

**OTTATHINGAL INDIA PVT
LIMITED**

(OTPL)

TENDER DOCUMENT

Tender No. OTPL/300TPD WOPC/04/2022

**CIVIL/STRUCTURE WORK/SANITARY /
PLUMBING/ROADFOR
SETTING UP 300TPD WOPC MANUFATURING
AT SIPCOT, TIRUNELVELI,TAMILNADU
FOR OTPL**

WEBSITE.<https://www.ottathingal.com>

PREQUALIFICATION CUM TECHNICAL BID

CLIENT

Ottathingal India Pvt Ltd (OTPL)
61/3731, Ravipuram Road,
Vanjambalam, Ernakulam,
Kerala, Pin 682016

DESIGNE &ENGINEERING

Chanderpur Works Pvt. Ltd
(CPW) Jorian,
Yamuna Nagar
Hariyana – 135 001

A) STRUCTURAL CONSULTANT

B) ENGINEERING&CONSTRUCTION CONSULTANT

Seeniraj.T
Plot No:23,Door No:21,First Floor,
Laxmi Kantham Ammal Street,
Rajiv Nagar,Velappanchavadi,
Chennai-600 077

Ahamed Meeran
530,North Mount Road,
Tenkasi,
Tamilnadu-627 811

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Section 1

NIT

1.NOTICE INVITING TENDER (NIT) Number **OTPL/300TPD WOPC/03/2022** Date 20.04.2022 is being invited by the Managing Director, on behalf of Ottathingal India Pvt Ltd 61/3731, Ravipuram Road, Valanjambalam, Ernakulam, Kerala, Pin 682016 for Tenders are invited in two cover system from competent bidders for providing Complete CIVIL & STRUCTURAL WORK for setting up 300tpd white cement (WOPC) manufacturing unit (Clinker Grinding Unit) at , SIPCOT, Gangaikondan, Thirunalveli, Tamilnadu from eligible and resourceful bidders having sufficient credential and financial capability for execution of the project as per the tender. Intending bidders desirous of participating in the tender are to login to the website www.ottathingal.com (the official website of OTPL). The Contractor/bidder must visit the site and fully acquainted himself with all the details of the site, location, materials, weather characteristics, labour condition and all other information and data pertaining to and needed for the work. In fact, the rates to be quoted by the Tenderer should be prepared only after taking into account of all the obligations of the Contractor as stated in the Tender Document including procurement, transportation and handling of all materials and labor. Intending bidders are required to download the tender documents directly from the website www.ottathingal.com. Tender documents consisting of General instructions, Eligibility criteria, Scope of work, Commercial terms and conditions etc. OTPL reserves the right to reject any or all tenders without assigning any reason thereof. If any clarification required, tenderers may also send their queries to the e-mail ottathingalindia@gmail.com.

Period of Completion	: 7 months
Validity of Tender	: 120 days
Date of Issue of Tender	: From 19.04.2022 to 29.04.2022
Last date of submission of bid	: Up to 3.00PM. on 30.04.2022
Date & Time of opening	: 11AM. on 02.05.2022 Technical bid

The blank tender forms together with schedules, plans, general terms and conditions, conditions of contract, specifications etc, for the work will be download at the web site <https://www.ottathingal.com>

Bid Closing date & Time : 30.04.2022 , 3.00PM

The Tender is two cover system consisting of :

1. **Technical Bid**: The technical bid details of technical, financial and managerial capabilities to execute the works as per the requirements.
2. **Financial bid**: The Financial Bid should contain only price bid. For such of those Contractors whose technical bids do not satisfy eligibility, their Financial Bids will not be opened and the tenders will be summarily rejected. The price bid is invited for both conditions with material and without material. After opened the price bid, OTPL will decide For The contract to Do With Or Without material.

The quantities indicated in the 'Itemized Schedule of Quantities' are meant to indicate approximately the volume of work involved and are in no way binding on the terms of contract. There could be +/- 10% variation in the final quantities during the detailed engineering. The Contractors are requested to submit their unit rate offer corresponding to various items in the 'Itemized Schedule of Quantities'. It is to be noted that the figures in the 'Itemized Schedule of Quantities' are preliminary and approximate in nature.

