenses incurred by the NPCC therewith.

32.0 MINIMUM WAGES ACT

The contractor shall comply with all the provisions of the minimum wages Act, 1948, contract labour Act (R&A) 1970, and rules framed there under and other labour laws/local laws affecting contract labour that may be brought into force from time to time.

33.0 LABOUR RECORDS

The contractor shall submit by the 4th & 19th of every month to the Engineer-in-Charge of NPCC a true statement, showing in respect of the second half of the proceeding month and the first half of the current month, respectively, of the following data: -

a) The number of the labour employed by him (category-wise).

b) Their working hours.

c) The wages paid to them.

d) The accidents that occurred during the said fortnight showing the circumstances under which they happened and the extent of damage and injury caused.

e) The number of female workers who have been allowed Maternity Benefits and the amount paid to them.

f) Any other information required by Engineer-in-Charge.

34.0 RELEASE OF SECURITY DEPOSIT AFTER LABOUR CLEARANCE

Security Deposit of the work shall not be refunded till the contractor produces a clearance certificate from the Labour Officer. As soon as the work is virtually complete, the contractor shall apply for the clearance certificate to the Labour Officer under intimation to the Engineer-in-Charge. The Engineer-in-Charge, on receipt of the said communication, shall write to the Labour Officer to intimate if any complaint is pending against the contractor in respect of the work. If no complaint is pending, on record till after 3 months after completion of the work and/or no communication is received from the Labour Officer to this effect till six months after the date of completion, it will be deemed to have received the clearance certificate and the Security deposit will be released if otherwise due.

35.0 SECURED ADVANCE AGAINST NON-PERISHABLE MATERIALS

Interest free secured advance up-to a maximum of 75 % (seventy five percent) of the Market Value of the Materials or the cost of materials as derived from the tendered item rate of the contractor, whichever is less, required for incorporation in the permanent works and brought to site and duly certified by NPCC site Engineer shall be paid to the Contractor for all non-perishable items as per CPWD norms. The advance will be paid only on submission of Indemnity Bond in the prescribed pro-forma. The advance shall be recovered in full from next Running Account bill and fresh advance paid for the balance quantities of materials. The contractor shall construct suitable godown at the site of work for safe storing the materials against any possible damages due to sun, rain, dampness, fire, theft etc. at his own cost. He shall also employ necessary watch & ward establishment for the purpose at his costs and risks.

35.1 Payment of such advance shall be processed by NPCCL with a certificate from an Officer not below the rank of Executive Engineer/Manager as under:-

a) The quantities of material for which advance is to be made are required being claimed have actually been brought to site.
b) Full quantity of the material for which advance is to be made are required by the contractor for use on items of work for which rates for finished work have been agreed up on.
c) The quality of materials is as per desired specifications and having the desired test certificates from the approved laboratories.

36.0 MEASUREMENTS OF WORKS

Unless otherwise mentioned in the bill of quantities the measurements of works shall be done as per MOST/ CPWD specifications (as specified in Technical Specification of the Tender) and if the same is not given in the CPWD / MOST Specifications, the same shall be measured as per latest relevant BIS codes in force. The quantity of steel reinforcement and the structural steel sections incorporated in the work shall be measured & paid on the basis of standard coefficients of sections as per BIS Codes of practice.

37.0 PAYMENTS

37.1 The bill shall be submitted by contractor each month on or before the date fixed by the Engineer-in-Charge for all works executed in previous months. The contractor shall prepare computerized bills using the program as approved by Engineer-in-Charge as per prescribed

format/ pro-forma. The Contractor shall submit five numbers of hard copies and one soft copy of floppy/ CD for all bills, subject to clause 37.3 herein below, the payment due to the contractor shall be made within fifteen days of getting the measurements verified from the Engineer-in-Charge or his subordinate/ representative and certification of bill by the Engineer-in-Charge.

37.2 All running payments shall be regarded as payments by way of advance against the final payment only and not as payments for work actually done and completed and / or accepted by NPCC and shall not preclude the recovery for bad, unsound and imperfect or unskilled work to be removed and taken away and reconstructed or re-erected or be considered as an admission of the due performance of the Contract, or any part thereof, in this respect, or the accruing of any claim, nor shall it conclude, determine or affect in any way the powers of the NPCC under these conditions or any of them as to the final settlement and adjustments of the accounts or otherwise, or in any other way vary/ affect the contract. The contractor shall submit the final bill within three months of the completion of work, otherwise NPCC's certificate of the measurement and of the total amount payable for the work accordingly shall be final and binding on contractor

Each Running Bills should be accompanied by two sets of at-least 20 (twenty) photographs as per direction of Engineer-in-charge taken from various points depicting status of work as on Report/ Bill date along with Monthly Progress Report for the concerned month in the pro-forma to be given/ approved by Engineer-in-Charge. Intermittent progress Photographs as and when required shall also be provided by the Contractor at his own cost as per direction of Engineer-in-Charge. No payment of running account bill shall be released unless it is accompanied by progress photographs and Monthly Progress Report as above.

37.3 It is clearly agreed and understood by the Contractor that notwithstanding anything to the contrary that may be stated in the agreement between NPCC and the contractor, the contractor shall become entitled to payment only after NPCC has received the corresponding payment(s) from the client/ Owner for the work done by the contractor. Any delay in the release of payment by the client/ Owner to NPCC leading to a delay in the release of the corresponding payment by NPCC to the contractor shall not entitle the contractor to any compensation/ interest from NPCC.

37.4 All payments shall be released by NPCC by Payee's Account cheque from any of its offices in India directly at the address notified by the Contractor (Postage charges shall be charged to the contractor's account). In case of Payments is made by Demand Draft at the request of the Contractor, Bank Commission charges shall be debited to the account of contractor.

38.0 WORK ON SUNDAYS, HOLIDAYS AND DURING NIGHT

For carrying out work on Sunday and Holidays or during night, the contractor will approach the Engineer-in-Charge or his representative at least two days in advance and obtain his permission. The Engineer-in-Charge at his discretion can refuse such permission. The contractor shall have no claim on this account whatsoever. If work demand, the contractor shall make arrangements to carry out the work on Sundays, Holidays and in two, three shifts with the approval of Engineer-in-Charge at no extra cost to NPCC.

39.0 NO IDLE CHARGES TOWARDS LABOUR OR P&M ETC.

No idle charges or compensation shall be paid for idling of the contractor's labour, staff or P&M etc. on any ground or due to any reason whatsoever. NPCC will not entertain any claim in this respect.

40.0 WORK TO BE EXECUTED IN ACCORDANCE WITH SPECIFICATIONS, DRAWINGS AND ORDERS ETC.

The contractor shall execute the whole and every part of the work in the most substantial and workman like manner both as regards materials and otherwise in every respect in strict accordance with the specifications. The contractor shall also conform exactly, fully and faithfully to the design, drawings and instructions in writing in respect of the work assigned by the Engineer-in-Charge and the contractor shall be furnished free of charge one copy of the contract documents together with specifications, designs, drawings.

The contractor shall comply with the provisions of the contract and execute the works with care and diligence and maintain the works and provide all labour and materials, tools and plants including for measurements and supervision of all works, structural plans and other things of temporary or permanent nature required for such execution and maintenance in so far as the necessity for providing these is specified or is reasonably inferred from the contract. The contractor shall take full responsibility for adequacy, suitability and safety of all the works and methods of construction.

41.0 DIRECTION FOR WORKS

41.1 All works to be executed under the contract shall be executed under the directions and subject to approval in all respects of the Engineer-in-Charge of NPCC who shall be entitled to direct at what point or points and in what manner the works are to be commenced and executed.

41.2 The Engineer-in-Charge and his representative shall communicate or confirm their instructions to the contractor in respect of the execution of work during their site inspection in a 'Works Site Order Book' maintained at the site office of Engineer-in- Charge. The contractor or his authorized representative shall confirm receipt of such instructions by signing against the relevant orders in the book.

42.0 ORDER OF PRECEDENCE OF DOCUMENTS

In case of difference, contradiction, discrepancy, dispute with regard to Conditions of Contract, specifications, Drawings, Bill of quantities and rates quoted by the Contractor and other documents forming part of the contract, the following shall prevail in order of precedence.

i) Letter of Intent, Letter of Award, Work Order, Agreement along with statement of agreed variations and its enclosures.
ii) Bill of Quantity / Schedule of Quantities
iii) Special Condition of Contract.
iv) Technical specifications (General, Additional and Technical Specification) as given in Tender documents.
iv) General Conditions of Contract.
v) Drawings.
vi) CPWD specifications (as specified in Technical Specification of the Tender) update with correction slips issued up to last date of receipt of tenders.
viii) Relevant B.I.S. Codes.

43.0 TIME SCHEDULE & PROGRESS

43.1 Time allowed for carrying out all the works as entered in the tender shall be as mentioned in the Tender conditions. **The Date of start of contract shall be reckoned 10 days after the date of issue of letter/FAX/E-mail of intent/acceptance of tender**. Time shall be the essence of the contract and contractor shall ensure the completion of the entire work within the stipulated time of completion.

43.2 The contractor shall also furnish within 10 days of date of receipt of letter of Intent, a CPM network/ PERT chart/ Bar Chart along with quarterly milestones and resources plan for man, material & machinery to achieve the milestones for completion of work within stipulated time. This will be duly got approved from Concerned Zonal/Unit office of NPCC. This approved Network/ PERT Chart shall form a part of the agreement. Achievement of milestones as well as total completion has to be within the time period allowed.

43.3 Contractor shall mobilize and employ sufficient resources for completion of all the works as indicated in the agreed BAR CHART/Network. No additional payment will be made to the contractor for any multiple shift work or other incentive methods contemplated by him in his work schedule even though the time schedule is approved by the Engineer-in-Charge.

43.4 During the currency of the work the contractor is expected to adhere to the time schedule on miles stone and total completion and this adherence will be a part of Contractor's performance under the contract. During the execution of the work contractor is expected to participate in the review and updating of the Network/ BAR CHART undertaken by the NPCC. These reviews may be undertaken at the discretion of NPCC either as a periodical appraisal measure or when the quantum of work order on the contractor is substantially changed through deviation orders or amendments. The review shall be held at site or any of the offices of NPCC/ owner / consultant at the sole discretion of NPCC. The contractor will adhere to the revised schedule thereafter. The approval to the revised schedule resulting in a completion date beyond the stipulated date of completion shall not automatically amount to a grant of extension of time to the contractor.

43.5 Contractor shall submit fortnightly/ Monthly (as directed by Engineer-in-Charge) progress reports (5 copies) on a computer based program (program and software to be approved by Engineer-in-Charge) highlighting status of various activities and physical completion of work.

43.6 The contractor shall send completion report with as built drawings and maintenance schedule to the office of Engineer-in-Charge, of NPCC in writing within a period of 30 days of completion of work.

44.0 WATER AND ELECTRICITY

The contractor shall make his own arrangement for Water & Electrical power for construction and other purposes at his own cost and pay requisite electricity and water charges. The contractor shall also make standby arrangement for water & electricity to ensure un-interrupted supply.

45.0 MATERIALS TO BE PROVIDED BY THE CONTRACTOR

The contractor shall, at his own expense, provide all materials, required including Cement & Steel for the works.

The contractor shall at his own expense and without delay, supply to the Engineer-in-Charge samples of materials to be used on the work and shall get the same approved in advance. All such materials to be provided by the Contractor shall be in conformity with the specifications laid down or referred to in the contract. The contractor shall, if required by the Engineer-in- Charge furnish proof, to the satisfaction of the Engineer-in-Charge that the materials so comply.

The contractor shall at his risk and cost, submit the samples of materials to be tested or analyzed and bear all charges and cost of testing unless specifically provided or otherwise elsewhere in the contract or specifications. The Engineer-in-Charge or his authorized

representative shall at all times have access to the works and to all workshops and places where work is being prepared or from where materials, manufactured articles or machinery are being obtained for the works and the contractor shall afford every facility and every assistance and cost in obtaining the right and visit to such access.

The Engineer-in-Charge shall have full powers to require the removal from the premises of all materials, which in his opinion are not in accordance with the specifications and in case of default, the Engineer-in-Charge shall be at liberty to employ at the expense of the contractor, other persons to remove the same without being answerable or accountable for any loss or damage that may happen or arise to such materials. The Engineer-in-Charge shall also have full power to require other proper materials to be substituted thereof and in case of default, the Engineer-in-Charge may cause the same to the supplies and all costs which may require such removal and substitution shall be borne by the contractor.

45.1 CEMENT AND CEMENT GODOWN

Cement shall be procured by Contractor confirming to BIS: 8112 Specification latest edition or higher Grade as directed by the Engineer-in-Charge. The cement shall be procured directly from the reputed manufacturers/ stockiest, which will have to be got approved from NPCC in advance. Relevant vouchers and test certificates will be produced as and when required. The cement shall be stored by the contractor in such suitable covered and lockable stores, well protected from climate and atmospheric affect. The cement godown shall be constructed by the contractor as per CPWD specifications at his own cost. The cement in bags shall be stored in godowns in easy countable position. Cement bags shall be used on first in first out basis. Cement stored for beyond 90 days will be required to be tested at contractors cost, before use in works.

46.2 STEEL & STEEL STOCKYARD

Steel confirming to BIS specifications (latest edition) shall be procured by the contractor directly from reputed manufacturers/producers as per approved list of NPCC. The manufacturer has to give a certificate that the material supplied is not a re-rolled product. The contractor will produce relevant vouchers & test certificates. Re-rolled sections will not be allowed.

Reinforcement steel, structural steel shall be stored and stacked in such manner so as to facilitate easy identification, removal etc. The contractor shall take proper care to prevent direct contact between the steel and the ground/ water for which he shall provide necessary arrangement at his own cost including ensuring proper drainage of area to prevent water logging as per directions of the Engineer-in-Charge. Steel shall also be protected, by applying a coat of neat cement slurry over the bars for which no extra payment shall be made.

Test certificates for each consignment of steel shall be furnished and tests to be got carried out from the authorized laboratory as per the directions of Engineer-in-Charge, before incorporating the materials in the work.

46.0 SCHEDULE OF QUANTITIES / BILL OF QUANTITIES/ QUANTITY VARIATION

46.1 The work under this contract shall be carried out as per BOQ cum rate schedule. In case the description /specification as per BOQ are found to be incomplete CPWD/MOST specifications shall be followed. Quantities mentioned in the rate schedule are approx. only and liable for variation due to change of scope of work/variation in schedule of quantities, changes in design etc. The tenderers shall under take to execute actual quantities as per advise of NPCC engineer and accordingly the final contract price shall be worked out on the basis of quantities actually executed at site in payments will also be regulated for the same. The quantities indicated

against each item may vary to any extent and no compensation will be payable in variation of individual quantity to the extent sanction is available.

46.2 All items of work in the bill of quantities/ schedule of quantities shall be carried out as per the CPWD/MOST specifications, drawings and instructions of the Engineer-in-Charge of NPCC and the rates shall include for supply of required materials including proper storage, consumables, skilled & unskilled labour, supervision and tools, tackles, plant & machinery complete as called for in the detailed specifications and conditions of the contract. The Contractor without the approval of the NPCC shall execute no item, which is not covered in the bill of quantities. In case any Extra/Substituted item is carried out without specific-approval, the same will not be paid.

47.0 ANTI-TERMITE TREATMENT & WATER PROOF TREATMENT

47.1 Pre-construction treatment shall be carried out in co-ordination with the building work and shall be executed in such a manner that the civil works are not hampered or delayed by the anti-termite treatment. The treatment shall be carried out as detailed in BIS:6313 (Part-II) latest revision. The waterproof treatment shall be of type and specifications as given in the schedule of quantities.

47.2 The treatment against water-proofing of basement, roofs, water retaining areas and termite infestation shall be and remain fully effective for a period of not less than 10(Ten) years to be reckoned from the date of expiring of the Defect Liability period, prescribed in the contract. At any time during the said guarantee period if NPCC finds any defects in the said treatment or any evidence of re-infestation, dampness, leakage in any part of buildings or structure and notifies the contractor of the same, the contractor shall be liable to rectify the defect or give re-treatment and shall commence the work or such rectification or re-treatment within seven days from the date of issue of such letter to him. If the contractor fails to commence such work within the stipulated period, the NPCC may get the same done by another agency at the Contractor's cost and risk and the decision of the Engineer-in-Charge of NPCC for the cost payable by the contractor shall be final and binding upon him.

47.3 Re-treatment if required shall be attended to and carried out by the Contractor within seven days of the notice from Engineer-in-Charge of NPCC.

47.4 The NPCC reserves the right to get the quality of treatment checked in accordance with recognized test methods and in case it is found that the chemicals with the required concentration and rate of application have not been applied, or the water proof treatment is not done as per specifications, the contractor will be required to do the re-treatment in accordance with the required concentration & specifications at no extra cost failing which no payment for such work will be made. The extent of work thus rejected shall be determined by NPCC.

47.5 Water proofing and anti-termite treatment shall be got done through approved / specialized agencies only with prior approval of Engineer-in-Charge.

47.5a. The contractor shall make such arrangement as may be necessary to safe guard the workers and residents of the building against any poisonous effect of the chemicals used during the execution of the work.

47.6 During the execution of work, if any damage shall occur to the treatment already done, either due to rain or any other circumstances, the same shall be rectified and made good to the entire satisfaction of Engineer-In-Charge by the contractor at his costs and risks.

47.7 The contractor shall make his own arrangement for all equipments required for the execution of the job.

47.8 The contractor whose tender is accepted shall execute guarantee Bond in the prescribed form as appended for guaranteeing the anti-termite treatment and water proof treatment.

48.0 INDIAN STANDARDS

Wherever any reference is made to any IS in any particular specifications, drawings or bill of quantities, it means the Indian Standards editions with the amendments current at the last date of receipt of tender documents.

49.0 CENTERING & SHUTTERING

Marine plywood only or steel plates of minimum thickness as approved by Engineer-in-Charge shall be used for formwork. The shuttering plates shall be cleaned and oiled after every repetition and shall be used only after obtaining approval of NPCC's Engineers at site. The number of repetitions allowed for plywood and steel shuttering shall be at the discretion of Engineer-in-Charge of NPCC depending upon the condition of shuttering surface after each use and the decision of Engineer-in-Charge in this regard shall be final and binding on the contractor. No claim whatsoever on this account shall be admissible.

50.0 PROPRIETARY MATERIALS

50.1 The following proprietary materials shall be brought to site after the approval of NPCC.
a) Water Proofing Compound
b) Cement
c) Steel
d) Bitumen
e) Primer/Paints/Varnish etc.
f) Chemical for anti termite treatment
g) Any other materials as per discretion of the NPCC.

50.2 The quantity of proprietary materials shall be measured and recorded in the Measurement books and signed by the Contractor and the Engineer-in-Charge as a check to ensure that the required quantities as required for execution of works as per specifications have to be brought to site for incorporation in the work.

50.3 Proprietary materials brought at site shall be stored as directed by NPCC and those already recorded in Measurement book, shall be suitably marked for identification.

50.4 The contractor shall ensure that the proprietary materials are brought to site in original sealed containers or packing bearing manufacturer's markings and brands (except where the quantity required is a fraction of the smallest packing). Materials not complying with this requirement shall be rejected. The empty containers of such proprietary materials shall not be destroyed/ disposed-off without the permission of NPCC.

50.5 The contractor shall produce receipted vouchers showing quantities of the materials to satisfy Engineer-in-Charge that the materials comply with the specifications. These vouchers shall be endorsed, dated and initialed by Engineer-in-Charge giving the contract number and name of work and a certified copy of each such voucher signed both by NPCC and the Contractor shall be kept on record.

51.0 RECORDS OF CONSUMPTION OF MATERIALS

51.1 For the purpose of keeping a record of materials (Steel & Cement) received at site and consumed in works, the contractor shall maintain a properly bound register in the form approved by the NPCC, showing columns like quantity received and used in work and balance in hand etc. This register shall be signed daily by the contractor's representative and NPCC's representative.

51.2 The register of material shall be kept at site in the safe custody of NPCC's Engineer during progress of the work. This provision will not, however, absolve the contractor from the quality of the final product.

51.3 In case cement or steel quantity consumed is lesser as compared to the theoretical requirement of the same as per MOST/CPWD (as the case may be) specifications/ norms, the work will be devalued and/ or a penal rate (i.e. double the rate at which cement/ steel purchased last) recovery for lesser consumption of cement/ steel shall be made in the rates of the work done subject to the condition that the tests results fall within the acceptable criteria as per MOST/CPWD (as the case may be) specifications otherwise the work shall have to be dismantled and redone by the contractor at no extra cost.

In case of cement, if actual consumption is less than 98% of the theoretical consumption, a recovery shall be effected from the contractor's dues at the penal rate(Prescribed under relevant clauses of I.S.Code) for the actual quantity, which is lower than 98% of theoretical consumption.

52.0 MATERIALS AND SAMPLES

52.1 The materials/ products used on the works shall be one of the approved make/ brands out of list of manufacturers/ brands/ makes given in the tender documents. The contractor shall submit samples/ specimens out of approved makes of materials/ products to the Engineer-in-Charge for prior approval. In exceptional circumstances Engineer-in-Charge may allow alternate equivalent makes/ brands of products/ materials at his sole discretion. The final choice of brand/ make shall remain with the Engineer-in-Charge, whose decision in this matter shall be final and binding and nothing extra on this account shall be payable to the Contractor.

In case no make or brand of any materials, articles, fittings and accessories etc. is specified, the same shall comply with the relevant Indian Standard Specifications and shall bear the ISI/BIS mark. The Engineer of NPCC and the owner shall have the discretion to check quality of materials and equipments to be incorporated in the work, at source of supply or site of work and even after incorporation in the work. They shall also have the discretion to check the workmanship of various items of work to be executed in this work. The contractor shall provide the necessary facilities and assistance for this purpose.

52.2 The above provisions shall not absolve the contractor from the quality of final product and in getting the material and workmanship quality checked and approved from the Engineer-in-Charge of NPCC.

52.3 The contractor shall well in advance, produce samples of all materials, articles, fittings, accessories etc. that he proposes to use and get them approved in writing by NPCC. The materials articles etc. as approved shall be labeled as such and shall be signed by NPCC and the Contractor's representative.

52.4 The approved samples shall be kept in the custody of the Engineer- in-Charge of NPCC till completion of the work. Thereafter the samples except those destroyed during testing shall be

returned to the contractor. No payment will be made to the contractor for the samples or samples destroyed in testing.

52.5 The brands of all materials, articles fittings etc. approved together with the names of the manufacturers and firms from which supplies have been arranged shall be recorded in the site order book.

52.6 The contractor shall set up and maintain at his cost, a field-testing laboratory for all day-to-day tests at his own cost to the satisfaction of the Engineer-in-Charge. This field-testing laboratory shall be provided with equipment and facilities to carry out all mandatory field tests as per MOST/CPWD (as the case may be) specifications. The laboratory building shall be constructed and installed with the appropriate facilities; Temperature and humidity controls shall be available wherever necessary during testing of samples.

All equipments shall be provided by the Contractor so as to be compatible with the testing requirements specified. The Contractor shall maintain all the equipments in good working condition for the duration of the contract.

The Contractor shall provide approved qualified personnel to run the laboratory for the duration of the Contract. The number of staff and equipment available must at all times be sufficient to keep pace with the sampling and testing programme as required by the Engineer-in-charge.

The Contractor shall fully service the site laboratory and shall supply everything necessary for its proper functioning, including all transport needed to move equipment and samples to and from sampling points on the site, etc. The Contractor shall re-calibrate all measuring devices whenever so required by the Engineer-in-charge and shall submit the results of such measurements without delay. All field tests shall be carried out in the presence of NPCC representative. All costs towards samples, materials, collection, transport, manpower, testing etc. shall be borne by the Contractor and are deemed to be included in the rates quoted by him in the bill of quantities.

53.0 TESTS AND INSPECTION

53.1 The contractor shall carry out the various mandatory tests as per specifications and the technical documents that will be furnished to him during the performance of the work.

All the tests on materials, as recommended by CPWD, MOST and relevant Indian Standard Codes or other standard specifications (including all amendments current at the last date of submission of tender documents) shall be got carried out by the contractor at the field testing laboratory or any other recognized institution/ laboratory, at the direction of the NPCC. All testing charges, expenses etc. shall be borne by the contractor.

All the tests, either on the field or outside laboratories concerning the execution of the work and supply of materials shall be got carried out by the contractor or NPCC at the cost of the Contractor.

53.2 WORKS TO BE OPEN TO INSPECTION

All works executed or under the course of execution in pursuance of this contract shall at all times be open to inspection and supervision of the NPCC. The work during its progress or after its completion may also be inspected, by Chief Technical Examiner of Government of India (CTE) and/ or an inspecting authority of State Government of State in which work is executed and/or by third party checks by owner/ clients. The compliance of observations/ improvements as

suggested by the inspecting officers of NPCC/CTE/ State authorities/ Owners shall be obligatory on the part of the Contractor at the cost of contractor.

54.0 BORROW AREAS

The contractor shall make his own arrangements for borrow pits and borrow disposal areas including their approaches and space for movement of man, machinery, other equipments as required for carrying out the works. The contractor shall be responsible for taking all safety measures, getting approval, making payment of royalties, charges etc. and nothing extra shall be paid to the contractor on this account and rates quoted by the contractor for various items of bill of quantities shall deemed to include the same.

55.0 BITUMEN WORK

55.1 The contractor shall collect the total quantity of tar or bitumen required for the work as per standard formula, before the process of painting started and shall hypothecate it to the Engineer-in-Charge. Although the materials are hypothecated to NPCC the Contractor undertakes the responsibility for their proper watch, safe custody and protection against all risks. The materials shall not be removed from site of work without the consent of the Engineer-in-charge in writing.

56.0 CARE OF WORKS

From the commencement to the completion of works and handing over, the contractor shall take full responsibility for care thereof all the works and in case of any damage/loss to the works or to any part thereof or to any temporary works due to lack of Precautions or due to negligence on part of Contractor, the same shall be made good by the Contractor.

57.0 WORK IN MONSOON AND DEWATERING

The execution of the work may entail working in the monsoon also. The contractor must maintain labour force as may be required for the job and plan and execute the construction and erection according to the prescribed schedule. No special/ extra rate will be considered for such work in monsoon. The contractor's rate shall be considered inclusive of cost of dewatering required if any and no extra rate shall be payable on this account.

58.0 NO COMPENSATION FOR CANCELLATION/ REDUCTION OF WORKS

If at any time after the commencement of the work the NPCC shall for any reason whatsoever is required to abandon the work or is not require the whole work thereof as specified in the tender to be carried out, the Engineer-in-Charge shall give notice in writing of the fact to the contractor, who shall have no claim to any payment of compensation whatsoever on account of any profit or advantage which he might have derived from the execution of the work in full, but which he did not derive in consequence of the full amount of the work not having been carried out or fore-closure, neither shall he have any claim for compensation by reason of any alterations having been made in the original specifications, drawings, designs and instructions which shall involve any curtailment of the work as originally contemplated. Provided that the contractor shall be paid the charges on the cartage only of materials actually and bonafide brought to the site of the work by the contractor and rendered surplus as a result of the abandonment or curtailment of the work or any portion thereof and then taken back by the contractor, provided however, that the Engineer-in-Charge shall have in all such cases the option of taking over all or any such materials at their purchase price or at local current rates whichever may be less. In the case of such stores having been issued by NPCC and returned by the Contractor to NPCC, credit will be

given to him by the Engineer-in-Charge at rates not exceeding those at which they were originally issued to him after taking into consideration any deduction for claims on account of any deterioration or damage while in the custody of the contractor and in this respect the decision of the Engineer-in-Charge shall be final.

59.0 RESTRICTION ON SUBLETTING

59.1 The contractor shall not sublet or assign the whole or part of the works except where otherwise provided, by the contract and even then only with the prior written consent of the NPCC and such consent if given shall not relieve the contractor from any liability or obligation under the contract and he shall be responsible for the acts, defaults or neglects of any sub-contractor, his agents, servants or workman as full as if they were the acts, defaults or neglects of the contractor, his agent, servants or workman provided always that the provision of labour on piece work basis shall not be deemed to be a subletting under this clause.

59.2 The contractor may entrust specialized items of works to the agencies specialized in the specific trade. The contractor shall give the names and details of such firm whom it is going to employ for approval of NPCC. These details shall include the expertise, financial status, technical manpower, equipment, and resources and list of works executed and on hand of the specialist agency.

60.0 PROHIBITION OF UNAUTHORISED CONSTRUCTION & OCCUPATION

No unauthorized buildings, construction of structures should be put up by the contractor anywhere on the project site, neither any building built by him shall be un-authorisedly occupied by him or his staff.

61.0 CO-ORDINATION WITH OTHER AGENCIES

Work shall be carried out in such a manner that the work of other Agencies operating at the site is not hampered due to any action of the Contractor. Proper Co-ordination with other Agencies will be Contractor's responsibility. In case of any dispute the decision of NPCC shall be final and binding on the contractor. No claim whatsoever shall be admissible on this account.

62.0 SETTING OUT OF THE WORKS

The contractor shall be responsible for the true and proper setting out of the works and for the correctness of the position, levels, dimensions and alignment of all parts of the works. If at any time during the progress of works, shall any error appear or arise in the position, levels, dimensions or alignment of any part of the works, the contractor shall at his own expenses rectify such error to the satisfaction of Engineer-in- charge. The checking of any setting out or of any line or level by the engineers of NPCC shall not in any way relieve the contractor of his responsibility for the correctness.

63.0 NOTICE BEFORE COVERING UP THE WORK

The contractor shall give not less than seven days notice before covering up or otherwise placing beyond the reach of measurement any work, to the Engineer-in-charge in order that the same may be inspected and measured. If any work is covered up or placed beyond the reach of Inspection/ measurement without such notice or his consent being obtained the same shall be uncovered at the contractor's expenses and he shall have to make it good at his own expenses.

64.0 SITE CLEARANCE

64.1 The contractor shall ensure that the working site is kept clean and free of obstructions for easy access to job site and also from safety point of view. Before handing over the work to the NPCC the contractor shall remove all temporary structures like the site offices, cement godown, stores, labour hutments etc., scaffolding rubbish, left over materials tools and plants, equipments etc., clean and grade the site to the entire satisfaction of the Engineer-in-charge. If this is not done the same will be got done by NPCCat his risk and cost.

64.2 The contractor shall clean all floors, remove cement/ lime/ paint drops and deposits, clean joinery, glass panes etc., touching all painter's works and carry out all other necessary items of works to make the premises clean and tidy before handing over the building, and the Percentage rates quoted by the contractor shall be deemed to have included the same.

65.0 VALUABLE ARTICLES FOUND AT SITE

All gold, silver and other minerals of any description and all precious stones, coins, treasure, relics, antiques and all other similar things which shall be found in, under or upon the site, shall be the property of the owner/ Government and the contractor shall duly preserve the same to the satisfaction of Engineer-in-charge and shall from time to time deliver the same to such person or persons indicated by the NPCC.

66.0 MATERIALS OBTAINED FROM DISMANTLEMENT TO BE OWNER'S PROPERTY

All materials like stone, boulders and other materials obtained in the work of dismantling, excavation etc. will be considered owner/ government property and may be issued to the contractor by the owner/ NPCC, if required for use in this work at rate s approved by NPCC or the contractor may be asked to dispose these items at his cost.

67.0 SET-OFF OF CONTRACTOR'S LIABILITIES

NPCC shall have the right to deduct or set off the expenses incurred or likely to be incurred by it in rectifying the defects and/or any claim under this agreement against the Contractor from any or against any amount payable to the contractor under this agreement including security deposit and proceeds of performance guarantee.

68.0 MATERIALS PROCURED WITH THE ASSISTANCE OF NPCC

If any material for the execution of this contract is procured with the assistance of NPCC either by issue from its stores or purchase made under orders or permits or licenses obtained by NPCC, the contractor shall hold and use the said materials economically and solely for the purpose of this contract and shall not dispose them without the permission of Engineer-in-charge. The contractor, if required by the NPCC, shall return all such surplus or unserviceable materials that may be left with him after the completion of the contract or at its termination on whatsoever reason, on being paid or credited such price as the NPCC shall determine having due regard to the conditions of materials.

69.0 ALTERATION IN SPECIFICATION, DESIGN & DRAWING

69.1 The Engineer-in-Charge shall have power to make any alterations in, omissions from, additions to or substitutions for, the original specifications, drawings, designs and instructions that may appear to him to be necessary during the progress of the work, and the contractor shall carry out the work in accordance with any instructions which may be given to him in writing signed by the Engineer-in-Charge and such alterations, omissions, additions, or substitutions shall not

invalidate the contract and any altered, additional or substituted work which the contractor may be directed to do in the manner above specified as part of the work shall be carried out by the contractor on the same conditions in all respects on which he agreed to do the main work. The time for the completion of the work shall be extended in the proportion that the altered, additional or substituted work bears to the original contract work, and the certificate of the Engineer-in-Charge shall be conclusive as to such proportion. Over and above this, a further period to the extent of 25 percent of such extension shall be allowed to the contractor. The rates for such additional, altered or substituted work under this clause shall be worked out in accordance with the following provisions in their respective order:

i) The rates for the additional, altered or substituted work are specified in the contract for the work, the contractor is bound to carry out the additional, altered or substituted work at the same rates as are specified in the contract for the work.

ii) If the rates for the additional, altered or substituted work are not specifically provided in the contract for the work, the rates will be derived from the rates for a nearest similar item of work as are specified in the contract for the work. In case of composite tenders where two or more schedule of quantities/ bill of quantities form part of the contract, the rates shall be derived from the nearest similar item in the schedule of quantities / bill of quantities of the particular part of work in which the deviation is involved failing that from the lowest of the nearest similar item in other schedule of quantity. The opinion of the Engineer-in-Charge as to whether or not the rate can be reasonably so derived from the item in this contract will be final and binding on the contractor.

iii) If the altered, additional or substituted work includes any work for which no rate is specified in the contract for the work and which cannot be derived in the manner specified in sub para (i) and (ii) from the similar class of work in the contract then such work shall be carried out at the rates entered in the Schedule of rates (DSR-2007 including cost index considered in tender) plus the percentage above or below to the quoted rates.

iv) If the rates for the altered, additional or substituted work cannot be determined in the manner specified in sub-clauses (i) to (iii) above, then the contractor shall, within 7 days of the date of receipt of order to carry out the work, inform the Engineer-in-Charge of the rate which it is his intention to charge for such class of work, supported by analysis of the rate or rates claimed, and the Engineer-in-Charge shall determine the rate or rates on the basis of prevailing market rates of the material, Labour, T&P etc. plus 10% (Ten percent) to cover the contractors supervision, overheads and profit and pay the contractor accordingly. The opinion of the Engineer-in-Charge as to the current market rates of materials and quantum of labour involved per unit of measurements will be final and binding on the contractor.

However, the Engineer-in-Charge, by notice in writing, will be at liberty to cancel his order to carry out such class of work and arrange to carry it out in such manner as he may consider advisable. But under no circumstances, the contractor shall suspend the work on the plea of non-settlement of rates of items falling under the clause.

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70.0 ACTION AND COMPENSATION PAYABLE IN CASE OF BAD WORK

If it shall appear to the Engineer-in-Charge or his authorized subordinate in charge of the work or to the Chief Technical Examiner or to any other inspecting agency of Government/ State Government/ Owner where the work is being executed, that any work has been executed with unsound, imperfect, or unskillful workmanship or with materials of any inferior description, or that any materials or articles provided by him for the execution of the work are unsound or of a quality inferior to that contracted for or otherwise not in accordance with the contract, the

contractor shall on demand in writing which shall be made within six months of the completion of the work from the Engineer-in-Charge specifying the work, materials or articles complained of notwithstanding that the same may have been passed, Certified and paid for forthwith rectify, or remove and reconstruct the work so specified in whole or in part as the case may require or as the case may be, remove the materials or articles so specified and provide other proper and suitable materials or articles at his own proper charge and cost, and in the event of his failing to do so within a period to be specified by the Engineer-in-Charge in his demand aforesaid, then the Contractor shall be liable to pay compensation at the rate of one percent of the estimated amount put to tender for every day not exceeding ten days, while his failure to do so shall continue and in the case of any such failure, the Engineer-in-Charge may rectify or remove and re-execute the work or remove and replace with others, the material or articles complained of as the case may be at the risk and expense in all respects of the contractor.

71.0 POSSESSION PRIOR TO COMPLETION

71.1 NPCC shall have the right to take possession of or use any completed or partially completed work or part of the work. Such possession or use shall not be deemed to be any acceptance of any work not completed in accordance with the contract agreement. If such prior possession or use by NPCC delays the progress of work an equitable adjustment in the time of completion will be made and the contract agreement shall be deemed to be modified accordingly. The decision of NPCC in this case shall be final binding and conclusive.

71.2 When the whole of the works or the items or the groups of items of work for which sepa rate periods of completion have been specified have been completed the contractor will give a notice to that effect to the Engineer-in-Charge in writing. The Engineer in-Charge shall within 7 days of the date of receipt of such notice inspect the works and either the Engineer-in-Charge issues to the contractor a completion certificate stating the date on which in his opinion the works were completed in accordance with the contract or gives instructions in writing to the contractor specifying the balance items of work which are required to be done by the contractor before completion certificate could be issued. The Engineer-in-Charge shall also notify the contractor of any defect in the works affecting completion.

71.3 The contractor shall during the course of execution prepare and keep updated a complete set of ‘as built’ drawings to show each and every change from the contract drawings, changes recorded shall be countersigned by the Engineer-in-Charge and the contractor. Four copies of ‘as built’ drawings shall be supplied to NPCC by the contractor within 30 days of the completion. All costs incurred in this respect shall be borne by the contractor only.

72.0 COMPENSATION FOR DELAY AND REMEDIES

72.1 If the contractor fails to maintain the required progress in terms of relevant clause of Special Conditions of Contract, to complete the work and clear the site on or before the contract or extended date of completion, he shall, without prejudice to any other right or remedy available under the law to the NPCC on account of such breach, pay as agreed compensation the amount calculated at the rates stipulated below or such smaller amount as the Engineer in charge (whose decision in writing shall be final and binding) may decide on the amount of tendered value of the work for every completed day / week (as applicable) that the progress remains below that specified in the relevant clause in Special Conditions of Contract or that the work remains incomplete. This will also apply to items or group of items for which a separate period of completion has been specified.

i) Completion period (as originally stipulated) not exceeding 3 month @ 1% per day

ii) Completion period (as originally stipulated) exceeding 3 months @ 1% per week

Provided always that the total amount of compensation for delay to be paid under this Condition shall not exceed 10% of the Tendered Value of work or of the Tendered Value of the item or group of items of work for which a separate period of completion is originally given. The amount of compensation may be adjusted or set-off against any sum payable to the Contractor under this or any other contract with NPCC.

72.2 CANCELLATION / DETERMINATION OF CONTRACT IN FULL OR PART

Subject to other provisions contained in this clause the Engineer-in-Charge may, without prejudice to his any other rights or remedy against the contractor in respect of any delay, inferior workmanship, any claims for damages and / or any other provisions of this contract or otherwise, and whether the date of completion has or has not elapsed, by notice in writing absolutely determine the contract in any of the following cases:

i) If the contractor having been given by the Engineer-in-Charge a notice in writing to rectify, reconstruct or replace any defective work or that the work is being performed in an inefficient or otherwise improper or un-workmanlike manner shall omit to comply with the requirement of such notice for a period of seven days thereafter; or

ii) If the contractor has, without reasonable cause, suspended the progress of the work or has failed to proceed with the work with due diligence so that in the opinion of the Engineer-in-Charge (which shall be final and binding) he will be unable to secure completion of the work by the date for completion and continues to do so after a notice in writing of seven days from the Engineer-in-Charge; or

iii) If the contractor fails to complete the work within the stipulated date or items of work with individual date of completion, if any stipulated, on or before such date(s) of completion and does not complete them within the period specified in a notice given in writing in that behalf by the Engineer-in-Charge; or

iv) If the contractor persistently neglects to carry out his obligations under the contract and / or commits default in complying with any of the terms and conditions of the contract and does not remedy it or take effective steps to remedy it within 7 days after a notice in writing is given to him in that behalf by the Engineer-in-Charge; or

v) If the contractor shall offer or give or agree to give to any person in NPCC service or to any other person on his behalf any gift or consideration of any kind as an inducement or reward for doing or forbearing to do or for having done or forborne to do any action in relation to the obtaining or execution of this or any other contract from NPCC; or
vi) If the contractor shall obtain a contract with NPCC as a result of wrong tendering or other non-bona-fide methods of competitive tendering; or

vii) If the contractor being an individual, or if a firm, any partner thereof shall at any time be adjudged insolvent or have a receiving order or order for administrative of his estate made against him or shall take any proceedings for liquidation or composition (other than a voluntary liquidation for the purpose of amalgamation or reconstruction) under any Insolvency Act for the time being in force or make any conveyance or assignment of his effects or composition or arrangement for the benefit of his creditors or purport so to do, or if any application be made under any Insolvency Act for the time being in force for the sequestration of his estate or if a trust deed be executed by him for benefit of his creditors;or.

viii) If the contractor being a company, shall pass a resolution or the Court shall make an order for the winding up of the company, or a receiver or manager on behalf of the debenture holders or otherwise shall be appointed or circumstances shall arise which entitle the Court or debenture holders to appoint a receiver or manager; or

ix) If the contractor shall suffer an execution being levied on his goods and allow it to be continued for a period of 21 days; or

x) If the contractor assigns, transfers, sublets (engagement of labour on a piece-work basis or of the labour with materials not to be incorporated in the work, shall not be deemed to be subletting) or otherwise parts with or attempts to assign, transfer, sublet or otherwise parts with the entire works or any portion thereof without and prior written approval of the Engineer-in-Charge.

xi) When the contractor has made himself liable for action under any of the cases aforesaid, the Engineer-in-Charge may without prejudice to any other right or remedy which shall have accrued or shall accrue hereafter to NPCC, by a notice in writing, cancel the contract as a whole or only such items of work in default from the Contract.

The Engineer-in-Charge shall on such cancellation by the NPCC have powers to:

a) Take possession of site and any materials, constructional plant, implements, stores, etc. thereon; and/ or

b) Carry out the incomplete work by any means at the risk and cost of the contractor; and/ or

c) To determine or rescind the contract as aforesaid (of which termination or rescission notice in writing to the contractor under the hand of the Engineer-in-Charge shall be conclusive evidence). Upon such determination or rescission the full security deposit recoverable under the contract shall be liable to be forfeited and un-used materials, construction plants, implements, temporary buildings, etc. shall be taken over and shall be absolutely at the disposal of the NPCC. If any portion of the Security Deposit has not been paid or received it would be called for and forfeited; and/ or

d) To employ labour paid by the Department and to supply materials to carry out the work or any part of the work debiting the contractor with the cost of the labour and the price of the materials (of the amount of which cost and price certified by the Engineer-in-Charge shall be 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 rates as if it had been carried out by the contractor under the terms of his contract. The certificate of the Engineer-in-Charge as to the value of the work done shall be final and conclusive against the contractor provided always that action under the sub-clause shall only be taken after giving notice in writing to the contractor. Provided also that if the expenses incurred by the department are less than the amount payable to the contractor at his agreement rates, the difference shall not be paid to the contractor; and/ or

e) After giving notice to the contractor to measure up the work of the contractor and to take such whole, or the balance or part thereof as shall be un-executed or delayed with reference to the General Conditions of Contract clause / relevant clause of Special Conditions of Contract, 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 (of the amount of which excess the certificate in writing of the Engineer-in-Charge shall be final and conclusive) shall be borne and paid by the

original contractor and may be deducted from any money due to him by NPCC under his contract or on any other account whatsoever or from his security deposit or the proceeds of sales of unused materials, construction plants, implements temporary buildings etc. thereof or a sufficient part thereof as the case may be. If the expenses incurred by the NPCC are less than the amount payable to the contractor at his agreement rates, the difference shall not be paid to the contractor; and/ or

f) By a notice in writing to withdraw from the contractor any items or items of work as the Engineer-in-charge may determine in his absolute discretion and get the same executed at the risk and cost of the contractor.

Any excess expenditure incurred or to be incurred by NPCC in completing the works or part of the works or the excess loss or damages suffered or may be suffered by NPCC as aforesaid after allowing such credit shall without prejudice to any other right or remedy available to NPCC in law be recovered from any moneys due to the contractor on any account, and if such moneys are not sufficient the contractor shall be called upon in writing and shall be liable to pay the same within 30 days.

If the contractor shall fail to pay the required sum within the aforesaid period of 30 days, the Engineer-in-Charge shall have the right to sell any or all of the contractor's unused materials, constructional plant, implements, temporary buildings, etc. and apply the proceeds of sale thereof towards the satisfaction of any sums due from the contractor under the contract and if thereafter there be any balance outstanding from the contractor, it shall be recovered in accordance with the provisions of the contract and law.

Any sums in excess of the amounts due to NPCC and unsold materials, constructional plant etc. shall be returned to the contractor, provided always that if cost or anticipated cost of completion by NPCC of the works or part of the works is less than the amount which the contractor would have been paid had he completed the works or part of the works, such benefit shall not accrue to the contractor.

In the event of anyone or more of the above courses being adopted by the Engineer-in-Charge the contractor shall have no claim to compensation for any loss sustained by him by reasons of his having purchased or procured any materials or entered into any engagements or made any advances on account or with a view to the execution of the work or the performance of the contract. And in case action is taken under any of the provision aforesaid the contractor shall not be entitled to recover or be paid any sum for any work thereof or actually performed under this contract unless and until the Engineer-in-Charge has 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. Provided further that if any of the recoveries to be made, while taking action as per (d) and/or (e) above, are in excess of the security deposit forfeited, these shall be limited to the amount by which the excess cost incurred by the Department exceeds the security deposit so forfeited.

72.3 CONTRACTOR LIABLE TO PAY COMPENSATION EVEN IF ACTION IS NOT TAKEN

In any case in which any of the powers conferred upon the Engineer-in-Charge by relevant clause thereof, shall have become exercisable and the same are not exercised, the non-exercise thereof shall not constitute a waiver of any of the conditions hereof and such powers shall notwithstanding be exercisable in the event of any future case of default by the contractor and the liability of the contractor for compensation shall remain unaffected. In the event of the Engineer-in-Charge putting in force all or any of the powers vested in him under the preceding clause he may, if he so desires after giving a notice in writing to the contractor, take possession

of (or at the sole discretion of the Engineer-in-Charge which shall be final and binding on the contractor) use as on hire (the amount of the hire money being also in the final determination of the Engineer-in-Charge) all or any tools, plant, materials and stores, in or upon the works, or the site thereof belonging to the contractor, or procured by the contractor and intended to the used for the execution of the work / or any part thereof, paying or allowing for the same in account at the contract rates, or in the case of these not being applicable, at current market rates to be certified by the Engineer-in-Charge, whose certificate thereof shall be final, and binding on the contractor and/or direct the contractor or his authorized agent to remove such tools, plant, materials, or stores from the premises (within a time to be specified in such notice) in the event of the contractor failing to comply with any such requisition, the Engineer-in-Charge may remove them at the contractor's expense or sell them by auction or private sale on account of the contractor and his risk in all respects and the certificate of the Engineer-in-Charge as to the expenses of any such removal and the amount of the proceeds and expenses of any such sale shall be final and conclusive against the contractor.

72.4 TIME ESSENCE OF CONTRACT & EXTENSION FOR DELAY

The time allowed for execution of the Works as specified in the terms of contract or the extended time in accordance with these conditions shall be the essence of the contract. The execution of the works shall commence from the 10th Day or such time period as mentioned in letter of Intent/ award after the date on which the Engineer-in-Charge issues written orders to commence the work. If the Contractor commits default in commencing the execution of the work as aforesaid, the Executing Agency shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the earnest money absolutely.

72.4.1 Within 10 (Ten) days of Letter of Intent, the Contractor shall submit a Time and Progress Chart (CPM/ PERT/ Quantified Bar Chart) along with quarterly milestones and resources plan for man, material & machinery to achieve the milestones and get it approved by the Engineer-in-Charge. The Chart shall be prepared in direct relation to the time stated in the contract documents for completion of items of the works. It shall indicate the forecast (mile-stones) of the dates of commencement and completion of various items, trades, sections of the work and may be amended as necessary by agreement between the Engineer-in-Charge and the Contractor within the limitations of time stipulated in the Contract documents, and further to ensure good progress during the execution of the work.

The compensation for delay as per clause no. 72 shall be leviable at intermediate stages also, in case the required progress is not achieved to meet the above time deadlines of the completion period and/ or milestones of time and progress chart, provided always that the total amount of Compensation for delay to be paid under this condition shall not exceed 10% of the tendered value of work".

72.4.2 If the work(s) be delayed by:

i) force-majeure or
ii) abnormally bad weather, or
iii) serious loss or damage by fire, or
iv) civil commotion of workmen, strike or lockout, affecting any of the trades employed on the work, or
v) delay on the part of other contractors or tradesmen engaged by Engineer-in-Charge in executing work not forming part of the Contract, or
vi) non-availability of stores, which are responsibility of the NPCC or,
vii) non availability or break down of tools and plant to be supplied or supplied by NPCC or,
viii) any other cause which, in the absolute discretion of the NPCC, is beyond the Contractor's control, then upon the happening of any such event causing delay, the Contractor shall

immediately give notice thereof in writing to the Engineer-in-Charge but shall nevertheless use constantly his best endeavors to prevent or make good the delay and shall do all that may be reasonably required to the satisfaction of the Engineer-in-Charge to proceed with the works.

72.4.3 Request for extension of time, to be eligible for consideration, shall be made by the contractor in writing with in fourteen days of the happening of the event causing delay on the prescribed form. The Contractor will indicate in such a request the period for which extension is desired. In any such case NPCC may give a fair and reasonable extension of time for completion of work. Such extension shall be communicated to the Contractor by the Engineer-in-Charge in writing, within 3 months of the date of receipt of such request.

73.0 WITHHOLDING AND LIEN IN RESPECT OF SUMS DUE FROM CONTRACTOR

73.1 Whenever any claim or claims for payment of a sum of money arises out of or under the contract against the contractor, NPCC shall be entitled to withhold and also have a lien to retain such sum or sums in whole or in part from the security, if any, deposited by the contractor and for the purpose aforesaid, NPCC shall be entitled to withhold the security deposit, if any, furnished as the case may be and also have a lien over the same pending finalization or adjudication of any such claim. In the event of the security being insufficient to cover the claimed amount or amounts or if no security has been taken from the contractor, NPCC shall be entitled to withhold and have a lien to retain to the extent of such claimed amount or amounts referred to above, from any sum or sums found payable or which may at any time thereafter become payable to the contractor under the same contract or any other contract with NPCC pending finalization or adjudication of any such claim.

73.2 It is an agreed term of the contract that the sum of money or moneys so withheld or retained under the lien referred to above by the Engineer-in-Charge or NPCC will be kept withheld or retained as such by the Engineer-in-Charge or NPCC till the claim arising out of or under the contract is determined by the competent court and that the contractor will have no claim for interest or damages whatsoever on any account in respect of such withholding or retention under the lien referred to above and duly notified as such to the contractor. For the purpose of this clause, where the contractor is a partnership firm or a limited company, the Engineer-in-Charge or the NPCC shall be entitled to withhold and also have a lien to retain towards such claimed amount or amounts in whole or in part from any sum found payable to any partner/limited company, as the case may be whether in his individual capacity or otherwise.

NPCC shall have the right to cause an audit and technical examination of the works and the final bills of the contractor including all supporting vouchers, abstract, etc, to be made after payment of the final bill and if as a result of such audit and technical examination any sum is found to have been overpaid in respect of any work done by the contractor under the contract or any work claimed to have been done by him under the contract and found not to have been executed, the contractor shall be liable to refund the amount of over-payment and it shall be lawful for NPCC to recover the same from him in the manner prescribed in Clause 51.1 above or in any other manner legally permissible; and if it is found that the contractor was paid less than what was due to him under the contract in respect of any work executed by him under it, the amount of such under payment shall be duly paid by NPCC to the contractor, without any interest thereon whatsoever.

73.3 LIEN IN RESPECT OF CLAIMS IN OTHER CONTRACTS

Any sum of money due and payable to the contractor (including the security deposit returnable to him) under the contract may be withheld or retained by way of lien by the Engineer-in-Charge or by NPCC against any claim of the Engineer-in-Charge or NPCC in respect of payment of a sum

of money arising out of or under any other contract made by the contractor with the Engineer-in-Charge or the NPCC. It is an agreed term of the contract that the sum of money so withheld or retained under this clause by the Engineer-in-Charge or the NPCC will be kept withheld or retained as such by the Engineer-in-Charge or the NPCC or till his claim arising out of the same contract or any other contract is either mutually settled or determined by the arbitration clause or by the competent court, as the case may be, and that the contractor shall have no claim for interest or damages whatsoever on this account or on any other ground in respect of any sum of money withheld or retained under this clause and duly notified as such to the contractor.

74.0 DEFECTS LIABILITY PERIOD

The contractor shall be responsible for the rectification of defects in the works for a period of twelve months from the date of taking over of the works by the Owner/ Client. Any defects discovered and brought to the notice of the contractor forthwith shall be attended to and rectified by him at his own cost and expense. In case the contractor fails to carry out these rectifications, the same may without prejudice to any other right or remedy available, be got rectified by NPCC at the cost and expense of the contractor.

75.0 FORCE MAJEURE

Any delay in or failure of the performance of either party hereto shall not constitute default hereunder to give rise to any claims for damages, if any to the Extent such delay or failure of performance is caused by occurrences such as acts of God or the public enemy, expropriation, compliance with any order or request of Government authorities, acts of war, rebellions, sabotage fire, floods, strikes, or riots (other than contractor's employees). Only extension of time shall be considered for Force Majeure conditions as accepted by NPCC. No adjustment in contract price shall be allowed for reasons of force majeure.

76.0 ARBITRATION - Deleted

76.1 JURIDICTION

The agreement shall be executed at New Delhi on non-judicial stamp paper purchased in Delhi and the Courts at Delhi/New Delhi alone will have jurisdiction to deal with matters arising there from, to the exclusion of all other courts.

77.0 SUSPENSION OF WORKS

(a) The contractor shall, on receipt of the order in writing of the Engineer-in-charge, suspend the progress of the works or any part thereof for such time and in such manner as the Engineer-in-charge may consider necessary for any of the following reasons:

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

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

iii) For safety of the works or part thereof.

The contractor shall, during such suspension, properly protect and secure the works to the extent necessary and carry out the instructions given in that behalf by the Engineer-in-charge.

(b) If the suspension is ordered for reasons (ii) and (iii) in sub-para (a) above.

i) The contractor shall be entitled to an extension of the time equal to the period of every such suspension plus 25%. No adjustment of contract price will be allowed for reasons of such suspension.

ii) In the event of the Contractor treating the suspension as an abandonment of the Contract by NPCC, he shall have no claim to payment of any compensation on account of any profit or advantage which he may have derived from the execution of the work in full.

78.0 TERMINATION OF CONTRACT ON DEATH OF CONTRACTOR

Without prejudice to any of the right or remedies under this contract if the contractor dies, the Engineer-in-charge shall have the option of terminating the contract without compensation to the contractor.

79.0 CLARIFICATION AFTER TENDER SUBMISSION

Tenderer's attention is drawn to the fact that during the period, the bids are under consideration, the bidders are advised to refrain from contacting by any means, the

NPCC and/or his employees/ representatives on matters related to the bid under consideration and that if necessary, NPCC will obtain clarifications in writing or as may be necessary. Duly authorized Tender Scrutiny Committee does the tender evaluation and process of award of works and this committee is authorised to discuss and get clarification from the tenderers.

80.0 ADDENDA/ CORRIGENDA

Addenda/Corrigenda to the tender documents may be issued prior to the date of opening of the tender to clarify or effect modification in specification and/or contract terms included in various tender documents. The tenderer shall suitably take into consideration such Addenda/Corrigenda while submitting his tender. The tenderer shall return such Addenda/ Corrigenda duly signed and stamped as confirmation of its receipt and submit along with the tender document. All addenda/ Corrigenda shall be signed and stamped on each page by the tenderer and shall become part of the tender and contract documents.

81.0 QUALITY ASSURANCE PROGRAMME

To ensure that the services under the scope of this contract are in accordance with the specifications, the Contractor shall adopt Quality Assurance Programme to control such activities at the necessary points. The contractor shall prepare and finalise such Quality Assurance Programme within 15 days from letter of intent. NPCC shall also carryout quality audit and quality surveillance of systems and procedures of Contractor's quality control activities. A Quality Assurance Programme of Contractor shall generally cover the following:

a) His organization structure for the management and implementation of the proposed Quality Assurance Program.

b) Documentation control system.

c) The procedure for purpose of materials and source inspection.

d) System for site controls including process controls.

e) Control of non-conforming items and systems for corrective actions.

f) Inspection and test procedure for site activities.

g) System for indication and appraisal of inspection status.

h) System for maintenance of records.

i) System for handling, storage and delivery.

j) A quality plan detailing out quality practices and procedures, relevant standards and acceptance levels for all types of work under the scope of this contract.

The Contractors in the formats appended hereto shall submit all the quality reports. Checklist enclosed here in this document shall be followed while carrying out Construction activities (items). If any item is not covered by the Checklist/ Formats appended hereto, the Format for the same may be developed and submitted to Engineer-in-Charge for approval and the same shall be adopted. These filled in formats shall be prepared in two copies and duly signed by representatives of contractor and NPCC. All the costs associate with Printing of Formats and testing of materials required as per technical specifications or by Engineer-in-charge shall be included in the Contractor's quoted rates in the Schedule/ Bill of quantities.

82.0 APPROVAL OF TEMPORARY / ENABLING WORKS

The setting and nature of all offices, huts, access road to the work areas, and all other temporary works as may be required for the proper execution of the works shall be subject to the approval of the Engineer-in-charge.

All the equipments, labour, material including cement, reinforcement and the structural steel required for the enabling/ temporary works associated with the entire Contract-shall have to be arranged by the Contractor only. Nothing extra shall be paid to the Contractor on this account and the percentage rates quoted by the Contractor for various items in the Bill of Quantities shall be deemed to include the cost of enabling works.

83.0 CONTRACT COORDINATION PROCEDURES, COORDINATION MEETINGS AND PROGRESS REPORTING

The Contractor shall prepare and finalize in consultation with NPCC, a detailed contract coordination procedure within 15 days from the date of issue of Letter of Intent for the purpose of execution of the Contract.

The Contractor shall have to attend all the meetings at any place in India at his own cost with NPCC, Owners/ Clients or Consultants of NPCC/ Owner/ Client during the currency of the Contract, as and when required and fully cooperate with such persons and agencies involved during these iscussions. The Contractor shall not deal in any way directly with the Clients/ Owners or Consultants of NPCC/ Owner/ Clients and any dealing/ correspondence if required at any time with Clients/ Owners/ Consultants shall be through NPCC only.

During the execution of the work, Contractor shall submit at his own cost a detailed Monthly progress report to the Engineer-in-charge of NPCC by 5th of every month. The format of monthly progress report shall be as approved by Engineer-in-Charge of NPCC.

84.0 CONTRACT AGREEMENT

The Contractor shall enter into a Contract Agreement with the NPCC within 20 days from the date of receipt of Letter of Intent or within such extended time, as may be granted by the NPCC. The cost of stamp papers, stamp duty, registration, if applicable on the contract, shall be borne by the Contractor. Incase, the contractor does not sign the agreement as above or start the work within 10 days of the receipt of letter of intent, his earnest money is liable to be forfeited and letter of intent consequently will stand withdrawn.

85.0 MANNER OF EXECUTION OF AGREEMENT

i. The contract agreement as per prescribed Proforma as enclosed to the tender documents shall be signed at the office of the NPCC within 20 days from the date of receipt of Letter of Intent. The Contractor shall produce for signing of the Contract, appropriate Power of Attorney and the requisite documents/materials. Unless and until a formal contract is prepared and executed, the Letter of Intent read in conjunction with the Bidding Documents will constitute a binding contract.

ii. The agreement will be signed in five originals and the Contractor shall be provided with one signed original and the other four originals will be retained by the NPCC. Contractor has to provide 05 (five) nos. of non-judicial stamp papers of requisite value purchased from Delhi.

iii. The Contractor shall deposit the amount in the form of demand draft in favour of N.P.C.C. Ltd. Payable at Faridabad with in seven days of issuance of LOI/LOA equal to the twice of the tender cost in lieu to the preparation of contract agreement.

86.0 PURCHASE PREFERENCE TO PUBLIC SECTOR ENTERPRISES

NPCC reserves its right to extend Purchase Preference to Central Public Sector Enterprises (CPSE s) as per policy of Government of India, if any, as applicable on this work. The tenderers are requested to go through latest instructions of Government of India on its preference policy for CPSU s before quoting for the tender.

87.0 CHANGE IN FIRM'S CONSTITUTION TO BE INTIMATED

Where the contractor is a partnership firm, the previous approval in writing of the Engineer-in-Charge shall be obtained before any change is made in the constitution of the firm. Where the contractor is an individual or a Hindu undivided family business concern such approval as aforesaid shall likewise be obtained before the contractor enters into any partnership agreement where under the partnership firm would have the right to carry out the works hereby undertaken by the contractor. If previous approval as aforesaid is not obtained, the contract shall be deemed to have been assigned in contravention of Clause 59.1 hereof and NPCC shall be entitled to take action under Clause 72.2 (xi).

LABOUR SAFETY PROVISION

The contractor shall be fully responsible to observe the labour safety provisions as per prevailing act and amended from time to time.

1.0 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, suitable footholds and handholds shall be provided on the ladder and the ladder shall be given an inclination not steeper than 1/4 to 1 (1/4 horizontal and 1 vertical).

2.0 Scaffolding or staging more than 3.6m (12 feet) above the ground or floor, swung or suspended from an overhead support or erected with stationery support shall have a guard rail properly attached or bolted, braced and otherwise secured at least 90 cm. (3 feet) 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 opening 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.

3.0 Working platforms, gangways, and stairways should be so constructed that they should not sag unduly or unequally, and if the height of the platform or the gangway or the stairway is more than 3.6m (12 feet) above ground level or floor level, they should be closely boarded, should have adequate width & should be suitable fastened as described in (2.0) above.

4.0 Every opening in the floor of a building or in a working platform shall be provided with suitable means to prevent the fall of persons or materials by providing suitable fencing or railing whose minimum height shall be 90 cm (3 feet).

5.0 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 9m. (30 feet) in length while the width between side rails in rung ladder shall in no case be less than 29 cm. for ladder up to and including 3m (10 feet) in length. For longer ladders this width should be increased at least 1/4" for each additional 30 cm (1 ft.) of length. Uniform step spacing shall not exceed 30 cm (12"). Adequate precautions shall be taken to prevent danger from electrical equipment. No materials on any of the sites of the work shall be so stacked or placed as to cause danger or inconvenience to any person or the public. The contractor shall provide all necessary fencing and lights to protect the public from accident, and shall be bound to bear the expenses of defence of every suit, action or other proceeding at law that may be brought by an person for injury sustained owing to neglect of the above precautions and to pay any damages and cost which may be awarded in any such suit, action or proceedings to any such person or which may, with the consent of the Contractor, be paid to compensate any claim by any such person.

6.0 EXCAVATION AND TRENCHING

All trenches, 1.2mts.(four feet) or more in depth, shall at all times be supplied with at least one ladder for each 30m. (100 feet) in length or fraction thereof, Ladder shall be extended from bottom of the trench to at least 90 cm (3feet) above the surface of the ground. The side of the trenches, which are 1.5m. (5feet) or more in depth shall be stepped back to give suitable slope or securely held by timber bracing, so as to avoid the danger or sides to collapsing. The excavated materials shall not be placed within 1.5m (5 feet) of the edges of the trench or half of

the depth of the trench whichever is more. Cutting shall be done from top to bottom. Under no circumstances undermining or undercutting shall be done.

7.0 DEMOLITION –

Before any demolition work is commenced and also during the progress of the work:

a) All roads and open areas adjacent to the work site shall either be closed or suitably protected.
b) No electric cable or apparatus that is likely to be a source of danger or 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 overloaded with debris or materials as to render it unsafe.

8.0 All necessary personal safety equipments as considered adequate by the Engineer-in-charge should be kept available for the use of persons employed on the site and maintained in a condition suitable for immediate use, and the contractor should take adequate step to ensure proper use of equipment by those concerned- The following safety equipment shall be invariably provided.

8.1 Workers employed on mixing asphaltic materials, cement and lime mortars shall be provided with protective footwear and protective goggles.

8.2 Those engaged in white washing and mixing or stacking of cement bags or any materials that are injurious to the eye shall be provided with protective goggles.

8.3 Those engaged in welding works shall be provided with welders protective eye shields.

8.4 Stone breakers shall be provided with protective goggles and protective clothing and seated at sufficiently safe interval.

8.5 When workers are employed in sewers and manholes, which are in active use, the Contractors shall ensure that the manhole covers are opened and 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 or boards to prevent accident the public. In addition, the contractor shall ensure that the following safety measures are adhered to:

a. Entry for workers into the line shall not be allowed except under supervision of the JE or any other higher officer

b. At least 5 to 6 manholes upstream and down stream should be kept open for at least 2 to 3 hours before any man is allowed to enter into the manholes for working inside.

c. Before entry, presence of Toxic gases should be tested by inserting wet lead acetate paper, which changes colour in the presence of such gases and gives indication of their presence.

d. Presence of Oxygen should be verified by lowering a detector lamp into the manhole. In case, no Oxygen is found inside the sewer line, workers should be sent only with Oxygen kit.

e. Safety belt with rope should be provided to the workers. While working inside the manholes such rope should be handled by two men standing outside to enable him to be pulled out during emergency.

f. The area should be barricaded or cordoned of by suitable means to avoid mishaps of any kind. Proper warning signs should be displayed for the safety of the public whenever cleaning works are undertaken during night or day.

g. No smoking or open flames shall be allowed near the blocked manhole being cleaned.

h. The malba obtained on account of cleaning of blocked manholes and sewer lines should be immediately removed to avoid accidents on account of slippery nature of the malba.

i. Workers should not be allowed to work inside the manhole continuously. He should be given rest intermittently. The Engineer In-charge may decide the time up to which a worker may be allowed to work continuously inside the manhole.

j. Gas masks with Oxygen Cylinder should be kept at site for use in emergency.

k. Air-blowers should be used for flow of fresh air through the manholes. Whenever called for, portable air-blowers are recommended for ventilating the manholes. The Motors for these shall be vapour proof and of totally enclosed type. Non sparking gas engines also could be used but they should be placed at-least 2 meters away from the opening and on the leeward side protected from wind so that they will not be a source of friction on any inflammable gas that might be present.

l. The workers engaged for cleaning the manholes/ sewers should be properly trained before allowing working in the manhole.

m. The workers shall be provided with Gumboots or non sparking shoes, bump helmets and gloves non sparking tools, safety lights and gas masks and portable air blowers (when necessary) they must be supplied with barrier cream for anointing the limbs before working inside the sewer lines.

n. Workmen descending a manhole shall try each ladder step or rung carefully before putting his full weight on it to guard against insecure fastening due to corrosion of the rung fixed to manhole well.

o. If a man has received a physical injury, he should be brought out of the sewer immediately and adequate medical aid should be provided to him.

p. The extent to which these precautions are to be taken depend on individual situation but the decision of the Engineer In charge regarding the steps to be taken in this regard in an individual case will be final.

8.6 The Contractor shall not employ men and women below the age of 18 years on the work of painting with products containing lead in any form Wherever men above the age of 18 are employed on the work of lead painting the following precautions should be taken.

8.6.1 No paint containing lead or lead products shall be used except in the form of paste or readymade paint.

8.6.2 Suitable facemasks should be supplied for use by the workers when paint is applied in the form of spray or a surface having lead paint is dry rubbed and scrapped.

8.6.3 Overalls shall be supplied by the Contractor to the workmen and adequate facilities shall be provided to enable the working painters to wash during the cessation of work.

8.6.4.1

a. White lead, sulphate or lead work products containing those pigments shall not be used in painting operation except in the form of paste or of paints ready for use.

b. Measures shall be taken whenever required in order to prevent danger arising from the application of paint in the form of spray.

c. Measures shall be taken, whenever practicable to prevent danger arising out of dust caused by dry rubbing down and scrapping.

8.6.4.2

a. Adequate facilities shall be provided to enable working painter to wash during and on cessation of work.

b. Suitable arrangements shall be made to prevent clothing put off during working hours being spoiled by painting materials.

8.6.4.3

a Cases of lead poisoning and of suspected lead poisoning shall be notified and shall be subsequently verified by a medical man appointed by the competent authorities of the Consultant.

b The NPCC may require when necessary a medical examination of workers.

c Instructions with regard to the special hygienic precautions to be taken in the painting trade shall be distributed to working painters.

9.0 When the work is done near any place where there is risk of drowning, all necessary equipments should be provided and kept ready for use and all necessary steps taken for prompt rescue of any person in danger and adequate provisions should be made for prompt first aid treatment of all injuries likely to be obtained during the course of the work.

10.0 Use of hoisting machines and tackle including their attachment encourage and supports shall conform to the following standard of conditions.

10.1

a. These shall be of good mechanical construction, sound material and adequate strength and free from patent, defects and shall be kept required 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.

10.2 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 Scaffolding, winch or giving signals to operator.

10.3 In case of every hoisting machine and of every chain ring hook, shackle swivel and pulley block used in hoisting or as means of suspension the safe working load shall be ascertained by adequate means. Every hoisting machine and all gear referred to above shall be plainly marked with the safe working load. In case of a hoisting machine having a variable safe working load, each safe working load and the conditions under which it is applicable shall be clearly indicated. No part of any machine or any gear referred to above in this paragraph shall be loaded beyond the safe working load except for the purpose of testing.

10.4 In case of NPCC machines, the safe working load shall be notified by the Engineer-in-Charge. As regards Contractor's machines the Contractor shall notify the safe working load of the machine to the Engineer-in-charge whenever he brings any machinery to site of work and get verified by the Engineer-in-Charge.

11.0 Motors gearing, transmission electric wiring and other dangerous parts of hoisting appliances should be provided with efficient safeguard, hosting 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 the minimum the risk of any part of a suspended load becoming accidentally displaced. When workers are employed on electrical installations, which are already energized, insulating mats, wearing apparel, such as gloves sleeves and boots as may be necessary be provided. The worker should not wear any rings, watches and carry keys or other materials, which are good conductors of electricity.

12.0 All scaffolding, 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 should be provided at or near places of work.

13.0 These safety provisions should be brought to the notice of all concerned by display on a notice board at a prominent place of work spot. The person responsible for compliance of the safety codes shall be named therein by the contractor.

14.0 To ensure effective enforcement of the rules and regulations relating to safety precautions the arrangements made by the Contractor shall be open to inspection by the or their representatives.

15.0 Notwithstanding the above Clauses from (i) to (xiv) there is nothing in these to exempt the contractor from the operations of any other Act or Rule in force in the Republic of India.

MODEL RULES FOR THE PROTECTION OF HEALTH AND SANITARY ARRANGEMENTS FOR WORKERS

1.0 APPLICATION

These rules shall apply to all building and construction works in which 20 (twenty) or more workers are ordinarily employed or are proposed to be employed in any day during the period during which the contractor work is in progress.

2.0 DEFINITION

Work place means a place where twenty or more workers are ordinarily employed or are proposed to be employed in connection with construction work on any day during the period during which the contractor work is in progress.

3.0 FIRST-AID FACILITIES

3.1 At every work place first aid facilities shall be provided and maintained, so as to be easily accessible during working hours, First-Aid boxes at the rate of not less than one box per 150 contract labour or part thereof ordinarily employed.

3.2 The First-Aid box shall be distinctly marked with a red cross on white ground and shall contain the following equipments: -

3.2.1

a) For work places in which number of contract labour employed does not exceed 50, each First-Aid box shall contain the following equipments:

i) 6 small sterilized dressings.

ii) 3 medium size sterilized dressings.

iii) large size sterilized dressings.

iv) 3 large sterilized burn dressings.

v)1 (30 ml) bottle containing a two percent alcoholic solution of iodine.

vi) 1(30 ml) bottle containing Sal volatile having the dose and mode of administration indicated on the label.

vii) 1 snakebite lancet.

viii) (30 gms) bottle of potassium permanganate crystals.

ix) 1 pair of scissors.

x) 1 copy of the First-Aid leaf-let issued by the Director General, Factory Advise Service & Labour Institutes, Government of India.

xi) 1 bottle containing 100 tablets (each of 5 grams) of aspirin.

xii) Ointment for burns.
xiii) A bottle of suitable surgical antiseptic solution.

3.2.2 For work places in which the number of contract labour exceed 50. Each First-Aid box shall contain the following equipments:

i) 12 small sterilized dressings.

ii) 6 medium size sterilized dressings.

iii) 6 large size sterilized dressings.

iv) 6 large size sterilized burn dressings.

v) 6 (15 gms) packet sterilized cotton wool.

vi) 1 (60 ml.) bottle containing a two percent iodine alcoholic solution.

vii) 1 (60 ml.) bottle containing salvolatile having the dose and mode of administration indicated on the label.

viii) 1 roll of adhesive plaster.

ix) 1 snake – bite lancet.

x) 1 (30 gms.) bottle of potassium permanganate crystals.

xi) 1 pair of scissors.

xii) 1 copy of the First-Aid leaf-let issued by the Director General, Factory Advice Service and Labour Institutes, Government of India.

xiii) A bottle containing 100 tablets (each of 5 grams) of aspirin.

xiv) Ointment for burns.

xv) A bottle of suitable surgical antiseptic solution.

3.3 Adequate arrangements shall be made for immediate recoupment of the equipment when necessary.

3.4 Nothing except the prescribed contents shall be kept in the First Aid box.

3.5 The First Aid box shall be kept in charge of a responsible person who shall always be readily available during the working hours of the work place.

3.6 A person in charge of the First-Aid box shall be a person trained in First-Aid treatment, in work places where the number of labour employed is 150 or more.

3.7 In work places where the number of labour employed is 500 or more and hospital facilities are not available within easy distance of the works, first-Aid Posts shall be established and run by a trained Compounder. The Compounder shall be on duty and shall be available at all hours when the workers are at work.

3.8 Where work places are situated in places, which are not towns of cities, a suitable motor transport shall be kept readily available to carry injured person or persons suddenly taken ill to the nearest hospital.

4.0 DRINKING WATER

4.1 In every work place, there shall be provided and maintained at suitable places, easily accessible to labour, a sufficient supply of cold water fit for drinking.

4.2 Where drinking water is obtained from an intermittent public water supply, each work place shall be provided with storage where such drinking water shall be stored.

4.3 Every water supply of storage shall be at a distance of not less than 50 feet from any latrines drain or other source of pollution, Where water has to be drawn from an existing well which is within such proximity of latrine, drain or any other source of pollution, the well shall be properly

chlorinated before water is drawn from it for drinking. All such wells shall be entirely closed in and be provided with a trap-door which shall be dust and water-proof.

4.4 A reliable pump shall be fitted to each covered well, trap-door shall be kept locked and opened only for cleaning or inspection which shall be done at least once a month.

5.0 WASHING FACILITIES

5.1 In every work place adequate and suitable facilities for washing shall be provided and maintained for the use of labour employed herein.

5.2 Separate and adequate screening facilities shall be provided for the use of male and female workers.

5.3 Such facilities shall be conveniently accessible and shall be kept clean and hygienic condition.

6.0 LATRINES AND URINALS

6.1 Latrines shall be provided in every work place on the following scale, namely:

a) Where females are employed there shall be at least one latrine for every 25 females.

b) Where males are employed, there shall be at least one latrine for every 25 males.

Provided that where the number of males or females exceeds 100, it shall be sufficient if there is one latrine for 25 males or females, as the case may be, up to the first 100, and one for every 50 thereafter.

6.2 Every latrine shall be under cover and so partitioned off as to secure privacy, and shall has a proper door and fastenings.

6.3 Construction of Latrines: The inside walls shall be constructed of masonry or some suitable heat resisting non-absorbent materials and shall be cement washed inside and outside at least once a year. Latrine shall not be a standard lower than borehole system.

6.4

(a) Where workers of both sexes are employed, there shall be displayed outside each block of atrine and urinal, a notice in the language understood by the majority of the workers “For Men only” or “For Women only” as the case may be.

(b) The notice shall also bear the figure of man or of women, as the case may be.

6.5 There shall be at least one urinal for male workers up to 50and one for female workers up to 50 employed at a time. Provided that where the number of male or female workmen, as the case may be, exceeds 500, it shall be sufficient if there is one urinal for every 50 males or females up to the first 500 and one for every 100 or part thereof, thereafter.

6.6

a) The latrines and urinals shall be adequately lighted and shall be maintained in a clean and sanitary condition at all times.

b) Latrines and urinals other than those connected with a flush sewerage system shall comply with the requirements of the Public Health Authorities.

6.7 Water shall be provided by means of a tap or otherwise so as to be conveniently accessible in or near the latrines and urinals.

6.8 Disposal of Excreta

Unless otherwise arranged for by the local sanitary authority arrangements for proper disposal of excreta by incineration at the work place shall be made by means of a suitable incinerator. Alternatively excreta may be disposed off by putting a layer of night soil at the bottom of a pucca tank prepared for the purpose and covering it with a 15 cm layer of waste or for refuse and then covering it with a layer of earth for fortnight (when it will turn into manure).

6.9 The Contractor shall, at his own expense, carry out all instruction issued to him by the Engineer-in-Charge to effect proper disposal of night soil and other conservancy work in respect of the Contractor's workmen or employees on the site. The Contractor shall be responsible for payment of any charges, which may be levied by Municipal or Cantonment Authority for execution of such work on his behalf.

7.0 PROVISION OF SHELTER DURING REST

At every place there shall be provided, free of cost four suitable sheds, two for males and the other two for rest separately for the use of man and women labour. The height of each shelter shall not be less than 3 meters from the floor level to the lowest part of the roof. These shall be kept clean and the space provided shall be on the basis of 0.6 sqm. Per head, provided that the Engineer-in-Charges may permit, subject to his satisfaction, a portion of the building under construction or other alternative accommodation to be used for the purpose.

8.0 CRECHES

8.1 At every work place, at which 20 or more women workers are ordinarily employed, there shall be provided two rooms of reasonable dimensions for the use of their children under the age of six years. One room shall be used as a playroom for the children and the other as their bedrooms.

The rooms shall be constructed on standard not lower than the following:

i) Thatched roof

ii) Mud floor and walls.

iii) Planks spread over the mud floor and covered with matting

8.2 The rooms shall be provided with suitable and sufficient openings for light and ventilation. There shall be adequate provision of sweepers to keep the places clean.

8.3 The Contractor shall supply adequate number of toys and games in the playroom and sufficient number of cots and beddings in the bedroom.

8.4 The Contractor shall provide one Ayah to look after the children in the crèche when the number of women workers does not exceed 50 and two when the number of women workers exceeds 50.

8.5 The use of the rooms/earmarked as crèche shall be restricted to children, their attendant and mother of the children.

9.0 CANTEENS

9.1 In every work place where the work regarding the employment of contract labour is likely to continue for six months and wherein contract labour numbering one hundred or more are ordinarily employed, an adequate canteen shall be provided by the Contractor for the use of such labour.

9.2 The canteen shall be maintained by the Contractor in an efficient manner.

9.3 The canteen shall consist of at least a dining hall, kitchen, storeroom, pantry and washing places separately for workers and utensils.

9.4 The canteen shall be sufficiently lighted at all times when any person has access to it.

9.5 The floor shall be made of smooth and impervious material and inside walls shall be lime washed or colour washed at least once in each year provided that the inside walls of the kitchen shall be lime-washed every four months.

9.6 The premises of the canteen shall be maintained in a clean and sanitary condition.

9.7 Waste Water shall be carried away in suitable covered drains and shall not be allowed to accumulate so as to cause a nuisance.

9.8 Suitable arrangements shall be made for the collection and disposal of garbage.

9.9 The dinning hall shall accommodate at a time 30 persons of the labour working at time.

9.10 The floor area of the dinning hall, excluding the area occupied by the service counter and any furniture except tables and chair shall not be less than one square meter per dinner to be accommodated.

9.11

a) A portion of the dinning hall, and service counter shall be partitioned off and reserved for women workers in proportion to their number.

b) Washing places for women shall be separate and screened to secure privacy.

9.12 Sufficient tables, stool, chairs or benches shall be available for the number of dinners to be accommodated.

9.13.1

a) There shall be provided and maintained sufficient utensils, crockery, furniture and any other equipment necessary for the efficient running of the canteen.

b) The furniture, utensils and other equipment shall be maintained in a clean and hygienic condition.

9.13.2

a) Suitable clean clothes for the employees serving in the canteen shall be provided and maintained.

b) A service counter, if provided, shall have top of smooth and impervious material.

c) Suitable facilities including an adequate supply of hot water shall be provided for the cleaning of utensils and equipment.

9.14 The foodstuffs and other items to be served in the canteen shall be in conformity with the normal habits of the labour.

9.15 The charge for foodstuffs, beverages and any other items served in the canteen shall be based on 'No profit No loss' and shall be conspicuously displayed in the canteen.

9.16 In arriving at price of foodstuffs, and other articles served in the canteen, the following items shall not be taken into consideration as expenditure, namely:

a) The rent of land building.

b) The depreciation and maintenance charges for the building and equipment provided for the canteen.

c) The cost of purchase, repair and replacement of equipment including furniture, crockery, cutlery and utensils:

d) The water charges and other charges incurred for lighting and ventilation:

e) The interest and amounts spent on the provision and maintenance and equipment provided for in the canteen.

9.17 The accounts pertaining to the canteen shall be audited once in every 12 months by registered accountants and auditors.

10.0 ANTI MALARIAL PRECAUTIONS

The Contractor shall at his own expense, conform to all anti-malarial instructions given to him by the Engineer-in-Charge including the filling up of any borrow pits which may have been dug by him.

11.0 AMENDMENTS

NPCC may from time to time, add to or amend these rules and issue such directions as it may consider necessary for the purpose of removing any difficulty which may arise in the administration hereof.

CONTRACTOR'S LABOUR REGULATIONS

1.0 SHORT TITLE

These regulations may be called the Contractor "Labour Regulations".

2.0 Definitions

2.1 "Workman" means any person employed by the NPCC or its Contractor directly or indirectly through a sub-contractor, with or without the knowledge, of the NPCC to do any skilled, semi-skilled, un-skilled, manual, supervisory, technical or clerical work for hire or reward, whether, the terms of employment are expressed or implied but does not include any person-

a) Who is employed mainly in a managerial or administrative capacity; or

b) Who being employed in a supervisory capacity draws wages exceeding Rupees Two thousand Five hundred per person or exercises either by the nature of the duties attached to the office or by reason of powers vested to him, functions mainly of managerial nature.

c) Who is an outworker, that is to say, a person to whom any articles or materials are given out by or on behalf of the principal employer to be made up cleaned, washed, altered, ornamental finished, repaired, adopted or otherwise processed for sale for the purpose of the trade or business of the principal employer and the process is to be carried out either in the home of the out worker or in some other premises, not being premises under the control and management of the principal employer.

2.2 "Fair Wages" means wages whether for time or piecework fixed and notified under the provisions of the minimum Wages Act from time to time.

2.3 "Contractor" shall include every person who undertake to produce a given result other than a mere supply of goods or articles of manufacture through labour or who supplies labour for any work and includes a sub-contractor.

2.4 "Wages" shall have the same meaning as defined in the Payment of Wages Act.

2.4.1 Normally working hours of an adult employee should not exceed 9 hours a day. The working day shall be so arranged that inclusive of interval for rest, if any, it shall not spread over more than 12 hours on any day.

2.4.2 When an adult worker is made to work for more than 9 hours on any day or for more than 48 hours in any week he shall be paid overtime for the extra hours put in by him at double the ordinary rate of wages.

2.4.3.1 Every worker shall be given a weekly holiday on a Sunday, in accordance with the provisions of the Minimum Wages (Central) Rules 1960 as amended from time to time, irrespective of whether such worker is governed by the Minimum Wages Act or not.

2.4.3.2 Whether the Minimum Wages prescribed by the Government under the Minimum Wage Act are not inclusive of the wages for the weekly day of rest, the worker shall be entitled to rest day wages at the rate applicable to the next preceding day, provided he has worked under the same contractor for a continuous period of not less than 6 days.

2.4.3.3 here a contractor is permitted by the Engineer-in-Charge to allow a worker to work on a normal weekly holiday, he shall grant a substitute holiday to him for the whole day on one of the five days immediately before or after the normal weekly holidays and pay wages to such worker for the work performed on the normal weekly holiday at overtime rate.

3.0 DISPLAY OF NOTICE REGARDING-WAGES, ETC.

The contractor shall before he commences his work on contract, display and correctly maintain and continue to display and correctly maintain in a clean and legible condition in conspicuous places on the work, notices in English and in the local Indian languages spoken by the majority of the workers, giving the minimum rates of wages fixed under the Minimum Wages Act, the actual wages being paid, the hours of work for which such wages are earned, wage period, dates of payment of wages and other relevant information as per Appendix 'A'.

4.0 PAYMENT OF WAGES

4.1 The contractor shall fix wage periods in respect of which wages shall be payable.

4.2 No wage period shall exceed one month.

4.3 The wages of every person employed as labour in an establishment or by a contractor where less than one thousand, such persons are employed shall be paid before the expiry of the seventh day and in other cases before the expiry of tenth day after the last day of the wage period in respect of which the wages are payable.

4.4 Where the employment of any worker is terminated by or on behalf of the contractor the wages earned by him shall be paid before the expiry of the second working day from the date on which his employment is terminated.

4.5 All payments of wages shall be made on a working day at the work premises and during the working time and on a date notified in advance and in case the work is completed before the expiry of the wage period, final payment shall be made within 48 hours of the last working day.

4.6 Wages due to every worker shall be paid to him direct or to other person authorized by him in this behalf.

4.7 All wages shall be paid in current coin or currency or in both.

4.8 Wages shall be paid without any deductions of any kind except those specified by the Central Government by general or special order in this behalf or permissible under the Payment of Wages Act 1956.

4.9 A notice showing the wage period and the place and time of disbursement of wages shall be displayed at the place of work and a copy sent by the contractor to the Engineer-in-Charge under acknowledgment.

4.10 It shall be the duty of the contractor to ensure the disbursement of wages in the presence of the Engineer or any other authorized representatives of the Engineer-in-Charge who will be required to be present at the place and time of disbursement of wages by the contractor to workmen.

4.11 The contractor shall obtain from the Engineer or any other authorized representative of the Engineer-in-Charge as the case may be, a certificate under his signature at the end of the entries in the "Register of Wages" or the "Wage-cum-Muster Roll" as the case may be in the following form:

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

5.0 FINES AND DEDUCTIONS, WHICH MAY BE MADE FROM WAGES

5.1 The wages of a worker shall be paid to him without any deduction of any kind except the following–

a) Fines

b) Deductions for absence from duty i.e. from the place or the places where by the terms of his employment he is required to work. The amount of deduction shall be in proportion to the period for which he was absent.

c) Deduction for damage to or loss of goods expressly entrusted to the employed persons for custody, or from loss of money or any other deduction which he is required to account where such damage or loss is directly attributable to his neglect or default.

d) Deduction for recovery of advances or for adjustment of over payment of wages, advances granted shall be entered in a register.

e) Any other deduction, which the Central Government may from time to time allow.

5.2 No fines should be imposed on any workers in respect of such acts and omissions on his part as have been approved by the Chief Labour Commissioner.

NOTE: An approved list of Acts and Omissions for which fines can be imposed is enclosed at Appendix-I.

5.3 No fine shall be imposed on a worker and no deduction for damage or loss shall be made from his wages until the worker has been given an opportunity of showing cause against such fines or deductions.

5.4 The total amount of fine, which may be imposed in any one-wage period on a worker, shall not exceed an amount equal to three paise in Rupees of the total wages, payable to him in respect of that wage period.

5.5 No fine imposed on any worker shall be recovered from him in installment, or after the expiry of sixty days from the date on which it was imposed.

5.6 Every fine shall be deemed to have been imposed on the day of the act or omission in respect of which it was imposed.

6.0 LABOUR RECORDS

6.1 The contractor shall maintain a “Register of persons employed” on work on contract in form XIII of the CL (R&A) Central Rules 1971 (Appendix-B).

6.2 The contractor shall maintain a “Muster Roll” register in respect of all workmen employed by him on the work under contract in from XVI of the CL (R&A) Rules 1971 (Appendix-C).

6.3 The contractor shall maintain a “Wage Register” in respect of all workmen employed by him on the work in form (Appendix-D).

6.4 Register of accidents – The contractor shall maintain a register of accidents in such form as may be convenient at the work place but the same shall include the following particulars:

a) Full particulars of the labourers who met with accident.

b) rate of wages

c) Sex

d) Age

e) Nature of accident and cause of accident.

f) Time and date of accident.

g) Date and time when he/she admitted in Hospital

h) Date of discharge from the Hospital

i) Period of treatment and result of treatment

j) Percentage of loss of earning capacity and disability as assessed by Medical Officer.

k) Claim required to be paid under Workmen's Compensation Act.

l) Date of payment of compensation.

m) Amount paid with details of the person to whom the same was paid.
n) Authority by whom the compensation was assessed.

o) Remarks.

6.5 Register of Fines – The contractor shall maintain a "Register of Fines" in the form (Appendix-H).

The contractor shall display in a good condition and in a conspicuous place of work the approved list of Acts and Omission for which fines can be imposed (Appendix-I).

6.6 Register of Deductions-The contractor shall maintain a "Register of Deductions" for damage or loss in form (Appendix-J).

6.7 Register of Advances-The contractor shall maintain a "Register of Advances" in form (Appendix-K).

6.8 Register of Overtime-The contractor shall maintain a "Register of Overtime" in form (Appendix-L).

7.0 ATTENDANCE CARD-CUM WAGE SLIP:

7.1 The contractor shall issue an attendance card-cum-wage slip to each workman employed by him in the specimen form at (Appendix-E).

7.2 The card shall be valid for each wage period.

7.3 The contractor shall mark the attendance of each workman on the card twice each day, once at the commencement of the day and again after the rest interval, before he actually starts work.

7.4 The card shall remain in possession of the worker during the wage period under reference.

7.5 The contractor shall complete the wage slip portion on the reverse of the card at least a day prior to the disbursement of wages in respect of the wage period under reference.

7.6 The contractor shall obtain the signature or thump impression of the worker on the wage slip at the time of disbursement of wages and retain the card with himself.

8.0 EMPLOYMENT CARD

The contractor shall issue an Employment Card in form to each worker within three days of the employment of the worker (Appendix-F).

9.0 SERVICE CERTIFICATE

On termination of employment for any reason whatsoever the contractor shall issue to the workman whose services have been terminated, a service certificate in from Appendix-G.

10.0 PRESERVATION OF LABOUR RECORDS

All records required to be maintained under Regulations Nos. 6 and 7 shall be preserved in original for a period of three years from the date of last entries made in them and shall be made available for inspection by the Engineer-in-Charge, Labour Officer.

11.0 POWER OF LABOUR OFFICERS TO MAKE INVESTIGATIONS INQUIRY

The Labour Officer or any other person authorized by NPCC on its behalf shall have power to make inquires with a view to ascertaining and enforcing due and proper observance of the Fair Wage Clauses and the Provisions of Regulations. He shall investigate into any complaint regarding the default made by the contractor or sub-contractor in regard to such provision.

12.0 Inspection of Book and slips

The contractor shall allow inspection of all the prescribed labour records to any of his workers or to his agent at a convenient time and place after due notice is received or to the Labour officer or any other person, authorized by the Central Government on his behalf.

13.0 Submission of Returns

The contractor shall submit periodical returns as may be specified from time to time.

14.0 Amendments

The NPCC may from to time, add or amend the regulations and on any question as to the application, interpretation or effect of these regulations the decision of the Zonal Manager concerned shall be final.

15.0 Contractor has to follow all the rules & regulations as per Labour Act and maintain all the records in the proper formats by obtaining from concerned labour department/office which are to be produced before the Owner / NPCC / labour officers for inspection as & when asked.

Zonal Manager
Chattisgarh Zone

VOLUME - I

SCC

SPECIAL CONDITIONS OF CONTRACT (SCC)

FOR

Construction of Bank Building for Punjab & Sind Building at Mumbai (Maharashtra)

1.0 GENERAL

The following special conditions shall be read in conjunction with General Conditions of contract, if there are any provisions in these Special Conditions, which are at variance with the provisions of General Conditions of Contract, the provisions in these special Conditions shall prevail.

(1) The Drawing/Map provided with this Tender Document is only a tentative drawing and for reference only. Contractor is required to prepare fresh Conceptual drawings as per Owner's requirement and obtain necessary approval/clearance from local authorities. Contractors are advised to visit the Offices of local authorities to know the present status and formalities required to get the approvals/clearance. Owner/NPCC shall assist by way of giving the application/authority to obtain the requisite approvals/clearances. The statutory fees deposited will be reimbursed as per actual on production of original receipts.

(2) The work in general shall be carried out as per CPWD/MOST specification updated with correction slips issued up to last date of submission of tender.

(3) For items not covered under CPWD/MOST Specification, as above, the work shall be done as per latest relevant ISI /BIS Codes of practice.

2.0 INTRODUCTION

2.1 LOCATION/APPROACH TO SITE

The proposed site is in Fort Area of Mumbai (Maharashtra) at Plot No. 27/29 C.S. No. 82 (Part) Ambalal Doshi Marg.

3.0 LETTER OF UNDERTAKING

The tender shall be accompanied by Letter of acceptance of tender conditions as per proforma given in this tender document.

4.0 Any tender not accompanied by Letter of acceptance in accordance with aforesaid provision of notice Inviting Tender and Instructions to Tenderer shall be rejected.

5.0 Once the Tenderer has given an unconditional acceptance to the tender conditions in its entirety, he is not permitted to put any remark(s)/conditions(s)(except unconditional rebate on price ,if any)in/along with the tender.

6.0 SITE VISIT AND COLLECTING LOCAL INFORMATION

Before tendering, the tenderer is advised to visit the site, its surrounding, access and satisfy themselves about the local conditions such as approach roads to the site, availability of water & power supply, application of taxes, duties and levies as applicable, nature of ground, soil and sub-soil condition, underground water table level, accommodations they may require etc., river regime, river water levels, other details of river, streams & any other relevant information required by them to execute complete scope of work. The tenderer may obtain all necessary information as to risks, contingencies & other circumstances (insurgencies etc.) which may influence or affect their tender. Tenderer shall be deemed to have considered site conditions whether he has inspected it or not and to have satisfied himself in all respect before quoting his rates and no claim or extra charges whatsoever in this regard shall be entertained / payable by the NPCC at a later date.

7.0 **SALES TAX ON WORKS CONTRACT & TURNOVER TAX ETC.**

AS per GCC conditions

8.0 **TRANSFER OF BID DOCUMENTS**

Transfer of bid documents purchased by one intending bidder to another is not permissible.

9.0 The NPCC reserves the right to award the work to a single party or to split the work amongst two or more parties as deemed necessary without assigning any reason whatsoever.

10.0 **NO ESCALATION PAYMENT / PRICE VARIATION ADJUSTMENT**

The rates quoted by the contractor shall be firm and fixed for entire contract period as well as extended period for completion of works. All rates as per bill of quantities (BOQ) shall be firm & fixed for entire contract period as well as for extended period for completion of the project. No claim on account of any price variation / Escalation on whatsoever ground shall be entertained at any stage of works.

11.0 The rates and prices to be tendered in the bill of quantities are for completed and finished items of works and complete in all respects. It will be deemed to include all constructional plant, labour, supervision, materials, transport, all temporary works, erection, maintenance, contractor's profit and establishment / overheads, together with preparation of designs drawings pertaining to casting yard (if required). Staging from work, stacking yard, etc, all general risk, taxes, royalty, duties, cess, octroi and other levies, insurance liabilities and obligations set out or implied in the tender documents and contract.

12.0 The materials products used on the works shall be one of the approved **makes/brands** out of list of manufacturers / brands /makes given in the tender documents. The contractor shall submit samples /specimens out of approved makes of materials /products to the engineer in charge for prior approval. In exceptional circumstances engineer in charge may allow alternate equivalent makes / brands of products / materials at his sole discretion. The final choice of brand / make shall remain with the engineer in charge,

whose decision in the matter shall be final and binding and nothing extra on this account shall be payable to the contractor.

Incase single brand / make are mentioned, other equivalent makes brands may be considered by the engineer in charge with prior approval .Incase of variance in CPWD's specification from approved products makes specification the specification of approved products make shall prevail for which nothing shall be paid extra to the contractor.

13.0 Within 10 (Ten) days of issuance of Letter of Intent, the Contractor shall submit a Time and Progress Chart (CPM/ PERT/ Quantified Bar Chart) along with quarterly milestones and resources plan for man, material & machinery to achieve the milestones and get it approved by the Engineer-in-Charge. The Chart shall be prepared in direct relation to the time stated in the contract documents for completion of items of the works. It shall indicate the forecast (mile-stones) of the dates of commencement and completion of various items, trades, sections of the work and may be amended as necessary by agreement between the Engineer-in-Charge and the Contractor within the limitations of time stipulated in the Contract documents, and further to ensure good progress during the execution of the work.

14.0 AMENITIES TO BE PROVIDED BY CONTRACTOR TO NPCC

On acceptance of the tender, the contractor at his cost will provide immediately the amenities as per GCC clause 28.3 exclusively for the effective inspections of their work by Engineer-in-charge/ Project Manager and other staff of NPCC who will be connected with the project.

In case, the above amenities are not provided by the contractor within One month of the award of the work NPCC shall arrange the same at risk and cost of the contractor and make the recoveries from the bills proportionately. The decision of the Engineer-in-Charge shall be final and binding on the contractors.

15.0 The contractor if required shall demolish old structures on the proposed site properly. The useful material shall be the property of the owner /NPCC and these materials shall be stacked in workmanship like at the place specified by the Engineer-in-Charge.

16.0 The contractor shall provided safety equipment and gadgets to all their workers, supervisors and technical staff engaged in the execution of the work while working. The equipment and gadgets shall also be provided to NPCC by the contractor at his own cost for use of NPCC officials and /or workforce.

The cost of the above equipments /gadgets shall be included in the rates quoted by the contractor for the items & works as per bill of Quantities and contractor shall not be entitled for any extra cost in this regard. The above norm is to be strictly complied with at site .In case the contractor is found to be deficient in providing safety equipment/ gadgets in opinion of engineer- in - charge, the engineer in charge at his option can procure the same at the risk & cost of contractor and provide the same for the use at work site and shall make the recoveries from the bills of the contractor for the same. The decision of the engineer -in -charge shall be final and binding on contractor in this regard.

17.0 The tenderer shall quote his rates inclusive of turnover tax/ sales tax on works and service tax , Labour Cess payable to Central/State Government along with other taxes, duties, levies etc. in conjunction with other terms and conditions.

18.0 If required, the contractor has to do site clearance, enabling work, barricading, shifting / realignment of existing utility services etc at his own cost and the contractor shall not be entitled for any extra payment whatsoever in this regard.

19.0 In case of any sort of anomalies and/or typing error in the nomenclature, rates, & Description etc. of the items indicated in the Price bid / BOQ of scheduled items must be read as per respective schedule such as DSR-2007 re-print in 2010.

20.0 Deleted

21.0 Contractor has to submit a Construction Programme within 10 days of issue of LOA/LOI.

22.0 Unless otherwise provided in the schedule of quantity, rates tendered by the contractor shall be all inclusive and shall apply to all heights, lifts, leads, & depths of the building and nothing extra shall be paid to him on this account.

23.0 All drawings shall at all times be properly correlated before executing any work.

24.0 The contractor shall be required to produce samples of all building materials and fittings sufficiently in advance to obtain approval of the Engineer-in charge.

25.0 The contractor shall comply with proper and legal orders and directions of the local or public authority or municipality and abide by their rules and regulations and pay all fees and charges which he may be liable.

26.0 The rate of all items in which use of cement is involved inclusive of all charges for curing.

27.0 **MODE OF PAYMENT**
AS per GCC conditions and schedule of payment with Price bid.

28.0 The rate quoted by the contractor shall be deemed to be inclusive of Sales Tax, Turnover Tax on works contract, service tax, Labour cess or any other similar tax as per the laws applicable in the State.

29.0 The stamp duty if any on the contract agreement levied by the Government or any other statutory body shall be paid by the contractor.

Zonal Manager
Chattisgarh Zone

VOLUME - I

FORMS

Appendix – 'A'

LABOUR BOARD

S. No.	Description	
1.	Name of work	
2.	Name of Contractor	
3.	Address of Contractor	
4.	Name and Address of Unit	
5.	Name of Labour Enforcement Officer	
6.	Address of Labour Enforcement Officer	
7.	Date:	

S. No	Category	Minimum Wages fixed	Actual Wages fixed	Numbers present	Remarks

Weekly Holiday	
Wage Period	
Date of Payment of wages	
Working hours	
Rest interval	

Appendix – 'B'

FORM 13 **See rule 75**

REGISTER OF WORKMEN EMPLOYED BY CONTRACTOR

Sl.No.	Description	
	Name and Address of Contractor	
	Name and Address of Establishment in/ under which contract is carried on	
	Nature and location of work	
	Name & Address of Principal Employer	
1	Sl. No.	
2.	Name and surname of workman	
3.	Age & sex	
4.	Father's/ Husbands Name	
5.	Nature of employment / designation	
6.	Permanent home address of the workman (village and Taluk and District)	
7.	Local address	
8.	Date of commencement of employment	
9.	Signature or thumb impressions	
	of the workman	
10.	Date of termination of employment	
11.	Reasons for termination	
12.	Remarks	

Appendix – 'C'

FORM XVI **(See Rule 78(2) (193)**

MUSTER ROLL

SL.No.	Description	
	Name and address of contractor	
	Name and address of establishment in/under	
	which contract is carried on	
	Nature and location of work	
	Name and Address of Principal Employer	
	For the month / fortnight	
1.	S. No.	
2.	Name of the workman	
3.	Sex	
4.	Father's/Husband's Name	
5.	Dates (1, 2, 3, 4, 5, ----------12, 13, 14, 15)	
6.	Remarks	

Appendix – 'D'

FORM XVII **[See Rule 78(2) (03)]**

REGISTER OF WAGES

	Name and address of contractor	
	Name and address of establishment in/under which contract is carried on	
	Nature and location of work	
	Name and Address of Principal Employer	
	Wage period: per month/ fortnightly	
1	Sl. No.	
2	Name of Workman	
3	Serial No. in the register of workman	
4	Designation /nature of work done	
5	Nos. of days worked	
6	Units of work done	
7	Daily rate of wages/ piece rate	
8	Basic rate of Wages	
9	Dearness allowance	
10	Overtime	
11	Other cash payments (Nature of payments to be indicated)	
12	Total	
13	Deduction if any (indicate nature)	
14	Net amount paid	
15	15. Signature thumb impression of the workman	
16	Initials of contractor or his representatives	16.

Appendix – 'E'

FORM XIX

[SEE RULE 78 (2) (B)]

W A G E S L I P

	Name and address of contractor	
	Name and Father's/Husband's Name of workman	
	Nature and location of work	
	For the Week/Fortnight/Month ending	
1	No. of days worked	
2	No. of Units worked in case of piece rate works	
3	Rate of daily wages/piece rate	
4	Amount of overtime wages	
5	Gross wages payable	
6	Deductions if any	
7	Net amount of wages paid	
	Sign of the Contractor	
	Received the sum of Rs.----------	
	towards my wages for the above period.	

Sign.of workman: ----------

Appendix – 'E'

WAGE CARD

Wage Card No. &	Date of Issue
	Month/Fortnight
Name and address of Contractor	
Nature of work with location	Designation
Name of workman	

Rate of Wages

Dates	Morning	Evening	Rate	Amount	Initials
1	2	3	4	5	6

Received from the sum of Rs. on account of my wagon.

Signature

The wage card is valid for one month from the date of issue.

Appendix – 'F'

FORM XIV (See Rule 76)

EMPLOYMENT CARD

Sl.No.	Description	
	Name and address of contractor	
	Name and address of establishment under which	
	the contract is carried out	
	Nature and location of work	
	Name and address of Principal Employer	
1	Name of the workman	
2	Sl.No in the register of workman employed	
3	Nature of Employment/Designation	
4	Wage rate (with particulars of unit in case of piece work)	
5	Wage Period	
6	Tenure of employment	
7	Remarks	

Signature of Contractor

Appendix – 'G'

Form XV **(See Rule 77)**

SERVICE CERTIFICATE

Name and address of contractor

Nature and location of work	
Name and address of workman	
Age or date of birth	
Identification Marks	
Father's/Husband's Name	
Name and address of establishment in/under which	
contract is carried on	
Name and address of Principal Employer	
Total period of which employed	

S. No.	From	To	Nature of work	Rate of wages	Remarks

with particulars of unit
in case of piece work)

Signature

Appendix – 'H'

Form Xii **[See Rule 78 (2) (D)]**

REGISTER OF FINES

Name and address of contractor	
Name and address of establishment in/ under which	
contract is carried on	
Nature and location of work	
Name and address of workman	
Name and address of Principal Employer	

SNo.	Name of Workman	Father's / Husband Name	Designation/nature of employment	Act/Omission	Date of offence for which fine impos
1	2	3	4	5	7

8	Whether workman showed causes against fine	
9	Name of person in whose presence employees explanation was heared	
10	Wages period and wages payable	
11	Amount of fine imposed	
12	Date on which fine realized	
13	Remarks	

Appendix – 'I'

LIST OF ACTS AND OMISSIONS FOR WHICH FINES CAN BE IMPOSED

In accordance with rule of Labour Regulations, to be displayed prominently at the site of work both in English and local language.

1	Willful insubordination or disobedience, whether alone or in combination with other.
2	Theft, fraud or dishonestly in connection with contractors beside a business or property .
3	Taking or giving bribes or any illegal gratifications.
4	Habitual of Late attendance.
5	Drunkenness fighting riotous or disorderly or indifferent behaviors.
6	Habitual negligence.
7	Smoking near or around the area where combustible or other materials are locked.
8	Habitual indiscipline.
9	Causing damage to work in the progress or to property of the NPCC or of the contractor.
10	Sleeping on duty.
11	Malingering or slowing down work.
12	Giving the false information regarding name, age, fathers name etc.
13	Habitual loss of wage cards supplied by the employer.
14	Unauthorized use of employers property or manufacturing or making of unauthorized articles at the work place.
15	Bad workmanship in construction and maintenance by skilled workers, which is not approved by the NPCC for which the contractors are compelled to undertake rectifications.
16	Making false complaints and/or misleading statements.
17	Engaging on trade within the premises of the establishment.
18	Any unauthorized divulgence of business affairs of the employees.
19	Collection or canvassing for the collection of any money within the premises of an establishment unless authorized by the employer.
20	Holding meeting inside the premises without previous sanction of the employers.
21	Threatening or intimidating any workman or employee during the working hours. .

Appendix – 'J'

Form XX **[See Rule 78 (2) (D)]**

REGISTER OF DEDUCTIONS FOR DAMAGES OR LOSS

	Name and address of contractor	
	Name and address of establishment in/ under which	
	contract is carried on	
	Nature and location of work	
	Name and address of Principal Employer	
1	S. No.	
2	Name of workman	
3	Father's/Husband's Name	
4	Designation/nature of employment	
5	Particulars of damage or loss	
6	Date of damage/loss	
7	Date of recovery	
8	Whether workman showed cause against deductions	
9	Name of person in whose presence employees explanation was heard	
10	Amount of deduction Imposed	
11	No. of installment	
12	First Installment Last Installment	
13	Remarks	

.

Appendix – 'K'

Form XXII

[See Rule 78(2)]

REGISTER OF ADVANCES

	Name and address of contractor	
	Name and address of establishment in/ under which	
	contract is carried on	
	Nature and location of work	
	Name and address of Principal Employer	
1	S. No.	
2	Name of workman	
3	Father's/Husband's Name	
4	Designation/nature of employment	
5	Wages period and wages payable	
6	Date and amount of advance given	
7	Purpose / for which advance made	
8	No. of installments by which advance is to be paid	
9	Date and amount of each installment repaid	
10	Date on which last installment was repaid	
11	Remarks	

Appendix – 'L'

Form XXIII **[See Rule 78(2) (E)]**

REGISTER OF OVERTIME

	Name and address of contractor	
	Name and address of establishment in/ under which	
	contract is carried on	
	Nature and location of work	
	Name and address of Principal Employer	
1	S. No.	
2	Name of workman	
3	Father's/Husband's	
4	Sex	
5	Designation/nature of employment	
6	Date on which overtime worked	
7	Total overtime worked or production in case of piece rated	
8	Normal rate of wages	
9	Overtime rate of wages	
10	Overtime earning	
11	Rate on which overtime wages paid	
12	Remarks	

Appendix – 'M'

LIST OF APPROVED BANKS

Nationalized Banks:

The BGs shall be accepted from all Nationalized Banks, and in addition, these can also be accepted from the Scheduled Private Banks as detailed below:

Scheduled Private Sector Banks:

- ING Vysya Bank Ltd
- Axis Bank Ltd
- ICICI Bank Ltd
- HDFC Bank Ltd
- IDBI Bank Ltd

APPLICATION FOR EXTENSION OF TIME

(To be completed by the Contractor)

P A R T –I

1. Name of Contractor

2. Name of the work as given in the Agreement

3. Agreement No.

4. Estimated amount put to tender

5. Date of commencement work as per agreement

6. Period allowed for completion of work as per agreement

7. Date of completion stipulated as per agreement

8. Period for which extension of time has been given previously

Extension granted

a) First extension vide Engineer-in- charge letter No… ……date Months Days

b) 2nd extension vide Engineer-in- charge letter No…… date Months Days

c) 3rd extension vide Engineer-in- charge letter No……. date Months Days

d) 4th extension vide engineer-in- charge letter No……. date Months Days

Total extension previously given

9. Reasons for which extension have been previously given (copies of the previous application should be attached)

10. Period for which extension is applied for :

11. Hindrances on account of which extension is applied for with dates on which hindrances occurred, and the period for which these are likely to last.

a) Serial No.

b) Nature of hindrance

c) Date of Occurrence

d) Period for which it is likely to last

e) Period for which extension required for this particular hindrance.

f) Over lapping period, if any, with reference to item

g) Net extension applied for

h) Remarks, if any

Total period for which extension is now applied for on account of

hindrances mentioned above ……. Month/ days.

12. Extension of time required for extra work.

13. Details of extra work and on the amount involved:

a) Total value of extra work

b) Proportionate period of extension of time based on
estimated amount put to tender on account of extra work.

14. Total extension of time required for 11 & 12

Submitted to the Engineer-in-Charges office.

SIGNATURE OF CONTRACTOR

DATE

APPLICATION FOR EXTENSION OF TIME

(PART – II)

1. Date of receipt of application from the Contractor in the Engineer-in-charge's office.

2. Acknowledgement issued by Engineer-in-charge vide his letter No dated

3. Engineer-in-charge remarks regarding hindrances mentioned by the Contractor.

i) Serial No.

ii) Nature of hindrance

iii) Date of occurrence of hindrance

iv) Period for which hindrance, is likely to last

v) Extension of time period applied for by the contractor

vi) Over lapping period, if any, giving reference to items which over lap

vii) Net period for which extension is recommended.

viii) Remarks as to why the hindrance occurred and justification for extension recommended.

4. Engineer-in-charge recommendations.

(The present progress of the work should be stated and whether the work is likely to be completed by the date up to which extension has been applied for. If extension of time is not recommended, what compensation is proposed to be levied under the agreement?

SIGNATURE OF ENGINEER-IN-CHARGE

APPROVAL OF ZONAL MANAGER

PROFORMA FOR EXTENSION OF TIME

P A R T –III

To

NAME

ADDRESS OF THE CONTRACTOR

SUBJECT:

Dear Sir(s)

Reference your letter No _____ dated _____ , in connection with the grant of extension of time for completion of the work…..

The date of completion for the above mentioned work, is ……. ……. as stipulated in the agreement, dated ……

Extension of time for completion of the above-mentioned work is granted up to _____, without prejudice to the right of the NPCC to recover compensation for delay in accordance with the provision made in the relevant Clause (s) of the said agreement dated the ___/ ___/ ___. It is also clearly understood that the NPCC shall not consider any revision in contract price or any other compensation whatsoever due to grant of this extension.

Provided that notwithstanding the extension hereby granted, time is and shall still continue to be the essence of the said agreement.

Yours faithfully,

FOR NPCCLTD.

NATIONAL PROJECTS CONSTRUCTIONCORPORATION LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)

PROFORMA OF BANK GUARANTEE IN LIEU OF E M D (BID BOND)

National Projects Construction Corporation Limited,

(Address as mentioned in Notice Inviting Tender)

In consideration of National Projects Construction Corporation Limited, having its Registered Office at 30-31, Raja House, New Delhi -110019 (hereinafter called "NPCC" which expression shall unless repugnant to the subject or context include its successors and assigns) having issued Notice Inviting Tender No……. and M/s……. having its Registered Head Office at……. (Hereinafter called the "TENDERER") is to participate in the said tender for……. Whereas NPCC, as a special case, has agreed to accept an irrevocable and unconditional Bid Bond Guarantee for an amount of Rs… valid up to…. from the tenderer in lieu of Cash Deposit of Rs……. required to be made by the tenderer, as a condition precedent for participation in the said tender. We the…….(hereinafter called the "BANK") having its Registered, Office at……. . . . ……and branch office at……. do hereby unconditionally and irrevocably undertake
to pay to NPCC immediately on demand in writing and without demur/protest any amount but not exceeding Rs……. Any such demand made by NPCC shall be conclusive and binding on us irrespective of any dispute or differences that may be raised by the tenderer.
Any change in the constitution of the tenderer or the Bank shall not discharge our liability under the guarantee.

We, the… Bank, lastly undertake not to revoke this guarantee during its currency without the prior consent of NPCC in writing and this guarantee shall remain valid upto……. Unless a claim is made within three months from the date of expiry i.e.... (Three months after the date of expiry), we shall be relieved of our liability under this guarantee thereafter.

FOR AND ON BEHALF OF BANK

PLACE :

DATED :

WITNESS.

1.

2.

NATIONAL PROJECTS CONSTRUCTIONCORPORATION LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)

PROFORMA OF BANK GUARANTEE (FOR PERFORMANCE GUARANTEE)

NATIONAL PROJECTS CONSTRUCTION CORPORATION LIMITED,

(Address as mentioned in Notice Inviting Tender)

Whereas the National Projects Construction Corporation Limited (hereinafter called "NPCC" which expression shall include its successors and assigns) having awarded a work order/contract / supply order No…….. Dated ……(hereinafter called the contract) to M/s. ……..... ……..... (Hereinafter called the contractor / supplier) at a total price of Rs……..... subject to the terms and conditions contained in the contract.

WHEREAS, the terms and conditions of the contract require the contractor to furnish a bank guarantee for Rs……..... (Rupees…….....) being ……..% of the total value of the contract for proper execution and due fulfillment of the terms and conditions contained in the contract.

We, the Bank, (hereinafter called the "Bank") do hereby unconditionally and irrevocably undertake to pay to NPCC immediately on demand in writing and without protest/or demur all moneys payable by the contractor/supplier to NPCC in connection with the execution/ supply of and performance of the works/equipment, inclusive of any loss, damages, charges, expenses and costs caused to or suffered by or which would be caused to or suffered by NPCC by reason of any breach by the contractor/supplier of any of the terms and conditions contained in the contract as specified in the notice of demand made
by NPCC to the bank. Any such demand made by NPCC on the bank shall be conclusive evidence of the amount due and payable by the bank under this guarantee. However, the Bank's liability under this guarantee, shall be limited to Rs…….....in the aggregate and the bank hereby agrees to the following terms and conditions:-

(i) This guarantee shall be a continuing guarantee and irrevocable for all claims of NPCC as specified above and shall be valid during the period specified for the performance of the contract including the period of maintenance/warranty i.e. up to…….....

(ii) We, the said bank further agree with NPCC that NPCCshall have the fullest liberty without our consent and without affecting in any manner our obligations and liabilities hereunder to vary any of the terms and conditions of the said contract or to extend time for performance of contract by the contractor from time to time or to postpone for any time or from time to time any of the powers exercisable by NPCC against the contractor/supplier under the contract and forbear or enforce any of the terms and conditions relating to the said contract and we shall not be relieved from our liability by reason of any such variations or extension being granted to the contractor or for any forbearance, act or omission on the part of NPCC or any indulgence by NPCC to the contractor or by any such matter or thing whatsoever, which under the law relating to the sureties would, but for this provision, have effect of so relieving us.

(iii) This guarantee/undertaking shall be in addition to any other guarantee or security whatsoever NPCC may now or at any time have in relation to the performance of the works/equipment and the company shall have full re-course to or enforce this security in performance to any other security or guarantee which the NPCC may have or obtained and there shall be no forbearance on the part of the company in enforcing or requiring enforcement of any other security which shall have the effect of releasing the Bank from its full liability. It shall not be necessary for NPCC to proceed against the said contractor/supplier before proceeding against the Bank.

(iv) This guarantee/ undertaking shall not be determined or affected by the liquidation or winding up, dissolution or change of constitution or insolvency of the supplier/ contractor, but shall in all respects and for all purposes be binding and operative until payment of all moneys payable to NPCC in terms thereof are paid by the Bank.

(v) The Bank hereby waives all rights at any time inconsistent with the terms of this Guarantee and the obligations of the bank in terms hereof, shall not be otherwise effected or suspended by reasons of any dispute or disputes having been raised by the supplier/contractor (whether or not pending before any Arbitrator, Tribunal or Court) or any denial of liability by the supplier/contractor stopping or preventing or purporting to stop or prevent any payment by the Bank to NPCC in terms hereof.

We, the said Bank, lastly undertake not to revoke this guarantee during its currency except with the previous consent of NPCC in writing. Unless a claim is made in writing within three months from the date of expiry of this guarantee i.e…..... (Three months after the date of expiry) we shall be relieved from all liabilities under this guarantee thereafter.

Signed this …..... day of …..... at……

For and on behalf of Bank

WITNESS.

1. _____

2. _____

NATIONAL PROJECTS CONSTRUCTIONCORPORATION LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)

PROFORMA OF BANK GUARANTEE (FOR MOBILIZATION ADVANCE)

NATIONAL PROJECTS CONSTRUCTION CORPORATION LIMITED,

_____

_____

1. In consideration of the NPCC…….(hereinafter called "the Corporation" which expression shall unless repugnant to the subject or context include his successor and assigns) having agreed under the terms and conditions of Contract dated… made between… ……and the Corporation in connection with… (Hereinafter called "the said contract") to make at the request of the Contractor a Mobilization Advance of Rs… for utilizing it for the purpose of the Contract on his furnishing a guarantee acceptable to the Corporation, we the..… Bank (hereinafter referred to the "the said Bank") and having our registered office at……... do hereby guarantee the due recovery by the Corporation of the said advance as provided according to the terms and conditions of the Contract. We……... do hereby undertake to pay the amount due and payable under this Guarantee without any demur, merely on a demand from the Corporation stating that the amount claimed is due to the Corporation under the said Agreement. Any such demand made on the…….shall be conclusive as regards the amount due and payable by the….. . under this guarantee and……... agree that the liability of the ……..to pay the Corporation the amount so demanded shall be absolute and unconditional notwithstanding any dispute or disputes raised by the Contractor and notwithstanding any legal proceeding pending in any court or Tribunal relating thereto. However, our liability under this Guarantee shall be restricted to an amount not exceeding Rs…....

2. We ……. Bank further agree that the Corporation shall be the sole judge of and as to whether the amount claimed has fallen due to the corporation under the said agreement or whether the said Contractor has not utilized the said advance or any part thereof for the purpose of the Contract and the extent of loss or damage caused to or suffered by the Corporation on account of the said advance together with interest not being recovered in full and the decision of the Corporation that the amount has fallen due from contractor or the said Contractor has not utilized the said advance or any part thereto for the purpose of the contract and as to the amount or amounts of loss or damage caused to or suffered by the Corporation shall be final and binding on us.

3. We, the said Bank, further agree that the Guarantee herein contained shall remain in full force and effect till the said advance has been fully recovered and its claims satisfied or discharged and till NPCC certify that the said advance has been fully recovered from the said Contractor, and accordingly discharges this Guarantee subject, however, that the Corporation shall have no claims under this Guarantee after the said advance has been fully recovered, unless a notice of the claims under this Guarantee has been served on the Bank before the expiry of the said Bank Guarantee in which case the same shall be enforceable against the Bank.

4. The Corporation shall have the fullest liberty without affecting in any way the liability of the Bank under this Guarantee or indemnity from time to time to vary any of the terms and conditions of the said Contract or the advance or to extend time of performance by the said Contractor or to postpone for any time and from time to time of the powers exercisable by it against the said Contractor and either to enforce or forbear from enforcing any of terms and conditions governing the said Contract or the advance or securities available to the Corporation and the said Bank shall not be released from its liability under these presents by any exercise by the Corporation of the liberty with reference to the matters aforesaid or by reasons of time being given to the said Contractor or any other forbearance, act or omission on the part of the Corporation or any indulgence by the Corporation to the said Contractor or of any other matter or thing whatsoever which under the law relating to sureties would but for this provision have the effect of so releasing the bank from its such liability.

5. It shall not be necessary for the Corporation to proceed against the Contractor before proceeding against the Bank and the Guarantee herein contained shall be enforceable against he Bank notwithstanding any security which the Corporation may have obtained or obtain from the Contractor or shall at the time when proceedings are taken against the Bank hereunder be outstanding or unrealized.

6. We, the said Bank, lastly undertake not to revoke this Guarantee during its currency except with the previous consent of the Corporation in writing and agree that any change in the constitution of the said Contractor or the said Bank shall not discharge our liability hereunder.

Dated this ……day of…….....

For and on behalf of Bank

(NAME AND DESIGNATION)

Dated:

NATIONAL PROJECTS CONSTRUCTIONCORPORATION LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)

PROFORMA OF BANK GUARANTEE (IN LIEU OF SECURITY DEPOSIT)

National Projects Construction Corporation Ltd.

_____

_____

In consideration of the National Projects Construction Corporation Ltd., (hereinafter called "the NPCC") which expression shall include its successors and assigns having awarded to M/s…..
(hereinafter called "the Supplier/Contractor") which expression shall wherever the subject or context so permits includes its successors and assigns) a Contract in terms inter-alia of the company's letter No…….dated…….and the Contract/Purchase Conditions of the Company and upon the condition of the Supplier/Contractor furnishing Security for the performance of the Supplier's obligations and /or discharge of the contractor's/supplier's liability under and/or in connection with the said supply contract up to a sum of Rs……. (Rupees……. only)
We,……. ((Hereinafter called "The Bank")
which expression shall include its successors and assigns) hereby undertake and guarantee payment to NPCC forthwith on the same day on demand in writing and without protest or demur of any and all moneys payable by the supplier/contractor to the Company under, in respect or in connection with the said contract inclusive of all the losses, damages, costs , charges and expenses and other moneys payable in respect of the above as specified in any notice of demand made by the Company to the Bank with reference to this guarantee up to and aggregate limit of Rs……..(Rupees…….only) and the bank hereby
agree with the company that:

1. This Guarantee shall be continuing guarantee and shall remain valid and irrevocable for all claims of the Company and liabilities of Supplier/Contractor arising upto and until midnight of…….

2. That Guarantee shall be in addition to any other Guarantee or Security whatsoever that the Company now or at any time have in relation to the Supplier's obligations/liabilities under and/ or in connection with the said supply/contract, and the company shall have full authority to take recourse or to enforce this Security in preference to any other Guarantee or Security which the Company may have or obtain and no forbearance on the part of the Company in enforcing or requiring enforcement of any other Security shall have the effect of releasing the Bank from its liability hereunder.

3. The Company shall be at liberty without reference to the Bank and without affecting the full liability of the Bank hereunder to take any other security in respect of the Supplier's/Contractor's obligations and/ or liabilities under or in connection with the said supply/contract or to grant time and / or indulgence to the supplier / contractor or to increase or otherwise vary the prices or the total contract value or to release or to forbear from enforcement of all or any of the conditions under the said supply / contract and / or the remedies of the Company under any other security/securities now or hereafter held by the Company and no such dealings, increase(s) or other indulgence(s) or arrangement(s) with the supplier / contractor or releasing or forbearance whatsoever shall have the effect of releasing the Bank from its full liability to the Company hereunder or prejudicing rights of the company against the Bank.

4. This Guarantee shall not be determined or affected by the liquidation or winding up, dissolution or change of constitution or insolvency of the supplier / contractor but shall in all respects and for all purposes be binding and operative until payment of all moneys payable to the company in terms thereof.

5. The Bank hereby waives all rights at any time inconsistent with the terms of this Guarantee and the obligations of the Bank in terms hereof shall not be otherwise affected or suspended by reason of any dispute or disputes having been raised by the supplier / contractor (whether or not pending before any Arbitrator, Tribunal or Court) or any denial or liability by the supplier/ contractor stopping/ preventing or purporting to stop or prevent any payment by the Bank to the Company in terms thereof.

6. The amount stated in any notice of demand addressed by the company to the Guarantor as liable to be paid to the Company by the supplier/contractor or as suffered or incurred by the Company on account of any losses or damages, costs, charges and / or expenses shall as between the Bank and the Company be conclusive of the amount so liable to be paid to the company or suffered or incurred by the company as the case may be and payable by the Guarantor to the Company in terms hereof subject to a maximum of Rs ….....(Rupees …..only),

7. Unless demand or claim under this Guarantee is made on the Guarantor in writing within three months form the date of expiry of the Guarantee i.e. up to ….....…….
The Guarantor shall be discharged from all liabilities under this Guarantee there under.

Notwithstanding anything contained herein before our liability under this guarantee is restricted to Rs. …..... (Rupees…..……..only).

This guarantee will expire on……..

Any claim under this Guarantee must be received by us within three months from the date of expiry i.e. …..... (This Date is, three months after the expiry date) and if no such claim has been received by us by that date all your rights under this guarantee will cease.

For and on behalf of the Bank

Place

Date

WITNESS:

1.

2.

GUARANTEE TO BE EXECUTED BY CONTRACTOR FOR ANTI-TERMITETREATMENT

THIS AGREEMENT made this____ day of Two thousand _____ between M/s_____ (hereinafter called the guarantor of the one part) and M/s National Projects Construction Corporation Limited, (hereinafter called the NPCC) the OWNER of the other part.

Whereas this agreement is supplementary to the contract hereinafter called the contract dated_____ made between the guarantor of the one part and National Projects Construction Corporation Ltd., of the other part whereby the contractor inter-alia, understood to render the buildings and structures in the said contract recited, completed, termite proof. And whereas the guarantor agreed to give a guarantee to the effect that the said structure will remain termite proof for TEN YEARS to be so reckoned from the date after the maintenance period prescribed in the contract expires.

During this period of guarantee the guarantor shall make good all defects and for that matter shall replace at his risk and cost such wooden member as may be damaged by termite and in case of any other defect being found, he shall render the building termite proof at his cost to the satisfaction of the Engineer-in-charge and shall commence the works of such rectification within seven days from date of issuing notice from the Engineer-in-Charge calling upon him to rectify the defects falling which the work shall be got done by
NPCC/ OWNER by some other contractor at the guarantor's cost and risk and in the later case the decision of the Engineer-in-charge as to the cost recoverable from the guarantor shall be final and binding.

That if the Guarantor fails to execute the Anti-Termite treatment or commits breaches hereunder then the Guarantor will indemnify NPCC against all losses damages, cost expenses or otherwise which may be incurred by him by reasons of any default on the part of the guarantor in performance and observance of this supplemental Agreement. As to the amount of loss and or damage and/or cost incurred by NPCC/ OWNER decision of the Engineer-in-charge will be final and binding on the parties.

In witness where of these presents have been executed by the guarantor_____ and by_____ for and on behalf of NPCC on the day of month and year first above written.

Signed sealed and delivered by (Guarantor)

IN THE PRESENCE OF:

1.

2.

Signed for and on behalf of NPCC by/ in presence of:

1.

2.

GUARANTEE TO BE EXECUTED BY CONTRACTOR FOR REMOVAL OF DEFECTS AFTER COMPLETION IN RESPECT OF WATER PROOFING WORKS

The agreement made this ……. Day of…….. Two thousand eight between ……. (Hereinafter called Guarantor of the one part) and the NPCC (hereinafter called the Execution Agency of the other part).

WHEREAS this agreement is supplementary to a contract (hereinafter called the Contract), dated …… and made between the GUARANTOR OF THE ONE part and the NPCC of the other part, whereby the Contractor, inter-alia, undertook to render the buildings and structures in the said contract recited completely water and leak proof.

AND WHEREAS the Guarantor agreed to give a guarantee to the effect that the said structures will remain water and leak proof for ten years from the date of handing over of the structure of water proofing treatment

NOW THE GUARANTOR hereby guarantees that water proofing treatment given by him will render the structures completely leak proof and the minimum life of such water proofing treatment shall be ten years to be reckoned from the date after the maintenance period prescribed in the contract provided that the Guarantor will not be responsible for leakage caused by earthquake or structural defects or misuse of roof or alteration and for such purpose.

a) Misuse of roof shall mean any operation, which will damage proofing treatment, like chopping of firewood and things of the same nature, which might cause damage to the roof.

b) Alternation shall mean construction of an additional storey or a part of the roof or construction adjoining to existing roof whereby proofing treatment is removed in parts

c) The decision of the Engineer-in-Charge with regard to cause of leakage shall be final

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

That if the Guarantor fails to execute the waterproofing or commits breach thereunder, then the Guarantor will indemnify the principal and his successors against all laws damage, cost, expense or otherwise which he may incur by reason of any default on the part of the GUARANTOR in performance and observance of this supplementary agreement. As to the amount of loss and / or damage and/ or cost incurred by the NPCC, the decision of the Engineer-in-Charge will final and binding on the parties.

IN WITNESS WHEREOF these presents have been executed by the Obligator, and by ……. for and on behalf of the NPCC on the day, month and year first above written.

Signed, sealed and delivered by Obligator in the presence of-

1.

2.

Signed for and on behalf of the NPCC by _____

In presence of:

1.

2.

AGREEMENT FORM

This agreement made this day of (Month) (Year), between the National Projects Construction Corporation Limited (NPCC), a company incorporated under the Companies Act, 1956 having its Registered Office at 30-31,Raja House, Nehru place New Delhi – 110 019 (hereinafter referred to as the "NPCC" which expression shall include its administrators, successors, executors and assigns) of the one part and M/s (NAME
OF CONTRACTOR) (hereinafter referred to as the 'Contractor' which expression shall unless the context requires otherwise include its administrators, successors, executors and permitted assigns) of the other part.

WHEREAS, NPCC, has desirous of construction of (NAME OF WORK) (hereinafter referred to as the "PROJECT") on behalf of the (NAME OF OWNER/MINISTRY) (hereinafter referred to as "OWNER"), had invited tenders as per Tender documents vide NIT No. _____.

AND WHEREAS (NAME OF CONTRACTOR) had participated in the above-referred tender vide their tender dated _____ and NPCC has accepted their aforesaid tender and award the contract for (NAME OF PROJECT) on the terms and conditions contained in its Letter of Intent No. _____ and the documents referred to therein, which have been unequivocally accepted by (NAME OF CONTRACTOR) vide their acceptance letter dated _____ resulting into a contract.

NOW THEREFORE THIS DEED WITNESSETH AS UNDER:

ARTICLE 1.0 – AWARD OF CONTRACT

1.1 SCOPE OF WORK

NPCC has awarded the contract to (NAME OF CONTRACTOR) for the work of (NAME OF WORK) on the terms and conditions in its letter of intent No. _____ dated _____ and the documents referred to therein. The award has taken effect from (DATE) i.e. the date of issue of aforesaid letter of intent. The terms and expressions used in this agreement shall have the same meanings as are assigned to them in the "Contract Documents" referred to in the succeeding Article.

ARTICLE 2.0 – CONTRACT DOCUMENTS

2.1 The contract shall be performed strictly as per the terms and conditions stipulated herein and in the following documents attached herewith (hereinafter referred to as "Contract Documents").

a) NPCC Notice Inviting Tender vide No. _____ date _____and NPCC' s tender documents consisting of:

i) General Conditions of Contract (GCC) & Special Conditions of Contract (SCC) including Appendices & Annexure along with amendment(s) / errata (if any) issued (Volume-I).

ii) Bill of Quantities along with amendment(s)/corrigendum(s), if any, (Volume-II).

iii) Technical Specifications along with amendment(s) / corrigendum(s), if any, (Volume-III).

iv) Tender drawings along with amendment(s) / corrigendum(s), if any, (Volume-IV).

v) _____

vi) _____

b) (NAME OF CONTRACTOR) letter proposal dated _____ and their subsequent Communication:

i) Letter of Acceptance of Tender Conditions dated _____

ii) _____

iii) _____

2.2 NPCC 's detailed Letter of Intent No. _____ dated ____ including Bill of Quantities. Agreed time schedule, Contractor's Organisation Chart and list of Plant and Equipments submitted by Contractor.

2.3 All the aforesaid contract documents referred to in Para 2.1 and 2.2 above shall form an integral part of this Agreement, in so far as the same or any part thereof column, to the tender documents and what has been specifically agreed to by NPCC in its Letter of Intent. Any matter inconsistent therewith, contrary or repugnant thereto or deviations taken by the Contractor in its "TENDER" but not agreed to specifically by NPCC in its Letter of Intent, shall be deemed to have been withdrawn by the Contractor without any cost implication to NPCC. For the sake of brevity, this Agreement along with its aforesaid contract documents and Letter of Intent shall be referred to as the "Contract".

ARTICLE 3.0 – CONDITIONS & CONVENANTS

3.1 The scope of Contract, Consideration, terms of payments, advance, security deposits, taxes wherever applicable, insurance, agreed time schedule, compensation for delay and all other terms and conditions contained in NPCC 's Letter of Intent No. _____ dated _____ are to be read in conjunction with other aforesaid contract documents. The contractor shall duly perform the contract strictly and faithfully in accordance with the terms of this contract.

3.2 The scope of work shall also include all such items which are not specifically mentioned in the Contract Documents but which are reasonably implied for the satisfactory completion of the entire scope of work envisaged under this contract unless otherwise specifically excluded from the scope of work in the Letter of Intent.

3.3 Contractor shall adhere to all requirements stipulated in the Contract documents.

3.4 Time is the essence of the Contract and it shall be strictly adhered to. The progress of work shall conform to agreed works schedule/contract documents and Letter of Intent.

3.5 This agreement constitutes full and complete understanding between the parties and terms of the presents. It shall supersede all prior correspondence to the extent of inconsistency or repugnancy to the terms and conditions contained in Agreement. Any modification of the Agreement shall be effected only by a written instrument signed by the authorized representative of both the parties.

3.6 The total contract price for the entire scope of this contract as detailed in Letter of Intent is Rs._____ (Rupees _____ only), which shall be governed by the stipulations of the contract documents.

ARTICLE 4.0 – NO WAIVER OF RIGHTS

4.1 Neither the inspection by NPCC or the Engineer-in-Charge or Owner or any of their officials, employees or agents nor order by NPCC or the Engineer-in-Charge for payment of money or any payment for or acceptance of, the whole or any part of the work by NPCC or the Engineer-in-Charge nor any extension of time nor any possession taken by the Engineer-in-Charge shall operate as waiver of any provisions of the contract, or of any power herein reserved to NPCC, or any right to damage herein provided, nor shall any waiver of any breach in the contract be held to be a waiver or any other or subsequent breach.

ARTICLE 5.0 – GOVERNING LAW AND JURISDICTION

5.1 The Laws applicable to this contract shall be the laws in force in India and jurisdiction of Delhi Court (s) only.

5.2 Notice of Default

Notice of default given by either party to the other party under the Agreement shall be in writing and shall be deemed to have been duly and properly served upon the parties hereto, if delivered against acknowledgment due or by FAX or by registered mail duly addressed to the signatories at the address mentioned herein above.

IN WITNESS WHEREOF, the parties through their duly authorized representatives have executed these presents (execution whereof has been approved by the Competent Authorities of both the parties) on the day, month and year first above mentioned at New Delhi.

For and on behalf of:	For and on behalf of:
(NAME OF CONTRACTOR)	M/S NATIONAL PROJECTS CONSTRUCTION CORPORATION LIMITED
WITNESS:	WITNESS:
1.	1.
2.	2.

VOLUME - I

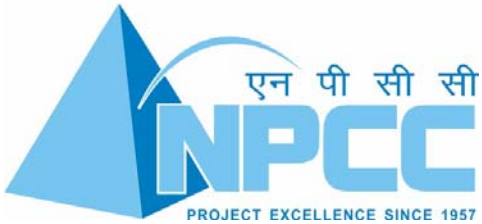
Drawing

NATIONAL PROJECTS CONSTRUCTION CORPORATION LIMITED
(A Government Of India Enterprise)
ISO 9001:2008
Zonal Office: Chattisgarh Zone, Ashok Vihar Colony, Pandri,
Raipur – 492 004 (Chattisgarh),
www.npcc.gov.in

TENDER FOR CONSTRUCTION OF BANK BUILDING FOR PUNJAB & SIND BANK at MUMBAI ON DESIGN & BUILD BASIS

एन पी सी सी
NPCC
PROJECT EXCELLENCE SINCE 1957

VOLUME: II



NATIONAL PROJECTS CONSTRUCTION CORPORATION LIMITED
(A Government Of India Enterprise)
ISO 9001:2008
Zonal Office: Chattisgarh Zone, Ashok Vihar Colony, Pandri,
Raipur – 492 004 (Chattisgarh),
www.npcc.gov.in

TENDER FOR CONSTRUCTION OF BANK BUILDING FOR PUNJAB & SIND BANK at MUMBAI ON DESIGN & BUILD BASIS

VOLUME: II

TECHNICAL SPECIFICATIONS

SCOPE OF WORK

Selected agency has to complete the Bank Building ready to use for Punjab & Sind Bank at 27/29, Ambalal Doshi Marg, Mumbai in all respect on Design and Build System with in the scheduled time. The Scope of Work is spelled below is only a brief description.

1. Dismantling of existing structures (if any) including site clearance.
2. Architectural drawings with green building concept, its approval from Owner/NPCC & necessary clearances from local authorities.
3. Structural designs duly vetted from any reputed institute like IIT.
4. Design for MEP services like Plumbing, Sanitary, water Supply, Electrical services, Generators, Air-Conditioning, Fire Protection, Telephone & Communication Systems & Surveillance System etc. as per requirement and Building Code and Where ever necessary obtaining approval of local bodies.
5. Construction of building including supply & installation of MEP services like Plumbing, Sanitary, water Supply, Electrical services, Generators, Air-Conditioning, Fire Protection, Telephone & Communication Systems & Surveillance System etc. as per requirement and Building Code and Where ever necessary obtaining clearances from local authorities.
6. Approval of Completion & submission of as built drawings.
7. Providing 100% Power Back-up for entire building.
8. Defect Liability for one year after handing over of Project to Owner.

The Interior work is not included in the scope of this Tender.

TECHNICAL SPECIFICATIONS

CIVIL WORKS

1. Notes - General

1.1 These notes are applicable to all specification of the items of work to be carried to execute the work as required to complete the work in all respect.

1.2 The work shall be carried out according to CPWD detailed specification 2009 with up to date corrections unless otherwise specified in these specifications whether specifically mentioned or not. No extra in any form will be paid.

1.3 All mandatory tests specified in CPWD specifications 2009 with up to date correction slips shall be tested from the approved laboratories as desired by the Engineer-in-charge and expenses viz. testing charges, including cartage, conveyance etc. what so ever shall be borne by the Contractor. If after any such test and in the opinion of the Engineer-in-charge any work or portion or work is found to be defective and unsound the contractor shall pull down and re-execute the same at his own cost. Defective materials shall be removed from the site.

1.4 The work shall be carried out simultaneously with the electrical, sanitary and other services. The work shall be carried out till it is completely satisfactory along with the completion of essential portions of the other services.

1.5 The work shall be related to the drawings which the contractor is presumed to have studied and keep in touch with Architect/Engineering Consultant deployed by the Contractor as the part of this Contract. Nothing extra will be paid for any item on account of its shapes, size, location or other difficult circumstances, even if the schedule makes no distinction in its description provided the item is shown in the drawings.

1.6 The sources of materials stated in the specifications are those from which materials are generally available. However, materials not conforming to specification shall be rejected even if they come from the stated sources. The contractor should satisfy himself that sufficient quantity of materials of acceptable specification is available from the stated or other sources and should tender accordingly,

1.7 Definition of work as related in the specifications specified means specified in CPWD specifications or in specifications of any standard code, similar documents mentioned herein and forming part of tender documents.

I.S – Shall mean a standard specification issued by the Indian Standard Institution with up to date correction as on date.

Engineer-in-charge – The Project Manager of NPCC who shall supervise and be in-charge of the work from time to time.

Approved, accepted, allowed – shall mean approved in writing by the Engineer-in-charge.

Structural Consultant – shall mean the firm or person(s) appointed by the Contractor as approved by the Engineer-in-charge to prepare structural drawings.

Instructed, directed or required – means as instructed by the Engineer-in-charge.

1.8 The requirement of these specifications shall be fulfilled by the contractor without extra charge i.e. The rates quoted shall be deemed to have taken these specifications in to account.

1.9 Floor to Floor height shall be between 3.8m- 4.2m & at Ground Level front portion shall be double height.

1.10 The work has to be planned and executed according to prevailing rules & regulations for FAR. Permission/approval from local authorities/bodies has to be obtained. Building shall be complete in all respect including Water, Power, Sewerage connections etc. and functional.

1.11 In addition to above, following specifications is also to be complied.

2.0 Mix Design for RCC work in Foundation, Plinth and Superstructure

Min. grade of Design Mix concrete shall be M-30 which can go up to M- 35 for some structural elements as per IS- 456 for condition of severe exposer to coastal environment. Concrete mix can be either BMC/ RMC as per local availability.

Quality Assurance

2.1 Concrete used on site shall comply to relevant parts of Standards, Codes of practices, Technical specification given in particular or approved, designed mixes as prepared, approved and adopted for works to give designed strength, serviceability, long term durability etc.,

2.2 The contractor shall have to submit all materials such as cement, sand, aggregate admixtures, water etc., incorporated into concrete along with test certificates from recognized laboratories for the Engineer–in charge's approval. Test has to be carried out 8 days before concreting with minimum cement contents criteria for all concrete mixes having strength M-30 and above as specified in design and strength as per the relevant IS code.

2.3 Minimum cement content/ consumption per cubic meter of concrete for the different grades of concrete shall be as per the provisions contained in IS 456-2000.

2.4 The contractor shall have to purchase/arrange cement with ISI mark 43 grade OPC of approved make.

2.5 The steel reinforcement to be used for the work shall be as per IS-1786-2008 TMT / HYSB of fe- 500 grade only and the contractor will have to procure steel from the approved primary producers confirming to IS code.

2.6 The water cement ratio shall be strictly adhered to as per the approved mix design.

2.7 The small quantity of concrete can be done using conventional method instead of ready mix concrete with approval from the Engineer-In-Charge.

2.8 Controlled concrete with proper concrete mix design to be placed in situ, using standard formwork as per CPWD specifications to produce form finished reinforced concrete walls and slabs, loft, chajja, waist slab, steps, parapet simultaneously. The concrete should be placed using concrete pumping system.

2.9 Providing and fixing in position TMT/HYSB steel bar reinforcement as per the approved make of various diameters for RCC foundation, other foundations, RCC slabs, beams, staircase, chajjas, lintels, copings, fins, arches etc. as per detailed designs, drawings and schedules as approved by the engineer- in- charge including cutting, bending, hooking the bars binding with wires or tack welding and supporting as required complete.

3. CONCRETING

3.1 The contractor may opt to use Ready Mixed Concrete of repute after obtaining prior written approval from the Engineer-in-charge.

3.2 The contractor shall provide construction joints only at the specified positions and as per BIS codes and the concreting for columns shall be floor to beam height in one lift, and in case the concreting is to be done in two lifts the minimum height of first lift of columns shall be 2.4 meters.

3.3 The stone aggregate and sand of required zone shall be from the quarries as approved by Engineer-in-charge. The samples of the materials shall be got approved along with the Mix design.

3.4 Admixtures/Plasticizers of the required specification and make shall only be permitted as per approved mix design

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4. FORMWORK

4.1 Form Work shall be made from water proof ply only.

4.2 Form work shall be so designed and constructed that it can be removed without damage to the concrete. Formwork shall be set to the profiles and pre-cambers

shown on the drawings and due allowance shall be made in setting the levels of the formwork to compensate for any deflection or deformation due to the weight of the concrete. Formwork shall be designed and constructed to withstand the vibration required during placing of the concrete.

4.3 Where concrete is poured in more than one operation the contractor shall take all necessary precautions to hold the formwork tight against the previous pour to avoid any discontinuities in the finished off-form surface.

4.4 Forms shall be built true to line and level and braced in a substantial and unyielding manner to maintain correct position and shape at any stage.

4.5 Forms shall be mortar tight and the edges of all joints shall be sealed with a suitable type of sealant. Forms subject to external water pressure shall be watertight.

4.6 Form shall be held in correct alignment and spacing by bolt and rod assemblies designed so that when the forms are removed no metal shall be closer to the surface of the concrete.

4.7 Prior to concreting all forms shall be clean and free from sand and shavings and tie wire ends and other debris. Surplus water shall be drained and any temporary openings should be closed in a proper manner.

4.8 Formwork shall be removed in such a manner to ensure that no damage to the concrete occurs.

4.9 Based on average conditions in accordance with IS-456, formwork support and formwork to reinforced concrete deck soffits and pier cap beams shall not be removed until the concrete has achieved a cubed strength as per IS.

5. TOLERANCES FOR CONCRETE CONSTRUCTION

The materials for forms and form arrangements shall be such as to result in finished concrete work complying with the tolerances shown in Walls, Columns and Column Cap Beams.

5.1 Variation from vertical or specified batter The lesser of 1:300 or + 5mm in full height
5.2 Variation in cross sectional dimensions - 5mm
5.3 Misplacement or eccentricity of centerline + 5mm
5.4 Variations from specified level of surfaces other than bearing surfaces + 5mm
5.5 Departure from specified alignment of centerline and edges + 5mm
5.6 Departure from specified profile + 5mm
5.7 Variation in cross-sectional dimensions - 3mm

5.8 Variation from specified level of all bearing surfaces + 3mm

6. FILLING

6.1 Filling up to plinth level shall comprise of 300 mm thick layer of stone aggregates 53 to 22.4mm size properly rammed and compacted, 150mm compacted bed of clean sand of FM 10, 100mm thick layer of Cement Concrete 1:4:8 followed by 75mm thick RCC Slab M-25 grade. The thickness and composition of each layer defined above shall be confirmed with the Structural Drawings.

7. ANTI TERMITE TREATMENT

Shall be treated with the Chemical, Concentration and dosage for horizontal, vertical surfaces are based on the CPWD Specifications and IS Code of Practices for Anti Termite measures in Buildings IS 1613(part-II) through the specialized agency with at least 10 (Ten) years guarantee.

9. SUPERSTRUCTURE

8.1 Solid concrete blocks used for external walls construction 200mm thick, and for internal walls 150 mm thick concrete blocks/Gypsum blocks/brick can be used as per approved make.

9. PLASTERING WORK

9.1 Work shall be carried out as per recommendations of code of practices IS 1661 and IS 2402.

10. DOORS AND WINDOWS

10.1 Door & Windows must be Aluminum frames, Shutters in Z sections with Powder coated of minimum 50 micron and 12mm profiles Toughened Glass.

10.2 Frame less doors must be at least 12mm profiles Toughened Glass.

10.3 Glass panes of float glass of 5.5-8mm as per requirement.

10.4 Materials, components and system incorporated in the work shall be in compliance with the standards and procedures of the appropriate manufactures and the standards and codes referred to in this specification.

10.5 Glazing in Building, Glazing and fixing of glass for building as per IS 3548, C P 152 respectively. Quality Assurance to be provided with the following Certificates.

1. Manufacturer's letter certifying glass and glazing materials compatibility
2. Manufacturer's letter certifying sealed insulating glass units meet or exceed specifications
3. Manufacture's test certificate for quality of glass supplied.

11. EXTERNAL FAÇADE WORK

11.1 Aluminium Composite Clading

Aluminium panel shall be of 4mm/6mm thick sheet or as specified. It shall confirm to BS 6063- 76 and ASTM B 209-73. Anodizing sheet and plate shall confirm to S 1615 AA 20

Providing & Fixing of 4mm thick PVDF coated approved make & approved shade Exterior Grade Aluminum Composite Panel Cladding consist of LDPE core laminated between two sheets of aluminum foils.50 thickness of a same grade on both sides as per ASTM standard ensuring no Air Entrapment between PE core and Aluminum Coil in desired color as may be approved by the Architects as per Elevation Drawings and Plan Drawings.

The basic frame work shall be created by 38mm x 25mm X 1.6mm Thick Extruded Aluminum Rectangular Tube in the vertical and horizontal plane of the cladding.

The Extruded Aluminum Rectangular Tube shall be provided with 50mm long Aluminum Extruded Angle (Brackets) of 25x25x4 mm thick (Or 38x25x4 mm thick-50x25x4 mm thick or as may be required at site at respective locations) at every 900mm internal on both sides of the Tube, fixed with 3 Nos. of Aluminum Rivets for each angle.

Fixing of the basic framework shall be done by drilling holes by an Electric Drill in the Masonry/Reinforced Cement Concrete, inserting 50mm long Nylon Sleeves of Fischer make and 10x25 or 50 or 75mm long stainless Steel CSK Wooden Screw (2 Nos. per Bracket). Wherever the basic frame work is required to be fixed on to Metal Structural Framework, the same shall be done by drilling holes and fixed with Stainless Steel self taping screws. ACP shall be sealed with "Non-Staining" Silicon Weather Sealant of Dow Corning (USA) make. The Aluminum Composite Panel Cladding shall be measured on out to out basis and paid for.

Note: The contractor shall submit fabrication drawings for approval of the Engineer-in-Charge.

The fabrication work shall start only after approval of the fabrication drawings. Any change required in the fabrication drawings shall be carried out at no extra cost.

11.2 **Structural Glazing**

Providing & fixing all arrangements for Semi unitized structural glazing in SGU (Double glass unit) as per the Elevation drawing, fabricated out of Heavy Duty Aluminum Extruded profiles/sections of approved make . All profiles shall be conforming to Alloy 63400WP with chemical composition and mechanical properties as per IS - 733.

Glazing system shall be design to withstand wind load of 1.5kpa as per prevalent IS code and as per prevalent site conditions and building profiles, system shall be consisting of mullion, transom & sash with natural Anodized/powder coating minimum 60 micron.

Glass shall be of 10mm thick of Saint Gobain , Pilkinston, ASAHI make of approved shade glazed with structural silicone of Dow corning on alum sash frame. Glazed panels shall fixed in grid manner on support frame of mullion and transoms. The contractor must submit detailed calculations with details of the structural calculations of the member offered and also provide drawings of individuals profiles, clearly including all dimensions, wall thickness etc.

The Anchoring/ Bracing of the Semi unitized structural glazing to the RCC slab/beams/columns at site shall be done with Heavy duty M.S. Brackets of approved design, PVC spacers shall be provided between the Aluminum Mullion member and Bracket. Aluminum shims of various thickness as may be required shall be provided behind the brackets to adjust the beam leve/line variations possible at site, or extended brackets duly designed shall be provided of required size as per site requirements. FISCHER make fasteners and 10 x 75 mm. stainless Steel Bolt (or as may be required as per site condition) shall be used for Anchoring the Brackets to provide a minimum anchoring depth of 50-80mm in the concrete to withstand the dead load of the Semi unitized structural glazing as well as stresses due to wind pressure etc.

11.3 **Spandrel Panel**

Providing and fixing of Spandral Insulation in spandral Glazing Area of the curtain wall with 1 mm thick G.I. sheet fabricated in a Tray form duly filled with 50 mm thick glass wool of density 48 Kg/ Cum as per approved make with one side tissue and the other side with aluminium foil taped fixed with G.I. framework by stainless steel screws of 8x25mm and the periphery gap between the GI Sheet frame & Aluminium framework shall be sealed by silicon weather sealant. The glass wool shall be fixed on to the G.I. Framework by using 6mm thick M.S. Screw, Headed Bolt and nut including washer of 25mm OD and 6.5mm ID both sides forming a pattern of squares of 300mm spacing.

11.4 **Smoke Seal**

Providing and fixing of smoke seal with cover frame work fabricated in 1 mm thick GI sheet duly filled with rock wool in loose as manufactured by Lloyd Insulation (I) Ltd or equivalent with necessary anchor fastner in slab / beam including sealing of approved quality (Daw Corning 790 or approved equivalant) with mineral fibre wool backing complete as per approved shop drawing.

11.5 **Aluminium Flashing**

Providing and fixing Aluminium Flashing at cill level, soffit level (pelmet) made out of 2 mm thick Aluminium sheet anodized (25micron) as per approved shade bent to required profile and shape to seal the cill, soffit including frame work, drilling holes with an electric drill, inserting PVC sleeves, stainless steels screws of 8 x 38 mm at a spacing of 300 mm complete in all respect. (Contractor shall submit detailed drawing of this flashing including its proposed fixing arrangement for the approval of the Engineer-in-charge/ Architect).

12 WATER PROOFING WORK

Terrace water proofing Work shall be Brickbat Koba with China Mosaic and carried out as per latest CPWD specification and IS Code of Practices by the Experienced and water proofing specialized agency with the guarantee for at least 10 years.

13. HAND RAIL

Main Stair Case area: Stainless Steel 304 grade with the thickness 38 mm (1-1/2 inches) O.D. tube in alloy and finish as scheduled and minimum weight of 8.0 Kg. per RM.

Service Stair Case/Fire Escape Stair case: M.S. railing with Minimum weight of 12.0 Kg. per RM.

14. FLOORING AND FINISHING

S. No.	Location / Area	Flooring	Skirting	Walls & Columns Finishing	Ceiling
1.	Entrance Lobby, Atrium, Circulation Area	Composite floor in Granite Raw Silk/ Tan Brown/ Ruby red/ Lakha Red/ Black Granite as approved by Owner	100 mm height as per floor finish	Composition of ALUCO BOND Texture paint + Granite as approved by Owner	Gypsum Board with GI frame as per CPWD specifications
2.	Working Area	Vitrified tiles 600x600mm of approved make	100 mm height as per floor finish	Composition of ALUCO BOND Texture paint + Granite as approved by Owner	Gypsum Board with GI frame as per CPWD specifications
3.	Parking Area / Ramp	100 mm thick non-suspended Vacuum dewatered R.C.C. floor with Power float to obtain Smooth finish or Paver Block		12 mm thick Cement Plaster finished with water based Enamel Paint up to 2250 LVL. Rest with Oil based Distemper.	Oil based distemper

4.	Stair Case	20 mm avg thickness polished Granite stone with nosing.	100 mm height as per floor finish	300x300 Ceramic tiles with pencil molding up to 1500 LVL. Rest with Oil based distemper	Oil based distemper
5.	Lift Lobbies	18mm avg. thickness pre polished Granite Stone	100 mm height as per floor finish	18 mm thick pre polished granite stone cladding	Gypsum Board with GI frame as per CPWD specifications
6.	Plumbing Plant Room, Electrical Room, Diesel Generator Room, Store and all other areas	20 mm Average thickness Polished Kota Stone	100 mm height as per floor finish	12 mm thick Cement Plaster finished with Oil based Distemper.	Oil based distemper

PLUMBING/FIRE FIGHTING WORKS

Notes - General

1. **SCOPE OF WORK**

The general character and the scope of work to be carried out under this contract are illustrated in Drawings, and Schedule of Quantities prepared by the Engineering Consultant deployed by the Contractor as a part of this contract. The Contractor shall carry out and complete the said work under this contract in every respect in conformity with the completion of the Building and with the directions of and to the satisfaction of the Owner/NPCC. The contractor shall furnish all labour, material, and equipment as required including transportation and incidental necessary for supply, installation, testing and commissioning of the complete system as described and shown in the drawings. This also includes any materials, equipment, appliances and incidental work not Specifically mentioned herein or noted on the Drawing/Documents as being furnished or installed, But which are necessary and customary to be performed under this contract. The scope of work shall comprise of following (but not limited to):

a. Sanitary fixtures & CP fittings.

b. Water supply, soil, waste & sewer pipes with all fittings.

c. Fire protection.

d. Dash fasteners for support of services or embedding of metal insert plates in ceiling/wall, as required.

e. Automatic controls and instruments.

f. Wiring and earthing from MCC panels to various pumps and equipments, control wiring and Interlocking.

g. Balancing, testing and commissioning of the entire plumbing & fire fighting system installation.

h. Test reports, list of recommended spares, as installed drawings, operation and maintenance manual for the entire plumbing & fire fighting system installation.

i. Complete P & I diagrams for all the systems installed to be submitted as part of completion documents

2. **ASSOCIATED CIVIL WORKS**

Following civil works associated with plumbing installation are excluded from the scope of this contract. These shall be executed by the specialized agencies in accordance with approved shop drawings and under direct supervision of the plumbing & fire fighting specialized agencies.

i. Provision of hoisting arrangement in plant room for loading & unloading of equipments.

ii. RCC foundation for water supply pumps & equipments with angle iron frame work to protect the edges from accidental damage.

iii. PCC foundation blocks with angle iron frame work for all motor control centre.

iv. PCC foundation for strainers.

v. Civil works for drainage sumps.

vi. Water proofing of toilet floors.

3. ASSOCIATED SERVICES WORKS

A. All associated **ELECTRICAL WORKS** required for completion of work included in the scope of this contract. These shall be installed by specialized agencies under direct supervision of the Plumbing contractor.

i. Providing main power supply and earthing at main incoming circuit breakers in the Plumbing control panels.

4. PROJECT EXECUTION AND MANAGEMENT

The Contractor shall ensure that Senior Planning and Erection personnel from his organization are assigned for this project. They shall have minimum 5 years experience in this type of installation. The Contractor shall appoint one Senior Technical Official in the organization. He shall be assisted on full time basis by a minimum of one erection engineer & two senior supervisors. The entire staff shall be posted at site on full time basis.

For quality control & monitoring of workmanship, contractor shall assign at least one full-time engineer who would be exclusively responsible for ensuring strict quality control and ensuring top class workmanship for the Plumbing & fire fighting installation.

The Contractor shall arrange to have mechanized & modern facilities of transporting material to place of installation for speedy execution of work.

5. PERFORMANCE GUARANTEE

The contractor shall carry out the work in accordance with the drawings and technical specifications of Manufacturer.

The contractor shall be fully responsible for the performance of the selected equipments installed by him at required parameters and for the efficiency of the installation to deliver the required end results.

The contractor shall also guarantee that the performance of various equipment individually, shall not be less than the quoted capacity; also actual power consumption shall not exceed the quoted rating.

6. **BYE-LAWS AND REGULATIONS**

The installation shall be in conformity with the Bye-laws, Regulations and Standards of the local authorities concerned, in so far as these become applicable to the installation. But if these Specifications and Drawings call for a higher standard of materials and / or workmanship than those required by any of the above regulations and standards, then these specifications and drawings shall take precedence over the said regulations and standards. However, if the drawings and specifications require something which violates the Bye-laws and Regulations, then the Bye-laws and regulations shall govern the requirement of this installation.

7. **DRAWINGS**

The Plumbing & fire fighting Drawing are to be made available to Engineer-in-charge for approval before commencement of the work. The architectural drawings and details shall be examined for exact location of sanitary fixtures & fittings.

Maximum headroom and space conditions shall be maintained at all points. Where headroom appears inadequate, the contractor shall notify the Architect/Consultant/Site representative before proceeding with the installation. In case installation is carried out without notifying, the work shall be rejected and contractor shall rectify the same at his own cost.

8. **AS BUILT DRAWINGS**

Contractor shall submit the schedule of as built drawings to be furnished by him keeping in view the overall project schedule.

A. All the drawings shall be prepared on computer through AutoCAD System. Within one week after the completion of the works, the contractor shall furnish, for the approval of the Engineer-in-charge, two sets of detailed drawings of all equipment and materials including layouts for Plant room. Detailed piping drawings showing exact location of supports, flanges, bends, tee connections, reducers, distribution grids, collars, detailed piping drawings showing exact location and type of supports, valves, fittings etc; pipe insulation etc; electrical panels inside/outside views, power and control wiring schematics, cable trays, supports and terminations. These drawings shall contain all information as required by the Architect/Consultant. These Drawings shall contain details of construction, size, arrangement, operating clearances, performance characteristics and capacity of all items of equipment, also the details of all related items of work. Each drawing shall contain tabulation of all measurable items of equipment/materials/works and progressive cumulative totals.

Each item of equipment/material proposed shall be a standard catalogue product of an established manufacturer strictly from the manufacturers.

C. Manufacturer's drawings, catalogues, pamphlets and other documents submitted shall be in four sets. Each item in each set shall be properly labeled, indicating the specific services for which material or equipment is to be used, giving reference to the governing section and clause number and clearly identifying in ink the items and the operating characteristics. Data of general nature shall not be accepted.

9. **QUIET OPERATION AND VIBRATION ISOLATION**

All equipment shall operate under all conditions of load without any sound or vibration which is objectionable in the opinion of the Owner. In case of rotating machinery sound or

vibration noticeable outside the room in which it is installed, or annoyingly noticeable inside its own room, shall be considered objectionable. Such conditions shall be corrected by the Contractor at his own expense.

10. **ACCESSIBILITY**

The Contractor shall verify the sufficiency of the size of the shaft openings, clearances in cavity walls and suspended ceilings for proper installation of his piping. His failure to communicate insufficiency of any of the above shall constitute his acceptance of sufficiency of the same**.** The Contractor shall locate all equipment which must be serviced, operated or maintained in fully accessible positions. The exact location and size of all access panels, required for pipes, valves or other devices requiring attendance, shall be finalized and communicated in sufficient time, to be provided in the normal course of work. Failing this, the Contractor shall make all the necessary repairs and changes at his own expenses**.**

11. **MATERIALS AND EQUIPMENT**

All materials and equipment shall conform to the relevant Indian Standards and shall be of the approved make and design. Makes shall be strictly in conformity with list of approved manufacturers.

12. **MANUFACTURERS INSTRUCTIONS**

Where manufacturers have furnished specific instructions, relating to the materials and equipment used in this project, covering points not specifically mentioned in these documents, such instructions shall be followed in all cases.

13. **ELECTRICAL INSTALLATION**

The electrical work related to Plumbing & fire fighting services, shall be carried out in full knowledge of, and with the complete coordination of the contractor. The electrical installation shall be in total conformity with the control wiring drawings prepared by the contractor and approved by the Architect/NPCC. All plumbing equipments shall be connected and tested in the presence of an authorized representative of the contractor.

The Plumbing & fire fighting system shall be commissioned only after the contractor has certified in writing that the electrical installation work for Plumbing & fire fighting services has been thoroughly checked, tested and found to be totally satisfactory and in full conformity with the contract drawings, specifications and manufacturers instructions. It is to be clearly understood that the final responsibility for the sufficiency, adequacy and conformity to the contract requirements, of the electrical installation work for Plumbing & fire fighting services, lies solely with the contractor**.**

14. **COMPLETION CERTIFICATE**

On completion of the Electrical installation for Plumbing & fire fighting works a certificate shall be furnished by the contractor, counter signed by the licensed supervisor, under whose direct supervision the installation was carried out. This certificate shall be in the prescribed form as required by the local authority.

15. **BALANCING, TESTING AND COMMISSIONING**

Balancing of water supply & fire fighting system and all tests as called for the specifications shall be carried out by the contractor through a specialist group, in accordance with the specifications and local standard Guide lines and Standards.

Four copies of the certified manufacturers performance curves for each piece of equipment, high lighting operational parameters for the project, shall be submitted alongwith the test certificates. Contractor shall also provide four copies of record of all safety and automatic control settings for the entire installation.

The installation shall be tested again after removal of defects and shall be commissioned only after approval by the Owners site representative. All tests shall be carried out in the presence of the representatives of the Owner/NPCC.

16. **OPERATING INSTRUCTION & MAINTENANCE MANUAL**

The contractor shall submit a draft copy of comprehensive operating instructions, maintenance schedule (periodic as well as Capital repair) and log sheets for all systems and equipment included in this contract. The description shall include set values of all the control equipments / parts, assembly - disassembly procedures and exploded views of all equipments. This shall be supplementary to manufacturer's operating and maintenance manuals. Upon approval of the draft, the contractor shall submit four (4) complete bound sets of typewritten operating instructions and maintenance manuals; one for retention by NPCC and three for Owners Operating Personnel. These manuals shall also include Basis of Design, detailed technical data for each piece of equipment as installed, spare parts manual and recommended spares.

17. **ON SITE TRAINING**

Upon completion of all work and all tests, the Contractor shall furnish necessary operators, labour and helpers for operating the entire installation for a period of thirty (30) working days of twenty four (24) hours each, to enable the Owner's staff to get acquainted with the operation of the system. During this period, the contractor shall train the Owner's representatives in the operation, adjustments and maintenance of all equipment installed.

18. **MAINTENANCE DURING DEFECTS LIABILITY PERIOD**

A. Complaints

The Contractor shall receive calls for any and all problems experienced in the operation of the system under this contract, attend to these within 24 hours of receiving the complaints and shall take steps to immediately correct any deficiencies that may exist.

B. Repairs

All equipment that requires repairing shall be immediately serviced and repaired. Since the period of Mechanical Maintenance runs for one year concurrently with the defects liability period, all replacement parts and labour shall be supplied promptly free-of-charge to the Owners.

19. **UPTIME GUARANTEE**

The contractor shall guarantee for the installed system an uptime of 98%. In case of shortfall in any month during the defects liability period, the Defects Liability period shall get extended by a month for every month having shortfall.

The Contractor shall provide log in the form of diskettes and bound printed comprehensive log book containing tables for daily record of all temperatures, pressures, humidity, power consumption. Starting and stopping times for various equipment, daily services rendered for the system alarms, maintenance and record of unusual observations etc. Contractor shall also submit preventive maintenance schedule.

PLUMBING SYSTEM

SECTION A : GENERAL

1. The execution of works and materials used shall be as per the latest relevant I.S. specification.

Wherever reference has been made to Indian Standard or any other specifications, the same shall mean to refer to the latest specification irrespective of any particular edition of such specification being mentioned in the specifications below.

2. WORKMANSHIP

The workmanship shall be best of its kind and shall conform to the specifications, as below or Indian Standard Specifications in every respect or latest trade practices and shall be subject to approval of the Engineer-in-Charge. All materials and/or Workmanship which in the opinion of the Engineer-n-charge is defective or unsuitable shall be removed immediately from the site and shall be substituted with proper materials and/or workmanship forthwith.

3. **MATERIALS**

All materials shall be best of their kind and shall conform to the latest Indian Standards.

All materials shall be of approved quality as per samples and origins approved by the Engineer-in-Charge.

As and when required by the Engineer-in-Charge, the contractor shall arrange to test the materials and/or portions of works at his own cost to prove their soundness and efficiency. If after tests any material, work or portions of work is found defective or unsound by the Engineer-in-Charge, the contractor shall remove the defective material from the site, pull down and re-execute the works at his own cost to the satisfaction of the Engineer-in-Charge. To prove that the materials used are as specified, the contractor shall furnish the Engineer-in-Charge with original vouchers on demand.

SECTION B : SANITARY FIXTURES & C.P.FITTINGS

1. INSTALLATION OF SANITARY FIXTURES AND FITTINGS

1.1 General Requirement

The fixtures and fittings shall be provided with all such accessories as are required to complete the item in satisfactory working conditions, whether specifically mentioned or not in Specifications and drawings.

The sanitary fixtures and fittings shall be installed at the correct assigned position as shown on the drawings and as directed by the Architect, and shall fully meet with the asthetic and symmetrical requirements as demanded by the Engineer-in-Charge.

All fixtures and accessories shall be fixed in accordance with a set pattern matching the tiles or interior finish as per Architect requirements. Wherever necessary, the fittings shall be centered to dimensions and pattern as called for.

Fixtures shall be installed by skilled workman with appropriate tools according to the best trade practice. Manufacturer's instructions shall be followed for the installation of fixtures. Fixtures in all toilets shall be standard height mounting as called for on the drawings. Fixtures shall be mounted rigid, plumb, and true to alignment.

1.2 Mock up and Trial Assembly

The contractor shall have to assemble at least one set of each type of sanitary fixtures and fittings in order to determine precisely the required supply and disposal connections. Relevant instructions from manufacturers shall be followed as applicable. This trial assembly shall be developed to determine the location of puncture holes, holding devices etc. which will be required for final installation of all

sanitary fixtures and fittings. The above assembly shall be subject to final approval by the Engineer-in-Charge.

The fixtures in the trial assembly can be re-used for final installation without any additional payments for fixing or dismantling of the fixtures.

1.3 Supporting and Fixing Devices

The contractor shall provide all the necessary supporting and fixing devices to install the sanitary fixtures and fittings securely in position. The fixing devices shall be rigidly anchored into the building structure. The devices shall be rust resistant and shall be so fixed that they do not present an unsightly appearance in the final assembly. Where the location demands, the Engineer-in-Charge may instruct the contractor to provide chromium plated or other similarly finished fixing devices. In such circumstances the contractor shall arrange to supply the fixing devices and shall be installed complete with appropriate vibration isolating pads, washers and gaskets.

1.4 Final Installation

The contractor shall install all sanitary fixtures and fittings in their final position in accordance with approved trial assemblies and as shown on drawings. The installation shall be complete with all supply and waste connections. The connection between building and piping system and the sanitary fixtures shall be through proper unions and flanges to facilitate removal/replacement of sanitary fixtures without disturbing the built in piping system. All unions and flanges shall match in appearance with other exposed fittings.

Fixtures shall be mounted rigid, plumb and to alignment. The outlets of water closet pans and similar appliances shall be examined to ensure that outlet ends are butting on the receiving pipes before making the joints. It shall be ensured that the receiving pipes are clear of obstruction. When fixtures are being mounted, attention shall be paid to the possibility of movement and settlement by other causes. Overflows shall be made to ensure that necessary anchoring devices have been provided for supporting water closets, wash basins, sinks and other appliances.

2. PROTECTION AGAINST DAMAGE

The contractor shall take every precaution to protect all sanitary fixtures against damage, misuse, cracking, staining, breakage and pilferage by providing proper wrapping and locking arrangement till the completion of the installation. At the time of handing over, the contractor shall clean, disinfect and polish all the fixtures and fittings. Any fixtures and fittings found damaged, cracked chipped stained or scratched shall be removed and new fixtures and fittings free from defects shall be installed at his own cost to complete the work.

SECTION C: WATER SUPPLY

1. PIPING MATERIAL

1.1 Galvanized Iron Pipes

The pipes shall be galvanized mild steel welded screwed and socketed conforming to the requirements of IS: 1239. The Galvanizing shall conform to IS:4736. The zinc coating shall be uniform, adherent, reasonably smooth and free from imperfections such as flux, ash and drops inclusions, bare patches, black spots, pimples, lumpiness, runs, rust strains, bulky white deposits and blisters. The pipes and sockets shall be cleanly finished, well galvanized in and out and free from cracks, surface flaws, laminations and other defects. All screw threads shall be clean and well cut. The ends shall be cut cleanly, and square with the axis of the pipe.

1.2 Valves & Controls

All valves (gate, check, safety) shall be of gun metal, non rising spindle, suitable for the particular service as called for. All valves shall be of the particular duty and design as called for. Valves shall either be of screwed type or flanged type, with suitable flanges and non-corrosive bolts and gaskets. Tail pieces as required shall be supplied alongwith valves. Gate, and check valves shall conform to Indian Standard IS: 776

Ball valves with floats to be fixed in storage tanks shall consist of cast brass lever arm having copper balls (26 SWG) screwed to the arm integrally. The copper ball shall have bronze welded seams. The closing/opening mechanism incorporating the position and cylinder shall be non-corrosive metal and include washers. The size and construction of ball valves and float shall be suitable for desired working pressure operating the supply system. Where called for brass valves shall be supplied with brass hexagonal back nuts to secure them to the tanks and a socket to connect to supply pipe.

Type of valve	Size	Construction	Ends.
a) G.M.valve	15mm to 65mm	Gun metal	Screwed.
	65mm and above	Gun metal	Flanged.
b) G.M. Non return	15mm to 65mm	Gun metal	Screwed Valve

1.3 Ferrules

The ferrules for connection with C.I. main shall generally conform to IS: 2692. It shall be of non-ferrous materials with a C.I. bell mouth cover and shall be of nominal bore as specified. The ferrule shall be fitted with a screw and plug or valve capable of completely shutting of the water supply to the communication pipe, if and when required.

1.4 Water Meters

Water meters of approved make and design shall be supplied for installation at location as shown. The water meters shall meet with the requirement of local water supply authorities. Suitable valves and chambers or wall meter box to house the meters shall also be provided alongwith the meters. The meters shall conform to Indian Standard IS: 779 and IS:2373.

Where called for, the water meters shall be located in masonry chambers of appropriate size.

Provision shall also be made to lock the water meter. The provision shall be such that the lock is conveniently operated from the top. Where the provision is designed for use in conjunction with padlocks, the hole provided for padlocks shall be a diameter not less than 4mm.

2. LAWN HYDRANTS

Lawn hydrants shall be of 20mm size unless otherwise indicated. All hydrants shall be provided with ball valves and nipple to receive hose pipes. Lawn hydrant valves shall be of approved make and design. Where called for lawn hydrants shall be located in masonry chambers of appropriate size.

3. LAYING AND JOINTING OF G.I PIPES

All pipes and fittings shall be fixed truly vertical and horizontal unless unavoidable. The pipes shall be fixed to walls with standard slotted angles `U' shape threaded bolts, nuts for clamping pipes to angles. Slotted angles shall be grouted to R.C.C. work with dash fasteners of size so as to fit tightly on the pipes when tightened with screwed bolts. These slotted angles shall be spaced at regular intervals in straight lengths and heights at 1.8m C/C.

The galvanised pipes and fittings shall run in wall chase or ceiling or as specified. The fixing shall be done by means of standard pattern holder bat clamps keeping the pipes about 1.5cm clear of the wall where to be laid on surface. Where it is specified to conceal the pipes, chasing may be adopted or pipes fixed in the shafts, ducts etc. provided there is a sufficient space to work on the pipes with the usual tools. As far as possible, pipes may be buried for short distances provided adequate protection is given against damage and where so required special care to be taken

at joints. Where directed by the Architect, pipe sleeves shall be fixed at a place where the pipe is passing through a wall or floor for reception of the pipe and allow freedom for expansion and contraction and other movements. In case of pipe is embedded in walls or floors, it should be painted with anticorrosive bitumastic paints of approved quality. Under the floors, the pipes shall be laid in layer of sand filling.

Galvanized iron pipes shall be jointed with threaded and socket joints, using threaded fittings. Care shall be taken to remove any burr from the end of the pipes after threading. White lead or an equivalent jointing compound of proprietary make shall be used, according to the manufacturer's instructions, with a grummet of a few strands of fine yarn while tightening compounds containing red lead shall not be used because of the danger of contamination of water. Any threads exposed after jointing shall be painted with bituminous paint to prevent corrosion.

The G.I. pipes and fittings shall run in wall chase or ceiling or as specified. The fixing shall be done by means of standard pattern holder bat clamps keeping the pipes about 1.5 cm clear of the wall where to be laid on surface. Where it is specified to conceal the pipes, chasing may be adopted or pipes fixed in the shafts, ducts etc. provided there is sufficient space to work on the pipes with the usual tools. As far as possible, pipes may be buried for short distances provided adequate protection is given against damage and where so required special care to be taken at joints. Where directed by the Architect, pipe sleeves shall be fixed at a place the pipe is passing through a wall or floor for reception of the pipe and allow freedom for expansion and contraction and other movements. In case of pipe is embedded in walls or floors it should be provided with protection.

4. PIPING INSTALLATION:

Piping shall be properly supported on, or suspended from, on stands, clamps, hangers as specified and as required. The Contractor shall adequately provide all the brackets, saddles, anchor, clamps and hangers, and be responsible for their structural stability.

Piping supports shall be steel, adjustable for the height and primer coated with rust preventive paint and finish coated black. Piping supports shall not exceed the following:

Pipe size	Spacing between supports.
Upto 12 mm	1.5 meter
15mm to 25 mm	2.0 meter
30mm to 50 mm	2.0 meter
above 50mm	2.5 meter

Vertical risers shall be parallel to walls and column lines and shall be straight and plumb. Risers passing from floor to floor shall be supported at each floor by clamps or collars attached to pipe and with a 15 mm thick rubber pad or any resilient material. Where pipes pass through the terrace floor, suitable flashing shall be provided to prevent water leakage.

All pipe work shall be carried out in a proper workman like manner, causing minimum disturbance to the existing services, buildings, roads and structure. The entire piping work shall be organized in consultation with other agencies work, so that area can be carried out in one stretch.

Cut-outs in the floor slab for installing the various pipes area are indicated in the drawings. Contractor shall carefully examine the cut-outs provided and clearly point out wherever the cut-outs shown in the drawings, do not meet with the requirements.

The contractor shall make sure that the clamps, brackets, saddles and hangers provided for pipe supports are adequate. Piping layout shall take due care for expansion and contraction in pipes and include expansion joints where required.

All pipes shall be accurately cut to the required sizes in accordance with relevant BIS codes and burrs removed before laying. Open ends of the piping shall be closed as the pipe is installed to avoid entrance of foreign matter.

Flanged inspection pieces 1.5 meters long, with bolted flanges on both ends, shall be provided not more than 30 meter centers to facilitate future cleaning of all welded pipes.

All buried pipes for CWS shall be cleaned and coated with two coats of bitumen and then wrapped with two layers of 400 micron polythene sheet.

Pressure gauges as required shall be provided at the discharge of pumps as shown on the drawings and included in schedule of quantities. Care shall be taken to protect pressure gauges during pressure testing.

4.1 Fixing Ferrules

For fixing ferrule, the empty main shall be drilled and tapped at 4-5° to the vertical and the ferrule screwed in. The ferrule must be so fitted that no portion of the shank shall be left projecting within the main into which it is fitted.

4.2 Cutting Chases in Masonry Walls

The chases upto 7.5 x 7.5 cm shall be made in the walls for housing GI pipes etc. These shall be provided in correct positions as shown in the drawings or directed by the Engineer-in-Charge. Chases shall be made by chiselling out the masonry to proper line and depth. After GI pipes etc are fixed in chases, the chases shall be filled with cement mortar 1:2:4 or as specified may be made flush with the masonry

surface. The concrete surface shall be roughened with wire brush to provide a key for plastering. Chase cutting in walls & hole cutting in conc. slabs shall be done by electric cutters/grinders.

4.3 Water Fittings

Unless otherwise specified, all gunmetal fittings such as gate, globe, check & safety valves shall be fitted in pipe line in a proper workman like manner. Necessary unions shall be provided on both ends of the valves for easy replacement. The joints between fittings and pipes shall be leak-proof when tested to a pressure of 2.5 times of working pressure. The defective fittings and joints shall be replaced or redone.

4.4 Making water connection

A pit of suitable dimension shall be dug at the point where the connection is to be made with main line and earth removed upto 150 mm below the main. The flow of water in main shall be disconnected by operating the nearest sluice valve on the main. The main shall be drilled and slopped at 45° to the vertical and the ferrule of required size shall be screwed in. The ferrule shall be fitted in a manner so that no portion of projection of the shank shall be left projecting within the main into which it is fitted. Ferrule shall be non-ferrous material with a C.I bell mouth cover and shall be of nominal bore as required.

4.5 Installation of Water Meter and Stop Cock

The G.I lines shall be cut to the required lengths at the position where the meter and stop cock are required to be fixed. Then end of the pipe shall be threaded. The meter and stop cock shall be fixed in a position by means of connecting pipes, GI jam nut and socket etc. The stop cock shall be fixed near the inlet of the water meter. The paper disc inserter in the ripples of the meter shall be removed. And the meter is installed exactly horizontal or vertical in the flow line in the direction shown by the arrow on the body of the meter. Care shall be taken that the factory seal of the meter is not disturbed. Wherever the meter shall be fixed to a newly fitted pipe line, the pipe line shall have to be completely washed before fitting the meter.

4.6 Connections to RCC/PVC Water Tanks

The contractor shall provide all inlets, outlets, washouts, vents, ball cocks, overflows control valves and all such other piping connections including level indicator / controller to water storage tanks as called for. All pipes crossing through RCC work shall have puddle flanges fabricated with MS/GI pipes of required size and length and welded to 6mm thick MS plate. All puddle flanges must be fixed in true alignment and level to ensure further connection in proper order.

Suitable float controls of an approved make, securely fixed to the tank, independent of the inlet pipe and set in a position such that water inlet into the tank is cut off when filled upto the water line. The water level in the tanks shall be of adjusted to

25mm below the lip of the overflow pipe. Full way gate valves of an approved make shall be provided as near the tank as practicable on every outlet pipe from the storage tank except the overflow pipe. Overflow and vent pipes shall terminate with mosquito proof coupling.

The overflow pipe shall be so placed to allow the discharge of water being readily seen. The overflow pipe shall be of size as indicated. A stop valve shall also be provided in the inlet water connection to the tank. The outlet pipes shall be fixed approximately 75mm above the bottom of the tank towards which the floor of the tank is sloping to enable the tank to be emptied for cleaning.

5. Disinfection of piping system and Storage Tanks

Before commissioning the water supply system, the contractor shall arrange to disinfect the entire system as described in the succeeding paragraph.

The water storage tanks and pipes shall first be filled with water and thoroughly flushed out. The storage tanks shall be filled with water again and disinfecting chemical containing chlorine shall be added gradually while tanks are being filled to ensure thorough mixing. Sufficient chemical shall be used to give water a dose of 50 parts of chlorine to one million parts of water. If ordinary bleaching powder is used, the proportions will be 150 gms of powder to 1000 liters of water. The powder shall be mixed with water in the storage tank. If a proprietary brand of chemical is used, the proportions shall be specified by the makers. When the storage tank is full, the supply shall be stopped and all the taps on the distributing pipes are opened successively. Each tap shall be closed when the water discharged begins to smell of chlorine. The storage tank shall then be filled up with water from supply pipe and added with more disinfecting chemical in the recommended proportions. The storage tank and pipe shall then remain charged at least for three hours. Finally the tank and pipes shall be thoroughly flushed out before any water is used for domestic purpose.

6. Protection against corrosion

All embedded piping material and accessories shall be suitably protected against corrosion. All embedded GI pipes. shall be wrapped throughout with 2 layers of 400 microne Polythene sheet with two coats of bitumen paint. Where G.I pipes are laid under floors, trenches etc shall be encased with 100mm thick jamuna sand allround in additions to the protective coating as stated above.

7. Shifting of Excavated Surplus Material

Contractor shall make his own arrangement to shift/dispose off the surplus excavated material out side the site limits as directed by Engineer-in-charge or local conditions.

8. Testing

a) All water supply system shall be tested to hydrostatic pressure test of atlast two and half time the maximum pressure but not less than 7.5 Kg/Sq Cm. for a

period of not less than 24 hours. All leaks and defects in joints revealed during the testing shall be rectified and got approved at site.

b) Piping required subsequent to the above pressure test shall be retested in the same manner.

c) System may be tested in sections and such sections shall be entirely retested on completion.

d) The Contractor shall make sure that proper noiseless circulation of fluid is achieved through the entire piping network of the system concerned. In case of improper circulation, the contractor shall rectify the defective connections. He shall bear all expenses for carrying out the above rectifications including the tearing up and refinishing of floors and walls as required.

SECTION D: INTERNAL DRAINAGE (SOIL,WASTE & VENT PIPES)

1. BASIC PIPING SYSTEM

Soil, waste and vent pipes in shafts, ducts and in concealed areas i.e. false ceilings etc. shall consist of cast iron pipes & fittings as called for. In general wastes and vents smaller than 50mm diameter shall be of Galvanised MS.

The soil pipes shall be circular with a minimum diameter of 100mm. Pipes shall be fixed by means of stout MS / GI clamps in two sections, bolted together, built into the walls, wedged and neatly jointed as directed and approved by the Architect. All bends, branches, swan neck and other parts shall conform to the requirement and standards as described for the pipes. Pipes shall be rested against the walls on suitable wooden cradles. Local authority regulations applicable to the installations shall be strictly followed.

Where indicated, the soil pipes shall be continued upwards without any diminution in its diameter, without any bend or angle to the height shown in the drawings. Joints throughout shall be made with molten lead as described under jointing of cast iron pipes. Soil pipes shall be painted as provided under `painting'. The soil pipes shall be covered on top with cast iron terminal outlets as directed and approved. All vertical soil pipes shall be firmly fixed to the walls with properly fixed clamps, and shall as far as possible be kept 50mm clear of wall. Waste pipes and fittings shall be of cast iron or galvanized mild steel pipes. Pipes shall be fixed. Jointed and painted as described in installation of soil, waste & vent pipes.

Every waste pipe shall discharge above the grating of properly trapped gully. The contractor will ensure that this requirement is adequately met with. Wherever floor traps are provided, it shall be ensured that at least one wash is connected to such floor traps to avoid drying of water seal in the trap. Ventilating pipes shall be of cast iron or galvanized mild steel pipes, conforming to the requirements laid down earlier. Anti-syphon vent pipes/relief vent pipes where called for on the drawings

shall be of cast iron or galvanized mild steel pipes as specified. The pipes shall be of the diameter shown on the drawings.

All traps on branch soil and waste pipes shall also be ventilated at a point not less than 75mm or more than 300mm from their highest part and on the side nearest to the soil pipe or waste pipes.

All the fittings used for connections between soil, waste and ventilation pipes and branch pipes shall be made by using pipe fittings with inspection doors for cleaning. The doors shall be provided with 3mm thick rubber insertion packing and when closed and bolted shall be air and water tight.

Where soil, waste and ventilating pipes are accommodated in shafts ducts, adequate access to cleaning eyes shall be provided.

2. PIPING MATERIALS

2.1 Cast Iron Pipes

Cast iron pipes and fittings shall be of good and tough quality and dark grey on fracture. The pipes and fittings shall be true to shape, smooth and cylindrical, their inner and outer surface being as nearly as practicable concentric. They shall be sound and nicely cast, shall be free from cracks, taps, pinholes and other manufacturing defects.

The pipes and fittings shall conform to IS as mentioned in schedule of quantities. Fittings shall be of required degree with or without access door. All access doors shall be made up with 3mm thick insertion rubber gasket of white lead and tightly bolted to make the fittings air and water tight. The fittings shall be of the same manufacture as the pipes used for soil and waste.

All CI pipes and fittings shall bear the manufacturer's name and ISI specification to which it conforms.

All pipes and fittings shall be coated internally and externally with the same material at the factory, the fittings being preheated prior to total immersion in a bath containing a uniformly heated composition having a tar/other suitable base. The coating material shall have good adherence and shall not scale off. The coating shall be smooth and tenacious and hard enough not to flow when exposed to a temperature of 77 degree C but not so brittle at a temperature of '0' degree C as to chip off when scratched lightly with a pen knife.

All pipes and fittings before installation at site shall be tested hydrostatically to a pressure of 0.4 Kg/sq. cm without showing any sign of leakage, sweating or other defects of any kind. The pressure shall be applied internally and shall be maintained for not less than 15 seconds. All these tests shall be carried out in the presence of

the representative of the Engineer-in-Charge. Alternatively a test certificate from manufacturers be obtained before despatch of material to site.

The pipes and fittings shall either be spigot or socket type or as called for. The pipes and fittings shall be of uniform material throughout and shall be free from all manufacturing defects.

2.2 Cast Iron Specialties

Cast iron specialty item such as deep seal floor traps, urinal traps, trap integral pieces with integral inlet/outlet connections manhole cover with frame, chamber cover etc. shall be fabricated to suit individual location requirements. The contractor shall arrange the fabrication of these items from an approved source. All traps shall have minimum 6cm deep seal shall be supplied with cast iron caps and collar capable of receiving a screwed grating.

2.3 Galvanised Iron Pipes

Waste pipes 50mm dia below and where called for shall be galvanized iron pipes screwed and socketed conforming to the requirements of IS:1239. The pipes and sockets shall be cleanly finished, well galvanized in and out and free from cracks, surface flaws, laminations and other defects. All screw thread shall be clean and well cut. All pipes and fittings shall bear manufacturer's trade mark and conform to the IS as specified.

3. INSTALLATION OF SOIL, WASTE & VENT PIPES

Soil, waste & vent pipes in shafts under the floors shall consist of cast iron pipes as described earlier. Waste pipes from bottle trap to floor/urinal traps for wash basin, urinal and sink shall be of GI pipes and fittings.

All Horizontal pipes running below the slab and along the ceiling shall be fixed on structural adjustable clamps, strudy hangers of the design as called for in the drawings. The pipes shall be laid in uniform slope and proper levels. All vertical pipes shall be truly vertical fixed by means of stout clamps in two sections, bolted together, built into the walls, wedged and neatly jointed. The branch pipes shall be connected to the stack at the same angle as that of fittings. All connections between soil, waste and ventilating pipes and branch pipes shall be made by using pipe fittings with inspection doors for cleaning. Pipes shall be fixed in a manner as to provide easy accessibility for repair and maintenance and shall not cause obstruction in shafts. Where the horizontal run off the pipe is long or where the pipes cross over building expansion joints etc. suitable allowance shall be provided for any movements in the pipes by means of expansion joint etc. such that any such movement does not damage the installation in any way.

All cast iron pipes and fittings shall be jointed with best quality soft pig lead free from all impurities.

Before jointing, the interior of the socket and exterior of the spigots shall be thoroughly cleaned and dried. The spigot end shall be inserted into the socket right upto the back of the socket and carefully centered by two or three laps of threaded spun yarn, twisted into ropes of uniform thickness, well caulked into the back of the socket. No piece of yarn shall be shorter than the circumference of the pipe. The jointed pipe line shall be at required levels and alignment. The reminder of the socket is left for the lead caulking. Where the gasket has been tightly held, a jointing ring shall be placed round the barrel against the face of the socket. Molten pig lead shall be poured to fill the remainder of the socket in one pouring. The lead then shall be solidly caulked with suitable tools by hammering right round the joints to make up for the shrinkage of the molten metal on cooling and preferably finish 3mm behind the socket face.

The depth of the lead joints for the cast iron pipes shall be 45mm for the pipes upto 100mm dia and 50mm for the pipes beyond 100mm dia respectively. Twenty percent variations shall be permissible in accordance with IS: 3114.

The joint shall not be covered till the pipe line has been tested under pressure. Rest of pipe line shall be covered so as to prevent the expansion and contraction due to variation in temperature.

4. INSPECTION AND TESTING

Before the appliances are connected all opening of pipes shall be inspected and tested. All opening of pipes shall be sealed with plugs and water test in small sections of pipes shall be carried out to a static head of 4.5 meters.

The contractor shall give a smoke test to the drains and sewers at his own expense and charges as directed by the engineer-in-charge.

After installation of all the appliances, discharge test shall be conducted individually and collectively. Obstruction in any of the pipe lines shall be traced and whole system is examined for hydraulic performance, including the retention of any adequate water seal in each trap. Any defect revealed by the tests shall be made good and the tests are repeated until a satisfactory result is obtained.

5. PIPE PROTECTION

Where pipes are embedded in floors, slabs, column, beams etc. they shall be given a protection by encasing them with 100mm thick 1:3:6 cement concrete. Allround the pipes and fittings as specified in Schedule of Quantities.

6. UPVC PIPES AND FITTINGS

The pipes shall be round and shall be supplied in straight lengths with socketed ends .The internal surfaces of piped shall be smooth, clean, free from groovings and other defects. the ends shall be Cleanly cut and square with the axis of the

pipes.The pipes shall be designated by external diameter and shall conform to IS: 4985-1981.

7. FITTINGS

Fittings shall be of the same make as that of pipes, injection moulded and shall conform to India Standard.

8. LAYING AND JOINTING

The pipes shall be laid clamped to wooden plugs fixed above the surface of the wall .Alternatively plastic clamps of suitable designs shall be preferred. Provisions shall be made for the effect of thermal movements by not gripping or disturbing the pipe at supports between the anchors for suspended pipes. The supports shall allow the repeated movements to take place without abrasion.

Jointing for UPVC pipes shall be made by means of solvents cements for horizontal Lines and 'O' rubber ring for vertical line .The type of joint shall be used as per site conditions/direction of the Clents' representative. Where UPVC pipes are to be used for rain water pipes, the pipe shall be finished with G.I. adopter for insertion in the R.C.C. slab for a water proof joint complete as directed by Client's Representative.

9. SUPPORTS

UPVC pipes require supports at close intervals. Recommended support spacing for unplasticised PVC pipes is 1400 mm for pipes 50mm dia and. Pipes shall be aligned properly before fixing them on the wooden plugs with clamps. Even if the wooden plugs are fixed using a plumb line, pipe shall also be checked for its alignments before- clamping, piping shall be properly supported on, or suspended from clamps, hangers as specified and as required. The Contractor shall adequately design all the brackets, saddles, anchors, clamps and hangers and be responsible for their structural sufficiency. Pipe supports shall be primer coated with rust preventive paint.

10. REPAIRS

While temporary or emergency repairs may be made to the damaged pipes, permanents repairs should be made by replacement of the damaged section. If any split or chip out occur in the wall of the pipe, a short piece of pipe of sufficient length to cover the damaged portion of the pipe is cut. The sleeve is cut longitudinally and heated sufficiently to soften it so that it so that it may be slipped over the damaged hard pipe.

11. TESTING

All Lengths of PVC rain water pipes shall be fully tested for water tightness by means of water test maintained for not less than 30minutes. All pipes shall be subjected to a test pressure of at least 1.5 metre head of water head. The test pressure shall, however, not exceed 6meter head at any point. The pipes shall be plugged preferably with standard design plugs with rubber plugs on both ends. The upper end shall, however, be connected to a pipe for filling with water and getting the required head.

12. NAHANI TRAP OR FLOOR TRAPS

Nahani traps or floor traps shall be cast iron, deep seal with an effective seal of 50mm. The trap and waste pipes shall be set in cement concrete blocks firmly supported on the structural floor. The blocks shall be in 1:2:3 mix (1cement: 2coarse sand: 4 stone aggregate 20mm nominal size) mixed with water proof compound and extended to 40 mm below finished floor level. Contractor shall provide all necessary shuttering and centering for the blocks. Size of the block shall be 30x30 cms of the required depth. The trap shall be installed at lowest point ensure no ponding occurs at perimeters of the drain.

13 CLEANOUT PLUGS

Contractor shall provide cast brass cleanout plugs in all horizontal run more than 15 mtr length required one cleanout plugs shall be threaded and provided with key holes for opening. Cleanout plugs shall be threaded and provided with key holes for opening. Cleanout plugs shall be fixed to the pipe by a G.I. socket and caulked joint.

SECTION E : EXTERNAL DRAINAGE & SEWAGE DISPOSAL

1. GENERAL SCHEME

The contractor shall install a drainage system to effectively collect; drain and dispose all soil and waste water from various parts of the buildings, appurtenances and equipment. The piping system shall finally terminate and discharge into the City sewer manhole. The piping work mainly consists of laying of Salt glazed stoneware pipes, upvc pipes, reinforced cement concrete pipes and cast iron soil pipes as called for on the drawings. All pipings shall be installed at depth greater than 60 cm below finished ground level. The disposal system shall include construction of gully traps, manholes, intercepting chambers as indicated. The piping system shall be vented suitably at the starting point of all branch drains, main drains, the highest/lowest point of drain and at intervals as shown. All ventilating arrangements shall be un-obstructive and concealed. The work shall be executed strictly in accordance with IS:1742. The sewage system shall be subject to smoke test for its soundness as directed by the Engineer-in-Charge. Wherever the sewerage pipes

run above water supply lines, same shall be completely encased in cement concrete 1:2:4 all round with the prior approval of the Engineer-in-Charge

2. PIPING MATERIAL

2.1 Stoneware Pipes

Stoneware pipes shall be perfectly salt glazed, sound, free from cracks, deformities and imperfections in glazing. They shall be cylindrical, straight and of standard nominal diameter, length and depth of socket. They will be made of hard burnt stoneware of dark grey colour and thoroughly glazed and shall give a sharp clear note when struck with a light hammer. The pipe shall conform to the requirements of Indian Standards IS:651 and the sizes and make specified in the schedule of Quantities.

2.2 S.W. Gully Trap

Gully trap shall be stoneware conforming to IS:651. These shall be sound and free from visible defects such as fire cracks, or hair cracks. The glaze of the traps shall be free from cracks. They shall give a sharp clear note when struck with light hammer. There shall be no broken blisters. Each gully trap shall have one CI grating of square size corresponding to the dimensions of inlet of gully trap. It will also have a water tight CI cover with frame inside dimensions 300 x 300mm the cover weighing not less than 4.5 kg and the frame not less than 2.7kg. The grating cover and frame shall be of good casting and shall have truly square machined seating faces.

2.3 Cast Iron Pipes

Cast iron pipes and fittings shall conform to for in the documents.

2.4 Cast Iron Manhole Cover and Frame

The Cast Iron Manhole Cover and Frame shall conform to IS:1726 and the grade and types have been specified in the schedule of quantities. The cover and frames shall be cleanly cast and they shall be free from air and sand holes and from cold shuts. They shall be neatly dressed and carefully trimmed. All castings shall be free from voids whether due to shrinkage, gas inclusion or other causes. Covers shall have a raised checkered design on the top surface to provide an adequate non-slip grip.

The sizes of covers specified shall be taken as the clear internal dimensions of the frame.

The covers and frames shall be coated with a black bituminous composition. The coating shall be smooth and tenacious. It shall not flow when exposed to a temperature of 63° C and shall not brittle as to chip off at a temperature of 0° C.

3. LAYING AND JOINTING OF PIPES

3.1 General

All the material shall be new of best quality conforming to specifications and subject to the approval of the Engineer-in-Charge s. Drainage lines shall be laid to the required gradients and profiles. All drainage work shall be done in accordance with the local municipal by-laws.

Contractor shall obtain necessary approval and permission for the drainage system from the municipal or any other competent authority. Location of all manholes, catch basins etc. shall be confirmed by the Engineer-in-Charge before the actual execution of work at site. All work shall be executed as directed by the Engineer-in-Charge.

3.2 Alignment and Grade

The sewer and storm water drainage pipe/drains shall be carefully laid to levels and gradients shown in the plans and sections but subject to modifications as shall be ordered by the Engineer-in-Charge from time to time to meet the requirements of the works. Great care shall be taken to prevent sand etc. from entering the pipes. The pipes between two manholes shall be laid truly in straight lines without vertical or horizontal undulations. The body of the pipes shall rest on an even bed in the trench for its length and places shall be excavated to receive collar for the purpose of jointing. No deviations from the lines, depths of cuttings or gradients as called for on the drawings shall be permitted without the written approval of the Architect. All pipes shall be laid atleast 60cms below the finished ground level or as called for on the drawings.

3.3 Setting out Trenches

The contractor shall set out all trenches, manholes, chambers and such other works to true grades and alignments as called for. He shall provide the necessary instruments for setting out and verification for the same. All trenches shall be laid to true grade and in straight lines and as shown on the drawings. The trenches shall be laid to proper levels by the assistance of boning rods and sight rails which shall be fixed at intervals not exceeding 10 meters or as directed by the Engineer-in-Charge.

3.4 Trench Excavation

The trenches for the pipes shall be excavated with bottoms formed to level and gradients as shown on the drawings or as directed by the Architect. In soft and filled in ground, the Architect may require the trenches to be excavated to a greater depth then the shown on the drawings and to fill up such additional excavation with

concrete (1:4:8) consolidated to bring the excavation to the required levels as shown on the drawings.

All excavations shall be properly protected where necessary by suitable timbering, piling and sheeting as approved by the Architect. All timbering and sheeting when withdrawn shall be done gradually to avoid falls. All cavities shall be adequately filled and consolidated. No blasting shall be allowed without prior approval in writing from the Engineer-in-Charge. It shall be carried out under thorough and competent supervision, with the written permission of the appropriate authorities taking full precautions connected with the blasting operations. All excavated earth shall be kept clear of the trenches to a distance equal to 75 cms.

3.5 Obstruction of Roads

The contractor shall not occupy or obstruct by his operation more than one half of the width of any road or street and sufficient space shall then be left for public and private transit. He shall remove the materials excavated and bring them back again when the trench is required to be refilled. The contractor shall obtain the consent of the Engineer-in-Charge in writing before closing any road to vehicular traffic and the foot walks must be clear at all times.

3.6 Protection of Pipes etc.

All pipes, water mains, cables etc. met in the course of excavation shall be carefully protected and supported. Care shall be taken not to disturb the cables, the removal of which shall be arranged by the contractor with the written consent from the Owner/NPCC.

3.7 Trench Back Filling

Refilling of the trenches shall not be commenced until the length of pipes therein has been tested and approved. All timbering which may be withdrawn safely shall be removed as filling proceeds. Where the pipes are unprotected by concreted hunching, selected fine material shall be carefully hand-packed around the lower half of the pipes so as to buttress them to the sides of the trench.

The refilling shall then be continued to 150mm over the top of the pipe using selected fine hand packed material, watered and rammed on both sides of the pipes with a wooden hammer. The process of filling and tamping shall proceed evenly in layers not exceeding 150mm thickness, each layer being watered and consolidated so as to maintain an equal pressure on both sides of the pipe line. In gardens and fields the top solid and turf if any, shall be carefully replaced.

3.8 Contractor to ensure Settlement and Damages

The contractor shall at his own costs and expenses, make good promptly during the whole period for the works in hand if any settlement occurs in the surfaces of roads,

beams, footpaths, gardens, open spaces etc. in the public or private areas caused by his trenches or by his other excavations and he shall be liable for any accident caused thereby. He shall also, at his own expense and charges, repair (and make good) any damage done to building and other property. If in the opinion of the Engineer-in-Charge he fails to make good such works with all practicable dispatch, the Engineer-in-Charge shall be at his liberty to get the work done by other means and the expenses thereof shall be paid by the contractor or deducted from any money that may be or become due to him or recovered from him by any other manner according to the laws of land.

The contractor shall at his own costs and charges provide places for disposal of all surplus materials not required to be used on the works. As each trench is refilled, surplus soil shall be immediately removed, the surface shall be properly restored and roadways and sides shall be left clear.

3.9 Removal of water from Sewer, trench etc

The contractor shall at all times during the progress of work keep the excavations free from water which shall be disposed by him in a manner as will neither cause injury to the public health nor to the public or private property nor to the work completed or in progress nor to the surface of any road or streets, nor cause any interference with the use of the same by the public.

If any excavation is carried out at any point or points to a greater width of the specified cross section of the sewer with its cover, the full width of the trench shall be filled with concrete by the contractor at his own expense and charges to the requirements of the Engineer-in-Charge.

3.10 Route Markers

Markers indicating the particular service shall be provided along with the routes of pipe trenches. Markers shall be of mild steel indicating the type of service installed and the direction of flow painted on it. The markers shall be set firmly in a concrete base and installed at all corner and turning points. Over straight runs, markers shall be spaced centre to centre at 50 meter centre (generally).

3.11 Laying and jointing of cement concrete pipes

Cement concrete pipes shall be laid and jointed as described in IS:783. After setting out the pipes, the collar shall be centered over the joint and a few skins of spun yarn soaked in a neat cement wash shall be inserted in the groove at the end of the pipe and two adjoining pipes butted against each other. After setting out the pipes, the collar shall then be slipped over the joint, covering equally both the pipes. Spun yarn soaked in neat cement wash shall be passed round the pipes and inserted in the joint by means of caulking tools from the ends of the collar. More skins of yarn shall be added and well rammed above. The object of the yarn is to

centre the two ends of pipes within the collar and to prevent the cement mortar of the joints penetrating into the pipes.

Cement mortar with one part of cement and two parts of sand shall be slightly moistened and must in no account be soft or sloppy and shall be carefully inserted by hand into the joint and more cement mortar be added until the space of the joint has been filled completely with tightly caulked mortar. The joint shall be finished off neatly outside the collar on both side at an angle of 45 degree, any surplus mortar projecting inside the joint is to be removed and to guard against any such projection, sack or gunny bags shall be drawn past each joint after completion. Cement mortar joint shall be cured for seven days.

4. FIXING OF S.W. GULLY TRAP

The excavation for gully traps shall be done true to dimensions and levels as indicated on plans or as directed by the Architect. The gully traps shall be fixed on cement concrete foundation 65cm square and not less than 10cm thick. The jointing of gully outlet to the branch drain shall be done similar to the jointing of S.W. Pipes described earlier. After fixing and testing gully and branch drain, a brick work of specified class in cement mortar 1:5 shall be built with a half brick masonry work round the gully trap from the top of the bed concrete upto ground level. The space between the chamber and trap shall be filled in with cement concrete 1:3:6. The upper portion of the chamber i.e. above the top level of the trap shall be plastered inside the cement mortar 1:3 finish with a floating coat of neat cement. The corners and bottom of the chamber shall be rounded off so as to slope towards the grating.

CI cover with frame 300 x 300 mm (inside) shall then be fixed on the top of the brick masonry with cement concrete 1:2:4 and rendered smooth. The finished top cover shall be so as to prevent the surface water from entering the gully trap.

5. CONSTRUCTION OF MANHOLE

Where manholes are to be constructed, the excavation, filling back and ramming, disposal of surplus earth, preparation of bottom and sides etc. shall be carried out as described earlier under trench excavation. Manhole shall be sized and depths as called for in the drawings and Schedule of Quantities.

The manhole shall be built on a base concrete 1:2:4 of 150mm thickness for manholes upto 1500mm depth and 250mm thickness for manholes from 1500 to 2500mm depth and 300mm thickness manholes of depth greater than 2500mm. Reinforcement as shown shall be provided in the base slabs. The walls shall be of brick work/solid Concrete blocks of thickness as shown in drawings built in cement mortar 1:5. The joints of brick work shall be raked and plastered internally and externally with cement plaster 1:3 to a thickness of 20mm and finished with a coat of

neat cement shall be provided in the bottom of the manholes, semi circular channels of the same diameter as the pipes.

Above the horizontal diameter, the sides of channel shall be extended vertically to the same level as the crown of the outgoing pipe and the top edge shall be suitably rounded off. The branch channels shall also be similarly constructed with respect to the benching but at their junction with the main channel an appropriate fall suitably rounded off in the direction of flow in the main channel shall be given. Rungs of cast iron or mild steel of suitable dimensions shall be provided in all manholes over 800mm depth. These rungs shall be set at 30cms interval in two vertical runs at 380mm apart horizontally. The top rung shall be 450mm below the manhole cover. Unless otherwise mentioned, manholes shall be constructed to the requirements of Indian Standard IS: 4111 (Part I). All manholes shall be constructed so as to be water tight under test. All angles shall be rounded to a 75mm radius with cement plaster 20mm thick. The benching at the side shall be carried out in such a manner so as to provide no lodgment for any splashing in case of accidental flooding. Manhole cover with frame shall be cast iron of an approved make. The covers and frame shall generally be double seal.

6. DROP CONNECTION

Drop connection shall be provided between branch sewer and main sewer in the main sewer itself in steep ground when the difference in invert level of two exceeds 45cms of the required sizes. Drop connections from gully traps to main sewer in rectangular shall be made inside the manholes and shall have HCI special type door bend on to top and heel rest bend at bottom connected by a HCI pipe. The pipe shall be supported by holder bat clamps at 180 cms intervals with at least one clamp for each drop connection. All joints shall be lead caulked joints 25mm deep.

Drop connections from branch sewer to main sewer shall be made outside the manhole wall with HCI / CI class LA pipe, connection, vertical pipe and bend at the bottoms. The top of the tee shall be finished upto the surface level and provided with a CI hinges type frame and cover 30cms x 30cms. The connection and tee upto the surface chamber of the tee.

Drop connection made from vertical stacks directly into manholes shall not be considered as drop connections.

7. MAKING CONNECTIONS

Contractor shall connect the new sewer line to the existing manhole by cutting the walls benching and restoring them to the original condition. A new channel shall be cut in the benching of the existing manhole for the new connection. Contractor shall remove all sewage and water if encountered in making the connection without additional cost.

8. SHIFTING OF EXCAVATED SURPLUS MATERIAL

Contractor shall make his own arrangement to shift the surplus excavated material out side the site limits as directed by Engineer-in-charge or local prevailing conditions.

9. TESTING

All lengths of the sewer and drain shall be carefully tested for water tightness by means of water pressure maintained for not less than 30 minutes. Testing shall be carried out from manhole to manhole. All pipes shall be subject to a test pressure of 1.5 metre head of water. The test pressure will however, not exceed 6 metres head at any point. The pipes shall be plugged preferably with standard design plugs with rubber plugs on both sides, the upper end shall, however, be connected to a pipe for filling with water and getting the required head poured at one time permit.

The contractor shall give a smoke test to the drains and sewer lines at his own expenses and charges if directed by the Engineer-in-charge. Sewer lines shall be tested for a straightness by :

a) Inserting a smooth ball 12mm less than the internal diameter of the pipe. In the absence of obstructions such as yarn or mortar projecting at the joints the ball should roll down the invert of the pipe and emerge at the lower end.

b) Means of a mirror at one end and a lamp at the other end. If the pipe is straight the full circle of light will be seen otherwise obstructions or deviations will be apparent.

c) The contractor shall give a smoke test to the drain and sewer at his own expense and charges, if directed by the Engineer-in-Charge.

d) A test register shall be maintained which shall be signed and dated by contractor and Engineer-in-Charge.

FIRE PROTECTION SYSTEM

SECTION - I

AUTOMATIC FIRE DETECTION & ALARM SYSTEM

1. SCOPE

This specification covers the supply, installation, testing and commissioning of the Fire Detection Systems and generally comprise.

- Provision of Smoke and Heat Detectors
- Provision of Manual Call Points
- Provision of Response Indicator Units
- Provision of Audio Alarm units

- Local and Main Control Unit for the System
- Public Address System
- Wiring between Detectors and Control Units to make the complete System

2. STANDARDS AND CODES

Specification for Smoke Detectors	BS 5445 : 1984
Specification for Heat sensitive Detectors for use in automatic fire alarm systems	IS 2175 : 1977
Code of Practice for installation of automatic Fire Alarm System using Heat sensitive type Fire Detectors	S 2189 : 1976
Code of Practice for Electrical Wiring installation (System voltage not exceeding 660 volts)	IS 732 : 1963
Automatic Fire Alarm Systems in buildings	BS 3116 Part I
Control and indicating equipment	BS 3116 Part IV
British Code of practice for installation and servicing of Fire Alarm System	CP 1019 : 1972
Underwriters Laboratory Specification for Smoke Detector	UL 268

All equipment and the installation shall be as per the relevant Indian Standards Specifications. Where these Standards do not exist, the relevant British Standards or any other internationally accepted Standard shall apply.

3. IONISATION TYPE SMOKE DETECTORS

3.1 GENERAL

The Ionisation type Smoke Detectors shall be capable of sensing fire in the smoldering or the incipient stage. Smoke Detectors shall be sensitive to products of combustion of all materials like wood, paper , rubber, natural and synthetic fibers, plastic and common liquid hydrocarbons in accordance with the sensitivity requirements of BS 5445 Part 7 : 1984

3.2 CONSTRUCTIONAL FEATURES

DETECTOR HEAD

The Smoke Detector enclosure shall be of white plastic molded with high impact self extinguishing polycarbonate and shall be fitted to the base by a twist and lock action. Correct alignment of the electrical contacts in the base with the terminal pins of the Detector shall be ensured. The twist and lock action shall ensure a good electrical contact with the wiping action. Apertures in the Detector housing shall

allow the free ingress of smoke through a stain less steel gauze and into the smoke sensing ionization chamber

IONISATION CHAMBERS

The Detector head shall incorporate two ionization chambers and twin radio active sources namely Americium 241 having a radio activity of less than 1.0 micro curies. The radio active source shall be mounted on a stainless steel electrode and shall be electrically insulated from the gauze and the chamber cage. The second radio active source shall be mounted on the underside of the stainless steel electrode. Air within the chambers shall be ionized by the radio active sources with the second being the sealed reference chamber in electrical series with the first – smoke sensing chamber. The gauze and the chamber cage shall provide electrical screening to the smoke sensing chamber.

DETECTOR BASES

The Detector bases shall be suitable for mounting directly on a 75mm recessed round box or as required at the site. The basis shall have terminals which shall be suitable for receiving 1.5 sqmm PVC copper conductor or 2.5 sqmm PVC aluminium conductor cables. Access to the terminals shall be available form the front of the base after removing the Detector. A plastic cover shall be provided with each base to be fixed to the rear to eliminate the ingress of dust, water and insect into the Detector.

LED INDICATION LAMP

A LED lamp shall be incorporated which shall normally flicker at the rate of six flashes per minute indicating alertness and shall turn steady when a fire is sensed enabling immediate identification of the Detector.

ELECTRONICS

The Printed Circuit Board electro tinned copper tracks shall be protected from corrosion by a green epoxy solder resist coating. The tracks and solder joints shall be protected against fungus growth by an insulating varnish coating.

The sensitive electronic components shall be protected by a high resistivity silicone encapsulation compound. All electronic components shall be electrostatically screened.

The electronic design and circuit shall provide the following safety devices:

- protection against high voltage spikes on the supply line
- protection against polarity reversal
- protection of the ionization chamber monitoring circuits from high voltage static discharges
- protection against high frequency transients
- detection of alarm at the control unit even in the event of LED failure
- protection against transient spikes on long lead lines to the remote indicators

DETECTOR WIRING

The Smoke Detector shall be suitable for 2 wire monitored supply.

OPERATIONAL PARAMETERS

The Detectors shall be suitable for operation at a maximum ambient temperature of 60 deg C and a minimum of 0 deg C with a maximum relative humidity of 90%.

The Detector sensitivity shall remain constant and not vary with change in the ambient temperature, humidity, pressure or voltage by more than +/- 10%

The performance of the Detectors shall not be effected by continuous air flows upto 10 meters per second.

The Detectors shall be suitably protected against the accumulation of dust and insects.

The smoke Detectors shall comply to the requirements of BS 5445 Part 7 : 1984 and EN 54 Part 7 : 1984 for Vibration , Impact and Shock parameters.

The smoke Detectors shall be designed and constructed to meet the requirements of IP 43

DETECTOR TESTING IN SITU

It shall be possible to functionally test the Detector as well as assess its actual sensitivity without having to remove the same.

DETECTOR CERTIFICATION

The smoke Detector shall be UL Listed and tested and approved by independent Authorities for certified compliance and acceptance to the relevant Standards. The Detectors shall be approved by the Local Fire Authorities and relevant documentation shall be supplied with the tender.

4. GENERAL

The Heat Sensitive Detectors shall be of the rate of rise cum fixed temperature detection type and shall comply to the requirements of IS 2175: 1977 and NFPA Standard 721. The detectors shall respond to a rate of rise in temperature of 8 deg C per minute and a fixed temperature of 57 deg. C.

4.2 CONSTRUCTIONAL FEATURES

The Heat Detectors shall be of the plug – in type and shall be attached to the mounting plate by a twist and lock motion. The Detector body shall be of moulded plastic, white in colour. The electrical contacts and other moving parts of the Detector shall be enclosed in such a manner that will afford protection against moisture, dust , insects and other foreign matter. All make and break contracts shall be of silver or any other metal or alloy of equivalent characteristics.

The body and other parts shall be made of material inherently resistant to corrosion.

Any adjustments made at the factory shall be sealed and all adjustment screws shall be provided with a reliable means of locking to avoid disturbance of the adjustments in transit. In addition, the means of adjustment shall be rendered inaccessible to prevent tampering when the Detector is being installed or during its operation.

4.3 MOUNTING PLATES

All Detectors shall be installed on mounting plates moulded from white self extinguishing thermoplastic. The Detector shall be attached to the mounting plate with a twist and lock motion. The mounting plate shall be suitable for installation on a 75mm round recessed box.

4.4 **DETECTOR OPERATION**

The Detector head shall house a thermostat or a fusible alloy as a fixed temperature element. When activated the external heat collector shall drop to provide a visual confirmation that the fixed temperature element has operated.

A pneumatic element shall sense the rate of rise in temperature by expansion of air within a sealed chamber faster then it can escape through the calibrated vent. The resultant increase in pressure shall deprees a diaphragm causing the electrical contacts to close a circuit and trigger an alarm. The rate of rise element shall be of the self restoring type.

4.5 DETECTORS APPROVALS

The Detectors shall meet the performance requirements as per Clause 5 of IS 2175 1977 and or other International Standards. The Detectors shall be UL Listed and FM approved and shall meet the approval requirements of the Local Fire Authorities. Test certificates from independent authorities and the approvals for the Detectors shall be furnished.

5. HEAT SENSITIVE FIXED TEMPERATURE TYPE DETECTORS

- **GENERAL**

  The Heat Detectors shall be of the fixed temperature detection type and shall comply to the requirements of IS 2175: 1977 and NFPA Standard 721. The detectors shall respond to a fixed temperature of 57 deg C or 94 deg C as specified.

- **CONSTRUCTIONAL FEATURES**

  The heat Detectors shall be of the plug-in type and shall be attached to the mounting plate by a twist and lock motion. The Detector body shall be of moulded plastic, white in colour. The electrical contacts and other moving parts of the Detector shall be enclosed in such a manner that will afford protection against moisture, dust, insects and other foreign matter. All make and break contacts shall be of silver or any other metal or alloy of equivalent characteristics.

  The body and other parts shall be made of material inherently resistant to corrosion.

Any adjustments made at the factory shall be sealed and all adjustment screws shall be provided with a reliable means of locking to avoid disturbance of the adjustments in transit. In addition, the means of adjustment shall be rendered inaccessible to prevent tampering when the Detector is being installed or during its operation.

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- **DETECTORS CERTIFICATION**

  The Detectors shall meet the performance requirements as per Clause 5 of IS 2175 : 1977 and / or other International Standards. The Detectors shall be UL Listed and FM approved and shall meet the approval requirements of the Local Fire Authorities. Test certificates from independent authorities and the approvals for the Detectors shall be furnished..

6. MANUAL CALL POINTS

Manual Call Points shall consist of a push button switch housed in a dust tight sheet steel enclosure of 1.5mm thick sheet to manually initiate audio visual alarms. The front shall be sealed with a breakable glass cover fixed in such a way that the actuating push button is kept depressed as long as the glass is intact and released automatically when the glass is broken. The front face of the Manual Call Box shall have an area not less than 5000 sqmm and the element shall have an exposed area of not less than 1600 sqmm in the shape of a square or a rectangle.

A small steel hammer shall be attached to the assembly with a steel chain to facilitate breaking of the glass front. The Manual Call Box shall be suitable for surface or recessed mounting as required. The words" IN CASE OF FIRE BREAK GLASS" 5mm high shall be painted in red on the front face.

7. RESPONSE INDICATOR

The Response indicator shall consist of a red LED mounted in a sheet steel enclosure of 1.5mm thick sheet suitable for surface or recessed mounting on walls or partitions as required. These shall be connected to the Detectors in the enclosed area to indicate the status of the Detector. In normal circumstances the lamp shall flicker but in the event of the Detector inside the enclosed area sensing a fire, the lamp shall glow steadily.

8. ILLUMINATED SIGNS

The Illuminated Signs shall have the letters 'FIRE EXIT' or "NO FIRE EXIT" painted in red on a white Perspex sheet as the front face of a sheet steel enclosure constructed with 1.5mm thick sheet. The Perspex sheet shall be back it with an integral battery back up facility so as to operate independent of the mains supply in the event of a mains failure. The preferred dimensions of the Illuminated Signs shall be 450 mm length and 225mm height with 100mm high lettering. They shall be suitable for surface or recessed mounting as required.

9. ALARM SIRENS

Electronic audio alarm sirens shall be suitable for operation on the DC supply of the System and will be actuated from the Main Control Panel in the event of a fire. These shall have a two tone modulated alarm signal for continuous service with an output of 100 dB at a distance of 3 metres.

10.0 MAIN CONTROL PANEL

10.1 GENERAL

The Main Control Panel (MCP) shall be centrally located and shall form the nerve center of the total System. The MCP shall continuously monitor the status of each Fire Zone.

10.2 CONSTRUCTIONAL FEATURES

The MCP shall be dust and vermin proof. Synthetic rubber gaskets shall be provided on all covers and doors to tender the joints dust and vermin proof. All doors shall be lockable.

The MCP shall be fabricated from 2.0mm CRCA thick sheet steel and shall be folded and braced to provide a rigid support. Joints shall be seam welded.

10.3 MAIN CONTROL PANEL CONFIGUTATION with PA Amplifier

The MCP shall monitor the status of each Fire Zone and shall be configured to include :

Microprocessor based electronic panel complete with a facia to provide the following indications and controls :

- "FIRE" indication one per zone
- "FAULT" indication one per zone
- "FIRE TEST" push button one per zone
- "ZONE ISOLATE " switch one per zone
- "DETECTOR FAILURE – OPEN CIRCUIT – SHORT CIRCUIT" indication
- "DETECTOR REMOVED" indication
- "BREAK IN WIRING " indication with initiation of alarm
- Mother Board to control and monitor the entire System with audio/visual alarms and with a facia to provide the following controls and indications :
- "MAINS ON" switch with indicating lamp

- "SYSTEM ON" switch with indicating lamp
- "MAIN FAILURE" indication
- "BATTERY LOW " indication
- "LAMP TEST" push button
- "STAND BY ON" indication
- "SYSTEM RESET " push button
- "ALARM CANCEL" push button
- "TRICKLE BOOST" toggle switch
- "AUDIO ALARM" selector switches for general and / or zone wise broadcast
- "AUTO/MANUAL" selector switch for the Illuminated Signs

1. Power supply for the system integral with the MCP. The power supply rating shall be adequate for the Detectors, Illuminated Signs and all other devices as required in the System.
   The power supply unit integral with control Panel shall consist of a 230/24 volt step down transformer. The 24 volt secondary of the transformer shall be rectified through a silicon diode bridge rectifier unit and the DC output filtered to minimize ripples. The unregulated 24 volt DC supply shall be regulated for the electronic circuits and the power to the entire system.

   Screw type terminal blocks and cable glands for termination of all control wiring.

2. Required potential free spare contacts/ or as called for in Bill of Quantities.
3. End of Line resistors as required by the System design shall be provided as a part of the Control Panel.
4. Audio visual alarm unit with a provision to sound an alarm throughout the building from the Main Control Panel either as a general broadcast or selectively as may be required.

10.4 ELECTRONICS

The Printed Circuit Board electro tinned copper tracks shall be protected from corrosion by a green epoxy solder resist coating. The tracks and solder joints shall be protected against fungus growth by an insulating varnish coating.

The sensitive electronic components shall be protected by a high resistivity silicone encapsulation compound. All electronic components shall be electrostatically screened.

The electronic design and circuit shall provide protection against high voltage spikes on the supply line

All Printed Circuit Boards shall be mounted in the MCP such that they can be pulled out from the front without the need for disconnecting any wires and shall therefore be mounted on rails and plugged directly into connectors.

10.5 DISPLAY

The Main Control Panel shall be complete with a display showing the layout of each floor of the Building/s and each Fire Zone marked clearly thereon for ready identification with the Zone indications and controls. The Display Panel shall be

integral with the MCP and shall be etched in colour on a white Perspex sheet as approved by the Engineer-in-Charge.

10.6 INTERNAL WIRING

All internal wiring shall be with 1.5 sqmm PVC insulated copper conductor wires colour coded and labeled with ferrules for easy identification. The wiring shall be properly bunched and harnessed. The wiring shall be done in a manner such that it is readily accessible from the front for maintenance.

10.7 SHEET STEEL TREATMENT AND PAINTING

Sheet steel materials used in the construction of Panels should have undergone a rigorous rust proofing process comprising of alkaline degreasing. Descaling in dilute sulphuric acid and a recognized phosphating process. The steel work shall then receive two coats of filler oxide primer before final painting.

All sheet shall after metal treatment be spray or powder painted with two coats of shade 692 to IS 5 on the outside and white on the inside. Each coat of paint shall be properly stoved and the paint thickness shall not be less than 50 microns.

10.8 NAME PLATES AND LABELS

Suitable engraved white on black name plates and identification labels shall be provided for identification of the Fire Zones as approved by the Architects.

11. REMOTE CONTROL PANELS

Remote Control Panels shall generally comply to the Specifications of the Main Control Panels as detailed in para 10.3 above. These shall be located remotely and will indicate the status of each Zone and the MCP but without any controls. The indications to be provided on the Remote Control Panel shall be:

- "FIRE" indication one per zone
- "FAULT" indication one per zone
- "DETECTOR FAILURE – OPEN CIRCUIT – SHORT CIRCUTI" indication one per zone
- "DETECTOR REMOVED" indication one per zone
- "BREAK IN WIRING " indication one per zone
- "MAIN ON " indicating lamp
- "SYSTEM ON" indication lamp
- "MAINS FAILURE" indication
- "BATTERY LOW " indication
- "STANDBY ON" indication

12 BATTERY AND BATTERY CHARGER

Adequately rated 24 volt lead acid rechargeable DC battery with 12 hour autonomy shall be provided for the System. The capacity shall be such as to feed the full load of the Fire Detection System including the Illuminated Signs in the event of a mains failure. It shall be connected to the MCP via a mains failure relay.

The battery shall be complete with a Battery trickle charger set and shall be maintained in a charged condition with the constant trickle charge. It shall be possible to boost the charging of the battery by the manual operation of the trickle/boost toggle switch when 'Battery Low 'indication is observed on the Main Control Panel.

The Battery capacity shall fully meet the requirements of Clause 5.2 of IS 2189.

13 WIRING

The wiring for the Fire Detection System shall in general comply with the requirements of IS 2189: 1976 and IS 732 : 1963 . The Detectors in each loop shall be wired upto the Main Control Panel with a core 1.5 sq.mm copper conductor or 2 core 2.5 sqmm aluminium conductor FRLS PVC insulated 660/1100 volts grade wires in concealed or surface conduit as required. Crimped terminations shall be used throughout the System.

14 TEST CERTIFICATES

Type test certificates from a recognized independent agency shall be furnished for all the equipment. The equipment shall comply to the requirements of the Indian, International Standards, Fire Insurance Authorities and all National and Local Regulations in force.

15 SENSITIVITY ADJUSTMENTS

The sensitivity of all Detectors shall be set/adjusted by the Supplier to suit the site conditions.

16 INSTALLATION, COMMISSIONING AND ACCEPTANCE TESTS

The following installation, commissioning and acceptance tests shall be conducted by the Contractor and shall be apart form the Standard/Routine tests prescribed and normally conducted by the Supplier. These tests shall be carried out as a part of the installation irrespective of whether or not these are covered by the Standard/Routine tests.

INSTALLATION TESTS

After installation of the Detector Bases and prior to installation of the Detector, the wiring shall be tested for continuity and insulation resistance. A high voltage insulation meter 500 to 1000 volts shall be used to measure the insulation resistance between each conductor and between each conductor and earth. The value to insulation resistance shall not be less than 1 Mega ohm.

The insulation resistance of the wiring to the Response Indicators shall also be checked as above prior to the installation of the Indicators.

COMMISSIONING AND ACCEPTANCE TESTS

Each zone shall be tested by a test fire or by a heat source on all or any one or more of the Detector selected by the Architects. The time required for detection shall be noted and shall be within prescribed limits.

- Each alarm circuit shall be energized separately and the sound level reading taken to check for conformity with the minimum standards.
- Open circuit and removal of a Detector from a detection circuit shall be tested.
- Short circuit operation for each detection circuit will be tested
- Tests to prove satisfactory operation of the system shall be conducted simulating the conditions of

- Mains Failure
- Battery disconnection
- Open circuit and short circuit conditions of each alarm circuit

The results of all the tests conducted shall be so recorded and approved by the Owner/NPCC prior to acceptance of the System.

17 AUTHORITIES AND APPROVALS

The work shall conform to the requirements and provisions of the relevant Government Acts, Regulations and Bye Laws of the Local Authorities. The contractor shall give all notices as required under the said Acts, Regulations and Bye Laws.

FIRE ALARM SYSTEM

PART 1.0 - GENERAL

1.1. DESCRIPTION:

A. This section of the specification includes the furnishing, installation, and connection of a microprocessor controlled, analog addressable, intelligent fire alarm equipment required to form a complete coordinated system ready for operation. It shall include, but not be limited to, alarm initiating devices, alarm notification appliances, control panels, auxiliary control devices, annunciations, power supplies, and wiring as shown on the drawings/specified herein.

B. The system shall be electrically supervised and monitor the integrity of all conductors.

C. The system shall be an active/interrogative type system where each transponder and/or addressable device is repetitively scanned, causing a signal to be transmitted to the main fire alarm control panel (FACP) indicating that the device and its associated circuit wiring is functional. Loss of this signal at the main FACP shall result in a trouble indication as specified hereinafter for the particular input.

D. The system and its components shall be Underwriters Laboratories, Inc. listed under the appropriate UL/EN54 testing standard as listed herein for fire alarm applications and the installation shall be in compliance with the UL/EN54 listing.

1.2. SCOPE:

A. A new intelligent reporting, microprocessor controlled fire detection system shall be installed in accordance with the specifications/drawings.
B. The system shall be designed such that each signaling line circuit (SLC) is limited to only 80% of its total capacity at initial installation.
C. Basic Performance:

1. Alarm, trouble and supervisory signals from all intelligent reporting devices shall be encoded on NFPA Style 4 (Class B) Signaling Line Circuits (SLC).

2. Initiation Device Circuits (IDC) shall be wired Class A (NFPA Style D) as part of an addressable device connected by the SLC Circuit.

3. Notification Appliance Circuits (NAC) shall be wired Class A (NFPA Style Z) as part of an addressable device connected by the SLC Circuit.

4. On Style 6 or 7 (Class A) configurations a single ground fault or open circuit on the system Signaling Line Circuit shall not cause system malfunction, loss of operating power or the ability to report an alarm.

5. Alarm signals arriving at the FACP shall not be lost following a primary power failure (or outage) until the alarm signal is processed and recorded.

6. Audio amplifiers and tone generating equipment shall be electrically supervised for normal and abnormal conditions.

7. Notification Appliance Circuits (NAC) speaker circuits and control equipment shall be arranged such that loss of any one (1) speaker circuit will not cause the loss of any other speaker circuit in the system.

8. Speaker circuits shall be arranged such that there is a minimum of one speaker circuit per smoke zone.

9. Speaker circuits shall be electrically supervised for open and short circuit conditions. If a short circuit exists on a speaker circuit, it shall not be possible to activate that circuit.

10. Audio amplifiers and tone generating equipment shall be electrically supervised for abnormal conditions. Amplifiers shall be located in cabinets to simplify installation and to reduce power losses in wiring.

11. Speaker circuits shall be 25 VRMS. Speaker circuits shall have 20% space capacity for future expansion or increased power output requirements.

12. A prerecorded voice module shall be used to store tones and/or messages and transmit them over speaker circuits automatically upon alarm actuation. The voice module shall be of reliable, non-moving parts.

1. BASIC SYSTEM FUNCTIONAL OPERATION

When a fire alarm condition is detected and reported by one of the system initiating devices, the following functions shall immediately occur:

1. The System Alarm LED shall flash.

2. A local piezo electric signal in the control panel shall sound.

3. The graphic LCD display shall indicate all information associated with the fire alarm condition, including the type of alarm point and its location within the protected premises.

4. Printing and history storage equipment shall log the information associated each new fire alarm control panel condition, along with time and date of occurrence.

1.3. SUBMITTALS

A. General:

1. Two copies of all submittals shall be submitted to the Engineer-in-charge for review.

2. All references to manufacturer's model numbers and other pertinent information herein is intended to establish minimum standards of performance, function and quality.

B. Shop Drawings:

1. Sufficient information, clearly presented, shall be included to determine compliance with drawings and specifications.

2. Include manufacturer's name(s), model numbers, ratings, power requirements, equipment layout, device arrangement, complete wiring point-to-point diagrams, and conduit layouts.

C. Manuals:

1. Submit simultaneously with the shop drawings, complete operating and maintenance manuals listing the manufacturer's name(s), including technical data sheets.

2. Wiring diagrams shall indicate internal wiring for each device and the interconnections between the items of equipment.

3. Provide a clear and concise description of operation that gives, in detail, the information required to properly operate the equipment and system.

4. Approvals will be based on complete submissions of manuals together with shop drawings.

D. Software Modifications

1. Provide all hardware, software, programming tools and documentation necessary to modify the fire alarm system on site. Modification includes addition and deletion of devices, circuits, zones and changes to system operation and custom label changes for devices or zones. The system structure and software shall place no limit on the type or extent of software modifications on-site. Modification of software shall not require power-down of the system or loss of system fire protection while modifications are being made.

1.4. GUARRANTY:

A. All work performed and all material and equipment furnished under this contract shall be free from defects and shall remain so for a period of at least one (1) year from the date of acceptance. The full cost of maintenance, labor and materials required to correct any defect during this one year period shall be included in the submittal bid.

1.5. POST CONTRACT EXPANSIONS:

A. The contractor shall have the ability to provide parts and labor to expand the system specified, if so requested, for a period of five (5) years from the date of acceptance.

2. PRODUCTS

2.1. EQUIPMENT AND MATERIAL, GENERAL:

A. All equipment and components shall be new, and the manufacturer's current model. The materials, appliances, equipment and devices shall be tested and listed by a nationally recognized approvals agency for use as part of a protected premises protective signaling (fire alarm) system. The authorized representative of the manufacturer of the major equipment, such as control panels, shall be responsible for the satisfactory installation of the complete system.

B. All equipment and components shall be installed in strict compliance with each manufacturer's recommendations. Consult the manufacturer's installation manuals for all wiring diagrams, schematics, physical equipment sizes, etc. before beginning system installation.

C. All equipment shall be attached to walls and ceiling/floor assemblies and shall be held firmly in place (e.g., detectors shall not be supported solely by suspended ceilings). Fasteners and supports shall be adequate to support the required load.

2.2. CABLING:

A. Cable:

1. Cable shall be in accordance with the local and state requirements.
2. Cable must be separated from any open conductors of Power.
3. Number and size of conductors shall be as recommended by the fire alarm system manufacturer, but not less than 1.5 mm.
4. All field wiring shall be completely supervised. In the event of a primary power failure, disconnected standby battery, removal of any internal modules, or any open circuits in the field wiring; a trouble signal will be activated until the system and its associated field wiring are restored to normal condition.

B. Cabinets:

All cabinets (eg. FACP) shall be made of CR sheet and powder coated.

C. Initiating circuits shall be arranged to serve like categories (manual, smoke, water flow). Mixed category circuitry shall not be permitted except on signaling line circuits connected to intelligent reporting devices.

2.3 Power Supply:

1. The Addressable Main Power Supply shall operate on 240 VAC, 60 Hz, and shall provide all necessary power for the FACP.

2. The Addressable Main Power Supply shall provide 9 amps of power to the CPU, using a switching 24 VDC regulator and shall incorporate a battery charger for 24 hours of standby power using dual-rate charging techniques for fast battery recharge.

3. The Addressable Main Power Supply shall provide a battery charger for 24 hours of standby using dual-rate charging techniques for fast battery recharge. The supply shall be capable of charging batteries ranging in capacity from 25-200 amp-hours within a 48-hour period.

2.4. Specific System Operations

1. Smoke Detector programming: Means shall be provided for programming any analog intelligent smoke detectors in the system from the system programmer

2. System Point Operations:

   a. Any addressable device in the system shall have the capability to be enabled or disabled through the system keypad or video terminal.

   b. System output points shall be capable of being turned on or off from the system keypad or the video terminal.

3. Point Read: The system shall be able to display the following point status diagnostic functions without the need for peripheral equipment. Each point shall be annunciated for the parameters listed:

   a. Device Status.

   b. Device Type.

   c. Custom Device Label.

   d. Software Zone Label.

   e. Device Zone Assignments.

   f. Analog Detector Sensitivity.

   g. All Program Parameters.

4. System Status Reports: Upon command from an operator of the system, a status report will be generated and printed, listing all system statuses:

5. System History Recording and Reporting: The fire alarm control panel shall contain a history buffer that will be capable of storing up to 2000 system events. Each of these events will be stored, with time and date stamp, until an operator requests that the contents be either displayed or printed. The contents of the history buffer may be manually reviewed; one event at a time and the actual number of activations may also be displayed and or printed. History events shall include all alarms, troubles, operator actions, and programming entries.

   The history buffer shall use non-volatile memory. Systems which use volatile memory for history storage are not acceptable.

2.5 SYSTEM COMPONENTS:

A. Programmable Electronic Sounders:

1. Electronic sounders shall operate on 24 VDC nominal.

2. Electronic sounders shall be field programmable without the use of special tools, at a sound level of at least 90 DBA measured at 10 feet from the device.

3. Shall be flush or surface mounted as shown on plans.

B. Addressable Devices - General

1. Addressable devices shall provide an address-setting means by programmer.

2. Detectors shall be Analog and Addressable, and shall connect to the fire alarm control panel's Signaling Line Circuits.The detectors shall be ceiling-mount and shall include a separate twist-lock base which includes a tamper proof feature.

C. Addressable Control Module

1. Addressable control modules shall be provided to supervise and control the operation of one conventional appliance. For fan shutdown and other auxiliary control functions, the control module may be set to operate as a dry contract relay.

2. The control module shall mount in a standard 4-inch square (101.6 mm square), 2-1/8 inch (54 mm) deep electrical box, or to a surface mounted back box.

D. Isolator Module

1. Isolator modules shall be provided to automatically isolate wire-to-wire short circuits on an SLC Class A or Class B branch. The isolator module shall limit the number of modules or detectors that may be rendered inoperative by a short circuit fault on the SLC loop segment or branch. At least one isolator module shall be provided for each floor or protected zone of the building.

2. If a wire-to-wire short occurs, the isolator module shall automatically open-circuit (disconnect) the SLC. When the short circuit condition is corrected, the isolator module shall automatically reconnect the isolated section.

3. The isolator module shall not require any address-setting, and its operations shall be totally automatic. It shall not be necessary to replace or reset an isolator module after its normal operation.

4. The isolator module shall mount in a standard 4-inch (101.6 mm) deep electrical box or in a surface mounted back box. It shall provide a single LED that shall flash to indicate that the isolator is operational and shall illuminate steadily to indicate that a short circuit condition has been detected and isolated.

3. EXECUTION

3.1. INSTALLATION:

A. Installation shall be in accordance with the NEC, NFPA 72, local and state codes, and as recommended by the major equipment manufacturer.

B. All conduit, junction boxes, conduit supports and hangers shall be concealed in finished areas and may be exposed in unfinished areas. Smoke detectors shall not be installed prior to the system programming and test period. If construction is ongoing during this period, measures shall be taken to protect smoke detectors from contamination and physical damage.

C. All fire detection and alarm system devices, control panels and remote annunciators shall be flush mounted when located in finished areas and may be surface mounted when located in unfinished areas.

D Manual Pull Stations shall be suitable for surface mounting or semi flush mounting and shall be installed not less than 42 inches, nor more than 48 inches above the finished floor.

3.2. TYPICAL OPERATION:

A. Actuation of any manual station, smoke detector heat detector or water flow switch shall cause the following operations to occur unless otherwise specified:

1. Activate all programmed speaker circuits.
2. Actuate all strobe units until the panel is reset.
3. Light the associated indicators corresponding to active speaker circuits.
4. Release all magnetic door holders to doors to adjacent zones on the floor from that the alarm was initiated.
5. Return all elevators to the primary or alternate floor of egress.
6. A smoke detector in any elevator lobby shall, in addition to the above functions, return all elevators to the primary or alternate floor of egress.

7. Smoke detectors in the elevator machine room or top of hoist way shall return all elevators in to the primary or alternate floor. Smoke detectors or heat detectors installed to shut down elevator power shall do so in accordance with ANSI A17.1 requirements and be coordinated with the electrical contractor.

B. HVAC/Smoke Control System Operation:

1. On/Auto/Off switches and status indicators (LEDS) shall be provided for monitoring and manual control of each fan, damper, HVAC control unit, stairwell pressurization fan, and smoke exhaust fan.

2. The OFF LED shall be Yellow, the ON LED shall be green, the Trouble/Fault LED shall be Amber/Orange for each switch. The Trouble/Fault indicator shall indicate a trouble in the control and/or monitor points associated with that switch. In addition, each group of eight switches shall have two LEDS and one momentary switch which allow the following functions: An Amber LED to indicate an OFF-NORMAL switch position, in the ON or OFF position; A Green LED to indicate ALL AUTO switch position; A Local Acknowledge/Lamp Test momentary switch.

3. Each switch shall have the capability to monitor and control two addressable inputs and two addressable outputs. In all modes, the ON and OFF indicators shall continuously follow the device status not the switch position. Positive feedback shall be employed to verify correct operation of the device being controlled. Systems that indicate on/off/auto by physical switch position only are not acceptable.

4. All HVAC switches (i.e., limit switches, vane switches, etc.) shall be provided and installed by the HVAC contractor.

5. It shall be possible to meet the requirements mentioned above utilizing wall mounted custom graphic annunciators if the project requires such.

3.3. TEST:

Provide the service of a competent, factory-trained engineer or technician authorized by the manufacturer of the fire alarm equipment to technically supervise and participate during all of the adjustments and tests for the system.

1. Before energizing the cables and wires, check for correct connections and test for short circuits, ground faults, continuity, and insulation.

2. Close each sprinkler system flow valve and verify proper supervisory alarm at the FACP.

3. Verify activation of all flow switches.

4. Open initiating device circuits and verify that the trouble signal actuates.

5. Open signaling line circuits and verify that the trouble signal actuates.

6. Open and short notification appliance circuits and verify that trouble signal actuates.

7. Ground initiating device circuits and verify response of trouble signals.

8. Ground signaling line circuits and verify response of trouble signals.

9. Ground notification appliance circuits and verify response of trouble signals.

10. Check presence and audibility of tone at all alarm notification devices.

11. Check installation, supervision, and operation of all intelligent smoke detectors during a walk test.

12. Each of the alarm conditions that the system is required to detect should be introduced on the system. Verify the proper receipt and the proper processing of the signal at the FACP and the correct activation of the control points.

13. When the system is equipped with optional features, the manufacturer's manual should be consulted to determine the proper testing procedures. This is intended to address such items as verifying controls performed by individually addressed or grouped devices, sensitivity monitoring, verification functionality and similar.

3.4. FINAL INSPECTION:

At the final inspection a factory trained representative of the manufacturer of the major equipment shall demonstrate that the systems function properly in every respect.

3.5. INSTRUCTION:

A. Provide instruction as required for operating the system. Hands-on demonstrations of the operation of all system components and the entire system including program changes and functions shall be provided.

B. The contractor and/or the systems manufacturer's representatives shall provide a typewritten "Sequence of Operation."

FIRE HYDRANT

1. SCOPE

The specifications for the supply, installation, testing and commissioning of the components and accessories of the Fire Fighting System shall be in accordance with these Specifications. For items not included in these Specifications installation shall be done in accordance with the latest IS Standard/TAC/NFPA codes.

For items not covered by any of the above, the installation shall be done as directed by the Consultant/ Engineer-in-Charge and as per sound engineering practices.

2. FIRE HYDRANT/WET RISER SYSTEM

2.1 Hose Reels

Swinging hose reels conforming to IS-884 shall be with rubber hose of 20 mm (3/4") diameter suitable for 350 psig bursting pressure. The reel shall be fabricated out of heavy gauge pressed mild steel capable of swinging up to 170 degree rotation. The movement of the reel shall be friction less and shall be provided with suitable bearings. Gunmetal packing glands shall be provided with adjustable nuts.

The swinging hose reels shall be complete with the following accessories.

a) Shut-off nozzle of gun metal duly chromium plated complete with control valve suitable for throw of 40-45 ft. at 60 psig pressure.

b) Wall bracket with U shape reel carrier made out of cast iron.

c) G.M. isolation valve.

2.2 Flax-Canvas Hose

Flax canvas hose shall be 63 mm dia and 15 meter long and shall conform to IS-4297. Canvas hose shall be fabric lined and abrasion resistant. It shall be completely unaffected by extremes of temperature and adverse conditions of operation and storage. The bore shall be smooth and shall offer negligible friction. It shall be suitable for 180 psig working pressure. It shall be complete with gunmetal male and female couplings conforming to IS-903.

2.3 External Hydrant

External Hydrant (Yard Hydrant) shall conform to IS-5290.

Each external hydrant shall be housed in a hose box. Hose box shall be suitable to accommodate two numbers of flax canvas hoses each of 63 mm dia and 15 meter long conforming to IS-4297 complete with ISI marked male and female coupling and one number 63 mm dia ISI marked gunmetal short branch pipe with nozzle.

2.4 Internal Hydrant

At each landing, contractor shall provide one single/twin headed gun metal landing valve with 63 mm dia outlets and 80/100 mm dia inlets conforming to IS-5290 with cast iron wheels. Landing valves shall have flanged inlet and instantaneous female type outlets.

Instantaneous outlets for fire hydrant shall be of standard approved pattern and suitable for Fire Brigade hose of 63 mm dia with coupling conforming to and marked IS-903.

M.S.Hose Cabinet with glass front door and locking arrangements shall be provided at each landing. M.S. hose cabinet shall be constructed out of 16 gauge (1.6 mm) mild steel sheet and duly painted in approved finish. The cabinet shall be sufficient enough to accommodate first-aid hose reel and two canvas hoses of 63 mm dia & 15 meter length and branch pipe and nozzle. All the hydrants having pressure more than 7 bar shall be provided with orifice plate with flange. The orifice plate shall be fabricated out of 6 mm thick stainless steel plate. The bore of the orifice shall be so designed that the outlet pressure shall not exceed 7 Kg/Sqcm and the calculations shall be submitted to the Engineer-in-Charge for approval.

2.6 Fire Brigade Inlet Connection

Fire brigade inlet connection shall be of gun metal with two 63 mm dia instantaneous type inlets with 100/150 mm dia flanged outlet connections feeding to the main fire grid through a non return valve. The collecting head shall conform to IS-904.

2.7 Air Cushion Tank

Air cushion tank shall be fabricated out of 8 mm (Minimum) thick mild steel sheet for shell and 10 mm thick M.S. Sheets for dish ends. The tanks should be duly painted with two coats of approved enamel paint. The following accessories shall be supplied with air cushion tank.

a) Gun Metal isolation valve (stop valve)

b) Gun Metal drain valve

c) Pressure gauge with isolation valve

d) Safety valve

e) Air release valve

3.5 Painting

After complete installation and testing, pumps accessories and fittings shall be given two coats of approved finishing paint.

4.0 Piping

The scope of this section comprises the supply, laying, erecting, testing and commissioning of pipes required for this project.

All piping laid shall be as follows:

Pipe Size	Material	Joints & Fittings
Upto 50 mm	MS pipe	Welded fittings
	Heavy Class	Unions (Forged)
	IS-1239/1979	Raised face slip on flanges
75 mm to 150 mm	MS pipe	Welded fittings
	Heavy Class	Raised face slip-on flanges
	IS-1239/1979	---
200 mm to 300 mm	MS pipes	Welded
	Heavy Class	Raised face slip-on flanges
	IS-3589/1981	

Pipe threads shall be to IS-554 and flanges to IS-1536.

All piping shall be black steel unless otherwise stated. Pipes shall be given one primary coat of red oxide paint & 2 coats of synthetic enamel paint of approved color before being installed. Pipes shall be sloping towards drain points.

Fittings shall be new and from reputed manufacturers, fittings shall be of malleable casting of pressure rating suitable for the piping system. Fittings used on welded piping shall be of the weldable type. Flanges shall be new and from standard manufacturers. Supply of flanges shall include bolts, washers gaskets etc as required.

All equipment and valve connections shall be through flanges (Welded or screwed for mild steel).

All welded piping is subjected to the approval of the Construction Manager and sufficient number of flanges and unions shall be provided.

Gate valves shall conform to IS-780/1969, Flanges to IS-1536 or as required. Valves shall have non-rising spindles unless otherwise specified.

Butterfly valves shall conform to BS-5155, MSS SP 67 & API 609 and designed to fit without gaskets between mating flanges. The valves shall be suitable for flow in either direction and seal in both directions. The valve shall be of integral moulded design and of Audco/Eq make.

Check valves shall be provided as required or as shown on the drawings and conform to the following specifications:

Size	Connection	Ends
12 mm to 65 mm	Gun Metal	Screwed Female
80 mm & above	Gun Metal/C.I.	Flanged

Swing check valves shall normally be used in all water services. Lift type valves may be used in horizontal runs.

4.1 **Piping Installation**

Piping shall be properly supported on or suspended from stands, clamps, hangers etc, as specified and as required. The tenderer shall adequately design all the brackets, saddles, clamps, hangers etc and be responsible for their structural integrity.

Pipe supports shall be of steel, adjustable for height and primer coated with rust preventive paint and finish coated black. Where pipe and clamp are of dissimilar material, a gasket shall be provided in between.

Spacing of pipe supports shall not exceed the following:

Pipe Size (mm)	Spacing (M)
3 to 12	1.22
19 to 25	1.83
32 to 150	2.44
Above 150	3.05

Pipe hangers shall be fixed on walls and ceilings by means of metallic rawl plugs.

Vertical risers shall be parallel to walls and column lines and shall be straight and plumb. Risers passing from floor to floor shall be supported at each floor by clamps or collars attached to pipe and with a 12mm thick ribbed rubber pad or any other approved resilient material. Where pipes pass through the terrace floor, suitable curbing shall be provided to prevent water leakage. Risers shall also have a suitable concrete pipe support at the lowest point.

Pipes sleeves of 50mm larger than the pipe diameter shall be provided wherever pipes pass through wall and the annular space filled with lead wool and finished with retaining rings.

Piping work shall be carried out with minimum disturbance to the other works being done at the site. A programme work shall be chalked out in consultation with the Engineer-in-Charge and approved by him.

Piping layout shall take due care for expansion and contraction in pipes.

All pipes using screwed fitting shall be accurately cut to the required sizes and threaded in accordance with IS-554 and burrs removed before laying. Wherever reducers are to be made in horizontal runs, eccentric reducers shall be used if the piping is to drain freely, in other location, concentric reducers may used.

Air valves shall be provided at all high points in the piping system for venting. Air valves shall be of the sizes specified and shall be associated with an equal size gate valve with rising spindle.

Mains	**Air Valves**
Up to 100 mm dia	25 mm dia
100 mm to 300 mm dia	32 mm dia
Over 300 mm dia	50 mm dia

Discharge from the air valves shall be piped through an equal sized M.S. pipe to the nearest drain or floor waste or as shown.

All buried pipes shall be cleaned and coated with zinc chromate primer and bituminous paint, wrapped with two layers of fiberglass felt each layer laid in bitumen.Drain shall be provided at all low points in the piping system and shall be of the following sizes:

Mains	**Drains**
Upto 300 mm dia	25 mm dia
Over 300 mm dia	32 mm dia

Drain shall be provided with gate valves of equal size with rising spindle. Drains shall be piped through equal size M.S. pipe to the nearest drain or floor waste. Piping shall be pitched towards drain points.

4.2 Pressure Gauges

Pressure gauge shall be not less than 100 mm dia dial and of appropriate range and be complete with shut off gauge valve and goose neck etc duly calibrated before installation.

Pressure gauge shall be provided at the following locations and as indicated on the drawings & schedule of quant Care shall be taken to protect pressure gauges during pressure testing.

4.3 Vibration Elimination

Piping installation shall be carried out with vibration elimination fittings wherever required.

4.4 Testing

All Fire piping shall be tested to hydrostatic test pressure of 14 Kg/Sqcm or twice the design pressure whichever is higher for a period of not less than 24 hours. All leaks and defects in joints revealed during the testing shall be rectified to the satisfaction of the Engineer-in-Charge.

Piping required subsequent to the above pressure test shall be retested in the same manner. System may be tested in sections and such sections shall be securely capped. The Engineer-in-Charge shall be notified well in advance by the contractor of his intention to test a section of piping and all testing shall be witnessed by the Engineer-in-Charge.

The Contractor shall make sure that proper noiseless circulation of fluid is achieved through the system concerned. If proper circulation is not achieved due to air bound connections, the Contractor shall rectify the defective connections. He shall bear all the expenses for carrying out the above rectifications including the tarring-up and re-finishing of floors, walls etc as required.

The Contractor shall provide all materials, tools, equipment, instruments, services and labour required to perform the test, and shall ensure that the plant room and other areas are cleaned up and spill over water is removed.

4.5 Painting

After the piping has been installed, tested and run for at least ten days, It shall be given two finish coats, 3 mils each of approved colour.

The direction of flow of fluid in the pipes shall be visibly marked in white arrows or as directed by the Engineer-in-Charge.

5. Fire Sprinkler system:

The specifications for the supply, installation, testing and commissioning of the components and accessories of the Fire Sprinkler System shall be in accordance with the latest IS Standard/TAC/NFPA codes.

For items not covered by any of the above, the installation shall be done as directed by the Consultant/ Engineer-in-Charge and as per sound engineering practices.

Heating, Ventilation and Air Conditioning (HVAC)

AIR CONDITIONING – VARIABLE REFRIGERANT VOLUME SYSTEM

GENERAL

The work is to be carried out in accordance with the General Specifications for Heating, Ventilation and Air Conditioning (HVAC) Works 2004 including up to date correction slips published by CPWD and relevant IS codes. The specifications are to be followed from British Standards and/or American Society of Heating Refrigeration & Air Conditioning Engineers, USA where ever IS codes are not relevant. This specification covers the minimum requirements for the engineering, procurement, installation and commissioning of the HVAC system to be provided inside the proposed Bank building.

BASIS OF DESIGN

The entire system has to be designed on climatological conditions of the area.

The codes, regulation as detailed below shall be followed in this contract:

1.	Safety code for air-conditioning (revised) amendment 1	IS 659:1964 (reaffirmed 1991)
2.	Safety code for mechanical Refrigeration	IS 660 : 1963(Reaffirmed 1991)
3.	Testing of refrigeration compressors	IS 5111 : 1993
4.	Air cooled heat exchangers(Amendment 1)	IS 10470:1983 (reaffirmed 1991)
5.	Packaged Air-conditioner(Amendment 1991)	IS 8148:1976 (reaffirmed 1991)
6.	Thermostats for use in refrigeration etc.	IS:11338:1965 (reaffirmed 1991)
7.	Metal Duct work	IS 655:1963 (reaffirmed 1991)
8.	Steel for general structural purpose	IS 2062:1992
9.	Refrigeration	As per ASHRAE/ISI Air-conditioning & Refrigeration Air-conditioning institute standards

10.	Hot Dip Zinc Coated Steel Tubes	IS 4736 : 1968
11.	Colour code for the identification of pipe lines	IS 2379:1963
12.	Specific requirements for the direct switching of the individual motors	IS 4064 (Part II) 1978
13.	PVC insulated (HD) Electric Cables for working voltage up including 1100 Volts	IS:1554 (Part I)
14.	HRC Cartridge fuse links upto 650 Volts	IS : 2208 : 1976
15.	Starter	IS : 8554 (Part I) 1979
16.	Inspection and testing of installation	IS: 732 (Part III) 1979
17.	Galvanized steel wire for fencing	IS : 277 : 1977
18.	Three phase induction motors	IS : 325
19.	PVC insulated (Heavy duty) cables for working voltage up to 1.1 KV and up to 11 KV Grade respectively	IS:1554:1981 Part I & II
20.	Code for practice for electrical wiring installations	IS:732:1989
21.	Code for practice for earthing	IS : 3043
22.	Specification for single phase small A/C universal motors	IS : 996
23.	Circuit breaker A/C	IS 2516 : 1980 Part I & II
24.	Contactors for A.C for voltage upto 1100 V.	IS 2959 : 1975
25.	Low voltage switch gear and control gear assemblies	IS 8623: 1993 Part I & II
26.	Code of practice for selection of starters for AC induction motors	IS 3914
27.	Specification for cables glands	IS : 4821
28.	Code for selection, installation & maintenance of switch gear and control gear	IS 10118:1982 Part I to IV
29.	Conduits for electrical installations	IS:9537 :1981 Part I to IV
30.	Permissible limits of noise level for rotating electrical machines	IS 12065 : 1987
31.	Code of practice for installation and maintenance of motors	IS:3106:1966
32.	HRC cartridge fuse links upto 650 volts	IS : 2208
33.	PVC insulated (Heavy duty) electric cables for working voltage upto & including 1100 watts.	IS : 1554 (Part I)
34.	Method for testing Panel type air filters for AC purposes	IS 7613:1975 (reaffirmed 1991)
35.	Unbounded glass wool for thermal insulation (1st Revision)	IS 3690:1974

36.	Expanded polystyrene for thermal insulation purposes(1st revision)	IS 4671:1984 (reaffirmed)

1.2 Safety Codes

The following IS codes shall be followed:	
Safety code for mechanical refrigeration	IS 660
Safety code for air conditioning	IS 659
Safety code for scaffolds & ladders	IS 3696
Code of practice for fire precaution in Welding & cutting operations	IS 3016
Code for safety procedures and practices in electrical works	IS 5216
Code of practice for safety and health Requirements in electrical & gas welding and cutting operations	IS 3696

SCOPE

The scope of this section comprises the supply, erection testing and commissioning of **inverter based** Variable Refrigerant Volume System with **Scroll Compressor** conforming to specifications and in accordance with the requirements of Drawing, Designs and manufactures recommendation.

TYPE

Units shall be air cooled, variable refrigerant volume air conditioner of **R410A/R407C** gas based consisting of one outdoor unit and multiple indoor units. Each indoor units having capability to cool or heat independently for the requirement of the rooms.

It shall be possible to connect minimum 10 indoor units on one refrigerant circuit. The indoor units on any circuit can be of different type and also controlled individually. Following type of indoor units shall be connected to the system:

- Ceiling mounted cassette type
- Ceiling mounted Ductable (HS/MS/LS) type
- Ceiling suspended type

Compressor installed in outdoor unit shall be equipped with at least one inverter compressor up to 18 HP, two inverter compressors up to 36 HP and above this, three inverter compressors. The system shall be capable of changing the rotating speed of inverter compressor by inverter controller to follow variations in cooling and heating load.

Outdoor unit shall be suitable for mix match connection of all type of indoor units.

The refrigerant piping between indoor units and outdoor unit shall be extended up to **165m with maximum 50m** level difference **without any oil traps.**

Both indoor units and outdoor unit shall be factory assembled, tested and filled with first charge of refrigerant before delivering at site.

OUTDOOR UNIT

The outdoor unit shall be factory assembled, weather proof casing, constructed from heavy gauge mild steel panels and coated with baked enamel finish. The unit should be completely factory wired tested with all necessary controls and switch gears:

- All outdoor units above 5 HP shall have minimum two scroll compressors and be able to operate even in case one of compressor is out of order.
- In case of outdoor units above 18HP, the outdoor unit shall have at least 2 inverter compressors so that the operation is not disrupted with failure of any compressor.
- It should also be provided with duty cycling for switching starting sequence of multiple outdoor units.
- The noise level shall not be more than 68 dB(A) at normal operation measured horizontally 1m away and 1.5m above ground level.
- The outdoor unit shall be modular in design and should be allowed for side by side installation
- The unit shall be provided with its own microprocessor control panel.

The outdoor unit should be fitted with low noise, aero spiral design fan with large airflow and should be designed to operate compressor-linking technology. The unit should also be capable to deliver 78 Pa external static pressure to meet long exhaust duct connection requirement.

The condensing unit shall be designed to operate safely when connected to multiple fan coil units, which have a combined operating nominal capacity up to **160 %** of outdoor units up to **36 HP**.

COMPRESSOR

The compressor shall **be highly efficient scroll type** and capable of inverter control. It shall change the speed in accordance to the variation in cooling or heating load requirement:

- The inverter shall be IGBT type for efficient and quiet operation.
- All outdoor units shall have at least 10 steps of capacity control to meet load fluctuation and indoor unit individual control. All parts of compressor shall be sufficiently lubricated stock. Forced lubrication may also be employed.
- Oil heater shall be provided in the compressor casing.

REFRIGERANT CIRCUIT

The refrigerant circuit shall include liquid & gas shut-off valves and a solenoid valves at condenser end.

All necessary safety devices shall be provided to ensure the safe operation of the system.

SAFETY DEVICES

All necessary safety devices shall be provided to ensure safe operation of the system.

Following safety devices shall be part of outdoor unit; high pressure switch, fuse, crankcase heater, fusible plug, over load relay, protection for inverter, and short recycling guard timer.

OIL RECOVERY SYSTEM

Unit shall be equipped with an oil recovery system to ensure stable operation with long refrigeration piping lengths.

INDOOR UNIT

This section deals with supply, installation, testing, commissioning of various type of indoor units confirming to general specification and suitable for the duty selected. The type, capacity and size of indoor units shall be as specified in detailed Bill Of Quantities

GENERAL

Indoor units shall be either ceiling mounted cassette type, or ceiling mounted ductable type. These units shall have electronic control valve to control refrigerant flow rate respond to lead variations of the room.

a) The address of the indoor unit shall be set automatically in case of individual and group control

b) In case of centralized control, it shall be set by liquid crystal remote controller

The fan shall be dual suction, aerodynamically designed turbo, multi blade type, statically & dynamically balanced to ensure low noise and vibration free operation of the system. The fan shall be direct driven type, mounted directly on motor shaft having supported from housing.

The cooling coil shall be made out of seamless copper tubes and have continuous aluminum fins. The fins shall be spaced by collars forming an integral part. The tubes shall be staggered in the direction of airflow. The tubes shall be hydraulically/ mechanically expanded for minimum thermal contact resistance with fins. Each Coils shall be factory tested at 21kg/sqm air pressure under water.

Unit shall have cleanable type filter fixed to an integrally moulded plastic frame. The filter shall be slide away type and neatly inserted.

Each indoor unit shall have computerized PID control for maintaining design room temperature. Each unit shall be provided with microprocessor thermostat for cooling and heating.

Each unit shall be with wired LCD type remote controller. The remote controller shall memorize the latest malfunction code for easy maintenance. The controller shall have self-diagnostic features for easy and quick maintenance and service. The controller shall be able to change fan speed and angle of swing flat individually as per requirement.

CEILING MOIUNTED CASSETTE TYPE UNIT (MULTI FLOW TYPE)

The unit shall be ceiling mounted type. The unit shall include pre-filter, fan section and DX-coil section. The housing of the unit shall be powder coated galvanized steel. The body shall be light in weight and shall be able to suspend from four corners.

Unit shall have an external attractive panel for supply and return air. Unit shall have four way supply air grilles on sides and return air grille in center.

Each unit shall have high lift drain pump, fresh air intake provision (if specified)

Low gas detection system and very low operating sound.

All the indoor units regardless of their difference in capacity should have **same decorative panel size** for harmonious aesthetic point of view. It should have provision of connecting branch ducts.

CEILING MOUNTED DUCTABLE TYPE UNIT

Unit shall be suitable for ceiling mounted type. The unit shall include pre filter, fan section & DX coil section .The housing of unit shall be light weight powder coated galvanized steel. The unit shall have high static fan for Ductable arrangement.

CEILING SUSPENDED TYPE

Unit shall be suitable for ceiling suspended arrangement below false ceiling.

The unit include pre filter , fan section & DX coil section . The housing of unit shall be light weight powder coated galvanized steel.

CENTRALIZED TYPE REMOTE (TOUCH SCREEN TYPE) CONTROLLER

A multifunctional compact centralized controller shall be provided with the system.

The Graphic Controller must act as an advanced airconditioning management system to give complete control of VRV airconditioning Equipment, It should have ease of use for the user through its touch screen, icon display and color LCD display.

It shall be able to control up to 64 groups of indoor units with the following functions:-

a) Starting/stopping of Airconditoners as a zone or group or individual unit.
b) Temperature settling for each indoor unit or zone.
c) Switching between temperature control modes, switching of fan speed and direction of airflow, enabling/disabling of individual remote controller operation.
d) Monitoring of operation status such as operation mode & temperature setting of individual indoor units, maintenance information, trouble shooting information.
e) Display of air conditioner operation history.

f) Daily management automation through yearly schedule function with possibility of various schedules.

The controller shall have wide screen user friendly color LCD display and can be wired by a non polar 2 wire transmission cable to a distance of 1 km. away from indoor unit.

UNIFIED ON/OFF CONTROLLER

Unified ON/OFF controller shall be supplied as optional accessories.

The controller shall be able to control minimum 15 groups (each group containing maximum 16 indoor units) or 128 nos. of indoor units with the following functions:

a) On/Off as a zone or individual unit.
b) Indication of operation condition of each group.
c) Select one of 4 operation modes.

SCHEDULE TIMER

A schedule timer shall be supplied as an optional accessories.

a) The timer shall be able to set operation schedule for all indoor units.
b) The timer shall be able to set 8 pattern of schedule combined with centralized controller.

REFRIGERANT PIPING

All refrigerant piping for the air conditioning system shall be constructed from soft seamless upto 19.mm and hard drawn copper refrigerant pipes with copper fittings and silver-soldered joints. The refrigerant piping arrangements shall be in accordance with good practice within the air conditioning industry, and are to include charging connections, suction line insulation and all other items normally forming part of proper refrigerant circuits.

All joints in copper piping shall be swadle joints using low temperature brazing and or silver solder. Before jointing any copper pipe or fittings, its interiors shall be thoroughly cleaned by passing a clean cloth via wire or cable through its entire length. The piping shall be continuously kept clean of dirt etc. while constructing the joints. Subsequently, it shall be thoroughly blown out using nitrogen.

After the refrigerant piping installation has been completed, the refrigerant piping system shall be pressure tested using nitrogen at pressure of 20Kg per sq.cm. Pressure shall be maintained in the system for 24 hours. The system shall then be evacuated to minimum vacuum of 700mm hg and held for 24 hours.

The air-conditioning system supplier shall be design refrigerant pipe sizes and erect proper interconnections of the complete refrigerant circuit.

The thickness of copper piping shall not be less than mentioned below for sizes derived from the design requirement:

Pipe Size in mm(OD)	*Wall Thickness in mm*
a) 41.3	1.4
b) 38.1	1.3
c) 34.9	1.2
d) 31.8	1.1
e) 28.6	1.0
f) 25.4	1.0
g) 22.2	1.0
h) 19.1	1.0
i) 15.9	1.0
j) 12.7	0.8
k) 9.5	0.8
l) 6.4	0.8

The suction line pipe size and the liquid line pipe size shall be selected according to the manufacturers specified outside diameter. All refrigerant pipes shall be properly supported and anchored to the building structure using steel hangers, anchors, brackets and supports which shall be fixed to the building structure by means of inserts or expansion shields of adequate size and number to support the load imposed thereon.

To protect nitrile rubber insulation of exposed copper piping from degrading due ultra violet rays & atmospheric condition, it shall be covered polyshield coating with atleast two coats of resin and hardner (Make- poly Bond Company) above nitrile rubber insulation. Fiberglass tape shall be helically wound & painted two coats of resin with hardner to give smooth & plain finish.

PIPE INSULATION

a. Refrigerant Pipe Insulation

The whole of the liquid and suction refrigerant lines including all fittings, valves and strainer bodies, etc. shall be insulated with 19mm /13 mm thick elastomeric nitrile rubber as specified in BOQ.

b. Drain Pipe Insulation

Drain pipes carrying condensate water shall be insulated with 6 mm thick elastomeric nitrile rubber insulation.

For proper drainage of condensate, U Trap shall be provided in the drain piping (wherever required). All pipe supports shall be of pre fabricated & pre painted slotted angle supports, properly installed with clamps etc.

DUCTWORK:

Ducting shall be done according to standard specification for air circulation system following the CPWD specifications and Relevant IS codes.

Communication

EPABX

1. SCOPE

Supply, installation, testing and commissioning of wall mounted Analog extension EPABX

2. SPECIFICATIONS

The exchange shall comply to the following

- Single Cabinet wall mounting type
- In-built transformer
- Battery back-up optional OR Alternative DC Supply
- Built in switched mode power supply
- Built in slots for expansion

3 FEATURES

The exchange shall have the following features

- Alarm functions
- Answer positions(s)
- Background Music
- By-pass call diversion and Follow Me
- Call charge control
- Diagnostic Functions
- Music On-Hold
- Tone & Pulse Dialing
- Group Functions
- Intercom
- Other Extension Functions

ROUTINE AND COMPLETION TESTS

1.1 Installation Completion Tests

At the completion of the work, the entire installation shall be subject to the following tests:

1. Wiring continuity test
2. Insulation resistance test
3. Earth continuity test
4. Earth resistivity test

Besides the above, any other test specified by the local authority shall also be carried out. All tested and calibrated instruments for testing, labour, materials and incidentals necessary to conduct the above tests shall be provided by the contractor at his own cost.

1.2 Wiring Continuity Test

All wiring systems shall be tested for continuity of circuits, short circuits, and earthing after wiring is completed and before installation is energized.

1.3 Insulation Resistance Test

The insulation resistance shall be measured between earth and the whole system conductors, or any section thereof with all fuses in place and all switches closed and except in concentric wiring all lamps in position of both poles of the installation otherwise electrically connected together, a direct current pressure of not less than twice the working pressure provided that it does not exceed 1100 volts for medium voltage circuits. Where the supply is derived from AC three phase system, the neutral pole of which is connected to earth, either direct or through added resistance, pressure shall be deemed to be that which is maintained between the phase conductor and the neutral. The insulation resistance measured as above shall not be less than 50 mega ohms divided by the number of points provided on the circuit the whole installation shall not have an insulation resistance lower than one mega ohm.

The insulation resistance shall also be measured between all conductors connected to one phase conductor of the supply and shall be carried out after removing all metallic connections between he two poles of the installation and in those circumstances the insulation shall not be less than that specified above.

The insulation resistance between the frame work of housing of power appliances and all live parts of each appliance shall not be less than that specified in the relevant standard specification or where there is no such specification, shall not be less than half a mega ohm or when PVC insulated cables are used for wiring 11.5 mega ohms divided by the number of outlets. Where a whole installation is being tested a lower value than that given by the above formula subject to a minimum of 1 Mega ohms is acceptable.

1.4 Testing of Earth Continuity Path

The earth continuity conductor including metal conduits and metallic envelopes of cable in all cases shall be tested for electric continuity and the electrical resistance of the same along with the earthing lead but excluding any added resistance of earth leakage circuit breaker measured from the connection with the earth electrode

to any point in the earth continuity conductor in the completed installation shall not exceed one ohm.

1.5 Testing of Polarity of Non-Linked Single Pole Switches

In a two wire installation a test shall be made to verify that all non-linked single pole switches have been connected to the same conductor throughout, and such conductor shall be labeled or marked for connection to an outer or phase conductor or to the non-earthed conductor of the supply. In the three of four wire installation, a test shall be made to verify that every non-linked single pole switch is fitted to one of the outer or phase conductor of the supply. The entire electrical installation shall be subject to the final acceptance of the Architect as well as the local authorities.

1.6 Earth Resistivity Test

Earth resistivity test shall be carried out in accordance with IS Code of Practice for earthing IS 3043.

1.7 Performance

Should the above tests not comply with the limits and requirements as above the contractor shall rectify the faults until the required results are obtained. The contractor shall be responsible for providing the necessary instruments and subsidiary earths for carrying out the tests. The above tests are to be carried out by the contractor without any extra charge.

1.8 Test and Test Reports

The Contractor shall furnish test reports and preliminary drawings for the equipment to the Architect/owners for approval before commencing supply of the equipment. The Contractor should intimate with the tender the equipment intended to be supplied with its technical particulars. Any test certificates etc. required by the local Inspectors or any other Authorities would be supplied by the Contractor without any extra charge.

ELECTRICAL SYSTEM

1. All electrical works will be carried out as per 'GENERAL SPECIFICATIONS FOR ELECTRICAL WORKS, PART-1, INTERNAL, 2005'- CPWD publication.

2. All non-metallic conduit pipes and accessories shall be of suitable materials complying with IS: 2509-1973 and IS: 3419-1989 for rigid conduits and IS:9537 (part 5) 2000 for flexible conduits.

3. No non-metallic conduits less than 20 mm in diameter shall be used.

4. The maximum number of PVC insulated copper conductor cables of 650/1100 V grade conforming to IS: 694-1990 that can be drawn in one conduit of various sizes is given in the **Table 1** attached along with this document. Conduit sizes shall be selected accordingly.

5. A protective earth conductor shall be drawn inside all conduits in all distribution circuits to provide for earthing of non-current carrying metallic parts of the installation. These shall be terminated on the earth terminal in the switch boxes, and/or earth terminal blocks at the DB's.

6. Gas or water pipe shall not be used as protective conductors.

7. The Main L.T.Panel for the building is to be provided as per designed capacity. The requirement is to be designed by the specialist who is to be deployed by the contractor for which nothing has to be paid extra.

8. The Cables will travel on on cable trays as per design approved by the Engineer-in-charge.

9. Suitable Earthing is to be provided according to CPWD specification and latest IS codes.

TABLE 1- MAXIMUM NUMBER OF PVC INSULATED 650/1100 V GRADE

ALUMINIUM / COPPER

CONDUCTOR CABLE CONFORMING TO IS: 694 1990

NOMINAL CROSS SECTION- AL AREA OF CONDUC-TOR IN SQ. MM	20 MM		25 MM		32 MM		38 MM		51 MM		64 MM	
	S	B	S	B	S	B	S	B	S	B	S	B
1	2	3	4	5	6	7	8	9	10	11	12	13
1.5	5	4	10	8	18	12	-	-	-	-	-	-
2.5	5	3	8	6	12	10	-	-	-	-	-	-
4	3	2	6	5	10	8	-	-	-	-	-	-
6	2	-	5	4	8	7	-	-	-	-	-	-
10	2	-	4	3	6	5	8	6	-	-	-	-
16	-	-	2	2	3	3	6	5	10	7	12	8
25	-	-	-	-	3	2	5	3	8	6	9	7

35	-	-	-	-	-	-	3	2	6	5	8	6
50	-	-	-	-	-	-	-	-	5	3	6	5
70	-	-	-	-	-	-	-	-	4	3	5	4
NOTE:												
1) THE ABOVE TABLE SHOWS THE MAXIMUM CAPACITY OF CONDUITS FOR A SIMULTANEOUS DRAWING IN OF CABLES.												
2) THE COLUMNS HEADED 'S' APPLY TO RUNS OF CONDUITS WHICH HAVE DISTANCE NOT EXCEEDING 4.25 M BETWEEN DRAW												
IN BOXES AND WHICH DO NOT DEFLECT FROM THE STRAIGHT BY AN ANGLE OF MORE THAN 15 DEGREES. THE COLUMN HEADED												
B' APPLY TO RUNS OF CONDUIT, WHICH DEFLECT FROM THE STRAIGHT BY AN ANGLE OF MORE THAN 15 DEGREES.												
3) CONDUIT SIZES ARE THE NOMINAL EXTERNAL DIAMETERS.												

Diesel Generator

100% Power back –up for designed power requirement is to be provided complete in all respect including DG set, panels, earthing and suitable wiring as briefed below:

A Compact, Modular construction and sleek design with low noise level, sound proof, weather proof, acoustic enclosure and environment friendly Silent DG set complete with Diesel Engine for Air Cooled coupled with alternator with complete accessories including base plate, fuel tank suitable for minimum 8 hours of operation and 180 AH, 12V batteries with leads and terminals, silencer, standard control panel, CPCB certified for emission compliances, lowest operating cost, approved sound proof enclosure complete in all respect including suitable base foundation of approved make complete in all respect including AMF (Auto mains failure) panel for required capacity comprising of start & stop of Engine, control relays, Ammeter, Voltmeter with selector switches, Power contactors, timers, Electronic Hooters, Visual & Alarm indications for faults, UPS, Operating panel complete in all respect and suitable earthing.

LIST OF APPROVED MANUFACTURERS

WATER SUPPLY & SANITARY ITEMS

S. No.	Details of Materials / Equipments		Manufacturer's Name
1	Vitreous China Sanitary ware	:	Hindware / Parryware / Kohlar
2	C.P. Brass fittings	:	Jaquar / Gem / Parko
3	Cast iron pipes & fittings, Manhole covers and frames.	:	NECO / RIF / SKF
4	G.I. pipes.	:	Jindal /Tata /ITC/ Prakash / Bharat Steel
5	G.I. pipes fittings.	:	Unik / Kirti / Zoloto
6	R.C.C pipe	:	K.K. / App. Equivalent ISI marked
7	Stoneware pipes, Gully traps	:	Perfect potteries, Jabalpur / Approved equivalent ISI marked
8	G.M. / Forged brass valves	:	Zoloto / Leader / SKS
9	Check valve/Butterfly valve	:	C & R / Advance / Kartar / Castle
10	Paints	:	Asian Paints / Berger / Shalimar Paints
11	Water treatment equipments	:	Ion Exchange / Thermax / Pentair.
12	Pumps	:	Kirloskar / ITT / Grundfoss
13	Level Controller & Indicator (Water)	:	Technika / Minilec / Advance Auto
14	PVC Pipes	:	Supreme / Prince / Polypack
15	Geyser	:	Venus / Racold / AO Smith
16	Sink	:	Neelkanth / Kobra / Parryware
17	Water purifier	:	Acquaguard / Kent / Fontus
18	Water tanks	:	Sintex / Polycon / Frontier
19	CPVC Pipes	:	Ajay flowguard / Aashirwad / Supreme

20	Gratings,Cleanouts,Funnels	:	GMGR / Neer / Chilly
21	Foot Valves, Check Valves	:	Leader / Kirloskar / G.G.(Bombay)
22	Ball Cocks	:	SRS/Hindco/Jaquare/Kohinoor
23	Polythene Floats	:	Emcos BSJ/ Hindco / Jaquare
24	Bib tap, Stop tap	:	Hindco/Nitco/GEM/Jaquare
25	Pillar tap	:	Hindco/Nitco/GEM/Jaquare
26	C.P. fittings like Bottle trap,waste fittings, Shower roset, Towel rods etc.	:	Essco / Bilmat/ Metro/Somani/Jaquare

FIRE FIGHTING ITEMS

S. No.	Details of Materials / Equipments		Manufacturer's Name
1	G.I. /M.S pipes.	:	Jindal /Prakash / TATA
2	G.I. pipes fittings.	:	Unik / Kirti / Zoloto
3	G.M. / Forged brass valves	:	Zoloto / Leader /SKS
4	Sluice Valves, Non return valve	:	Kirloskar / Kartar / Castle
5	Valves	:	C& R / Advance / Castle
6	`Y' strainer	:	Emerald Enterprises / Zoloto / Kartar
7	Level Controller & Indicator (Water)	:	Technika / Minilec / Advance Auto
8	Paints	:	Asian Paints / Berger / Shalimar
9	Pressure Gauge	:	H Guru / Fiebig
10	Pumps	:	Kirloskar /Mather & Platt / Grundos
11	Fire Fighting Equipments	:	Minimax / Getech / Newage
12	Sprinklers	:	Tyco / Grinnel / Best / HD

13	Welding Rods	:	Advani / Victor / Supron
14	Rubber hose pipe	:	Deep Jyoti / Superex / approved IS marked
15	Motors	:	Cummins / KEC / NGEF / CGL
16	Fire Extinguisher	:	Fire Shield / Kanex / Eversafe /Minimax
17	Air Vessel	:	S. Sen & Co./ Minimax
18	Hose Box, Hose drum	:	GTech / Prefabs /Newage/ Jayasree
19	Anti Vibration Eliminators	:	Dunlop / Kanwal / Recetoflox
20	Pressure Switch	:	Indofoss / Switzer
21	Pressure Gauge	:	Bells / AN Instruments/H Guru
22	Switch Gear	:	L&T / Crompton
23	Installation Control Valves	:	HD Fire / Kolay
24	Flow Switch	:	System Sensor / RaPID Control /DK Inst
25	Photo Electric Smoke Detectors	:	Essar / Notifier / Siemens / Cease fire/ L&T / H
26	Heat Detector	:	Essar / Notifier / Siemens / Cease fire/ L&T / H
27	Fire Control Panel & Accessories	:	Essar / Notifier / Siemens / Cease fire/ L&T / H
28	Hooter	:	Apollo / System Sensor / Johnson Controls / D
29	Call Point	:	Apollo / System Sensor / Johnson Controls / D
30	Control Modules	:	Apollo / System Sensor / Johnson Controls / D
31	Fire Exit Sign with battery back up	:	Systems Tek/ Glo-lite/ Prolite/ MDS Legrand

ELECTRICAL ITEMS

S.NO	ITEM DESCRIPTION	MAKE
1.	Air Circuit Breaker (ACB)	L&T / GE / ABB / SCHNIEDER
2.	Molded Case Circuit Breaker (MCCB)	L&T / GE / ABB / SCHNIEDER

3.	Meters digital	AE / L&T / Siemens
4.	Indicating Lamps (LED type only)	L&T / BINAY or equivalent
5.	CT's (cast resin type only)	AE / CAPPA or equivalent
6.	Selector Switch	KAYCEE or equivalent
7.	MCB/ ELCB/ RCBO/ ISOLATORS	L&T HAGER / MDS / ABB / SCHNIEDER
8.	Contactors	L&T / ABB / GE / SCHNEDER
9.	HRC Fuses	L&T / SIEMENS / GE
10.	Push Buttons	L&T / SIEMENS or equivalent
11.	Battery Charger	SYSTEM CONTROLS or equivalent
12.	Batteries	EXIDE / STANDARD or equivalent
13.	Relays	EE / L&T / AVK SEG
14.	Timers	L&T or equivalent
15.	Rotary Switch	L&T / SIEMENS
16.	Toggle Switch	KAYCEE or equivalent
17.	P.F Correction Relay	DUCATI / L&T or equivalent
18.	Capacitors	KHATAU / DUCATI / SIEMENS / ASIAN
19.	HT Termination	Raychem or equivalent
20.	Compact Sub-station	ABB / SCHNIEDER / UNIVERSAL / AREVA
21.	Voltage Monitor	EE or equivalent
22.	Change Over Switches	HPL / ELECON
23.	Energy Meter	ENERCON
24.	RMU	ABB / SCHNIEDER / AREVA
25.	TV Coaxial wires	Conscope or equivalent
26.	HT/ LT Rubber matting	Jyoti / National or equivalent
27.	Metal Halide Fixtures	Phillips / WIPRO / BAJAJ
28.	SON Fixtures	Phillips / WIPRO / BAJAJ
29.	Fluorescent Fixtures	Phillips / WIPRO / BAJAJ
30.	Telephone Cables	Havells / Rallison / L&T / DELTON
31.	Modular Switch & Sockets & Weather proof Switch & Sockets	LK-OPAL / ABB / ROMA.
32.	Copper Wires	Rallison / L&T / Havells / KEI
33.	PVC / MS Conduits	BEC / AKG / POLYPACK / ATUL
34.	HT /LT Cable	Skyton /Polycab / KEI / Havells
35.	Wall Fans	Almonard / Crompton / Havell's
36.	Ceiling Fans	Crompton / Khaitan / Havell's

37.	Exhaust Fans	Neutec / Havell's / Crompton
38.	Timers	MDS Lexis/ Siemens/ L&T Hager/ Schneider
39.	Selector Switches	HPL / L&T Salzer / Kaycee

Other Items

S.NO	ITEM DESCRIPTION	MAKE
1	BMS: Digital Data Controls with Web Based Soft Ware with Un limited user license	Honey Well / Siemens / Schneider / Trane / Johnson Controls
2	Lift	OTIS / Kone/ Schneider Mitsubishi
3	HVAC	Daikin / Carrier / Voltas / Blue Star / trane
4	CCTV / Access Control / PA System	
a	Computer	Dell / HP / HCL / IBM
b	Color Monitor	LG / Samsung / Acer
c	Printer	Epson/HP/Canon/Samsung
d	Cable Trays/Race Ways	Pro Fab/Rico Steel/Indiana/Lloyed
e	Laser Detector / Nozzle / Panel/Soft Ware	VESDA/ ICAM
f	Speakers	Bausch/Bose/Ahuja
g	Communication Cable	Polycab / Skytone
5	DG Set	Kirloskar/Sudhir/Jackson
6	EPABX	Siemens/L&T/IBM

Note ::

1. All above materials shall have ISI certification marks.
2. The list given above is not to be considered as conclusive and is for reference and guidance only. As a general rule more stringent specification shall take precedence as per approval of the Engineer-in-incharge.
3. Contractor shall seek approval of specific make of equipment out of above options before commencement of work.
4. In case of non availability of material of specific makes given above. The material of makes with equivalent specifications may be used with the prior approval of the Engineer-in-charge.

NATIONAL PROJECTS CONSTRUCTION CORPORATION LIMITED
(A Government Of India Enterprise)
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TENDER FOR CONSTRUCTION OF BANK BUILDING FOR PUNJAB & SIND BANK at MUMBAI ON DESIGN & BUILD BASIS

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NPCC
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VOLUME: III

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TENDER FOR CONSTRUCTION OF BANK BUILDING FOR PUNJAB & SIND BANK at MUMBAI ON DESIGN & BUILD BASIS

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VOLUME: III

PRICE BID

CONSTRUCTION OF BANK BUILDING FOR PUNJAB & SIND BANK, MUMBAI.

Details of Payment Stages

SL. NO.	ACTIVITY / STAGES	TOTAL PERCENTAGE ALLOTED	PAYMENT TO BE RELEASED
1	2	3	4
I.	**Site Survey & Soil investigation**	**100%**	
1	On Completion of Site survey & Soil Testing		60%
2	After designing of Foundation		40%
	Total		**100%**
II.	**Implementation of Building including Services**		
A	**DESIGN STAGE: Architectural, Structural & MEP design**	**1.20%**	This payment shall be released in stages as per Annexure "A" of PQ part of tender document
B.	**SITE CLEARANCE STAGE**	**0.80%**	
	Dismantling of existing structure as per architectural drawings and disposal of melba outside to identified place as per local authority,and levellling of land		0.80%
C.	**CONSTRUCTION STAGE (Milestone Linked payment)**		
	R.C.C. framed Structures:	**49.00%**	
1	Excavation for foundations, Laying of P.C.C. & R.C.C. up to plinth beam & Slab including Reinfircement		4.00%
2	R.C.C. in Super Structure including Reinforcement		21.00%
3	Inner as well as Outer Walls complete		7.00%
4	Providing & fixing Doors and Windows including Shutters with all hardwares		6.00%
5	Internal & External finishes Finishes including flooring		7.00%
6	Out side flooring & Paving		2.00%

CONSTRUCTION OF BANK BUILDING FOR PUNJAB & SIND BANK, MUMBAI.

Details of Payment Stages

SL. NO.	ACTIVITY / STAGES	TOTAL PERCENTAGE ALLOTED	PAYMENT TO BE RELEASED
1	2	3	4
7	Water proofing for Wet area as well as terrace		2.00%
D.	**Services: Electrification**	**10.00%**	
1	Interior electrification complete		3.00%
2	Exterior Electrification complete		3.00%
3	Providing & fixing fittings & fixtures, Luminaries, Façade lighting, & Electric signages etc. cpmplete in all respect		3.00%
4	Testing, Certification & Obtaining Clearence from local bodies		1.00%
E.	**Services: Plumbing, Sanitary & Water Supply**	**9.00%**	
1	Providing & fixing Pipes complete		1.75%
2	Providing & fixing fittings & fixtures complete		1.75%
3	Sewerage & Drainage works complete in all respect		1.75%
4	Under ground sump complete in all respect		1.50%
5	Providing & fixing Over head Tanks complete in all respect including staging/bases and fittings		1.25%
6	Testing, Certification & Obtaining Clearence from local bodies		1.00%
F.	**Fire Protection systems: Wet riser, Sprinkler & Alarm**	**4.00%**	
1	Supply, Installation & Commissioning		3.50%
2	Testing, certification and Clearance from Local authorities		0.50%
G.	**Air-conditioning System**	**11.00%**	
1	Supply, Installation & Commissioning		10.00%
2	Testing, certification and Clearance from Local authorities		1.00%
H.	**Power Supply & Back up**	**4.50%**	

CONSTRUCTION OF BANK BUILDING FOR PUNJAB & SIND BANK, MUMBAI.

Details of Payment Stages

SL. NO.	ACTIVITY / STAGES	TOTAL PERCENTAGE ALLOTED	PAYMENT TO BE RELEASED
1	2	3	4
1	Power connections including Panels & Earthing		1.00%
2	Supply, Installation & Commissioning of DG		3.00%
3	Testing, certification and Clearance from Local authorities for DG		0.50%
I.	**Telephone & Communication Systems**	**2.50%**	
1	Supply, Installation & Commissioning		2.00%
2	Testing, certification and Clearance from Local authorities		0.50%
J.	**Surveillance System**	**1.50%**	
1	Supply, Installation & Commissioning		1.00%
2	Testing, certification and Clearance from Local authorities		0.50%
K.	**Lift**	**5.00%**	
1	Supply, Installation & Commissioning		4.50%
2	Testing, certification and Clearance from Local authorities		0.50%
L	HANDING OVER	**1.50%**	1.50%
	Total	**100%**	100.00%

NOTE:

1 All statutory fees required to be paid to local bodices for obtaining the approvals/ Clearences shall be reimburesed on actual basis on production of original receipt.

2 Security deposit will be deducted from all payments as above interms of General conditions of contract.

3 All Statutory taxes will be deducted as per Central/State Govt.,

4 The payments shall be released in part on pro-rata basis for the part execution of work of particular/ respective item of work

CONSTRUCTION OF BANK BUILDING FOR PUNJAB & SIND BANK AT MUMBAI

PRICE OFFER

S. No.	Job Description	Unit	Quantity	Bidders Offer		
				Quoted Rates in Indian Rupees		Quoted Amount (in Indian Rupees)
				In Figures	In Words	
1	2	3	4	5	6	7
I	Site Survey & Soil Investigation in all respect required for foundation design of Building	Job	One			
II	Preparation of detailed designs & drawings as required for construction including all Civil, structural drawings, drawings and details for Electro mechanical services including plumbing, sanitary, water supply, electrical services, generators, air-conditioning, fire protection, telephone and communication systems, surveillance systems etc. as per requirement as per building code and where ever necessary obtaining approval of local bodies complete in all respect.	Sq. M.	800			
	TOTAL (in Indian Rupees)					
	Note:					
1	Rates quoted by the Tenderer shall be inclusive of all Design, providing/Supply, Construction/installation, Carriage of materials by Mechanical transport including, loading, unloading complete upto site for all leads, commissioning, testing, clearence / approval from all statutory authorities complete in all respect including handing over to NPCC/ Owner and maintaineance during defect liability / guarantee / warantee period.					