VALIDITY OF TENDERS:

The rates quoted by the Tenderers should hold good at least for 4 months (120 days) and if accepted, the rates should hold good till the completion of work.

AGREEMENT AND SECURITY DEPOSITS:

The successful Tenderers shall execute the agreement of work within 14 days from the date of issue of the intimation of acceptance of his tender, an Agreement in the prescribed form on a Stamped paper worth Rs.500

TIME LIMIT FOR THE COMPLETION OF WORK:

The work shall be completed in all respects within a period of **7 months**.

RESERVATION OF THE RIGHT OF ACCEPTANCE OF TENDERS:

The OTPL reserves the right to accept or reject any or all tenders without assigning any reasons whatsoever in consultation with the Engineers.

Sealed tenders duly completed in all respects shall be submitted to Registered Office; Ottathingal India Pvt Ltd, 61/3731, Ravipuram Road, Valanjambalam, Ernakulam, Kerala, Pin 682016 S.India .Cont no mob 9645986965, 90725115551 on or before 30.04.2022 before 03.00PM.

For OTTATHINGAL INDIA PVT. LTD


Managing Director

Sd /- MANAGING DIRECTOR

2.BIO – DATA OF BIDDER

1. Name of the firm :
Address :
Telephone No. :
Office :
Residence :
Mobile :
Fax :
E-Mail :
Name of Contact person :

2.a) Whether proprietary/partnership/ :
Pvt. Ltd. / Public Ltd.
(certificate of registration /
partnership deed to be
enclosed as Annexure-I).

b) Name of the Proprietor, :
Partners, Directors

I)

II)

c) Year of establishment :

3. Registration with Tax Authorities :

i) Income-tax(PAN) No. :

ii) Service tax no. :

iii) EPF Regn.No. :

iv) GST/TIN / VAT No.

v) ESI Regn.No. :

4. Furnish copies of audited balance- : Enclosed / not
enclosed Sheet and Profit & Loss A/C. for
the last 3 years i.e. 2018-2019, 2019-200, 2020-2021

5. Give details if at present involved in litigation in similar type of contracts:

Sr. No.	Name of Project	Nature of work	Work order Dated	Date of completion of work	Value Rs.

6. Details of civil suit, if any,
7. that arose during execution of contract in the past 3 years.
8. Specify maximum value of single value project executed during the three years.

9. Details of work executed during the last three years:

Type of work	Work executed for (name of the Institution / Body)	Nature of work (in brief)	Location	Value Rs.	Duration of work with dt Commence completion		If work left incomplete or terminated (give reasons)

Note: Copies of work orders along with Xerox copies of relevant TDS certificate, satisfactory completion & performance certificate obtained from the client shall be enclosed as Annexure. Please note without the copies of certificates, your application is liable to be rejected.

10. Details of work on hand (photo copies of performance certificate, work orders issued by

3. INSTRUCTION WITH REGARD TO SUBMISSION OF TENDER

- 1) Rates should be quoted both in figures and words in columns specified. All erasures and alterations made while initials of the tenderer must attest filling the tender. Overwriting of figures is not permitted. Failure to comply with either of these conditions will render the tender invalid and it will be the option of OTPL to accept or reject the tender. No request of any change in rate or conditions after opening of the tender will be entertained.
- 2) In the case of figures, the word Rs. should be written before the figures of rupees and the word P' written after the decimal figures e.g. Rs. 3.25 P.
- 3) The different Schedules should be filled as follows:
 - (a) The "Rate" Column wherever applicable to be legibly filled in ink in both figures and words.
 - (b) The "Amount" Column also to be legibly filled in ink in both figures and words.
 - (c) All corrections to be initialed.
 - (d) No over writing is allowed.
 - (e) The figure of rate shall be legibly filled in ink in both figure and words.
 - (f) The Tenderer should quote his rates only for those items of work against which quantities have been furnished in the "Schedule of Quantities". In case, inadvertently or otherwise, the Tenderer quotes his rates for those items of work against which quantities have not been furnished, the Company will ignore these rates.

4. Work to be provided for by the Contractor

The work to be provided for by the Contractor, unless specified otherwise, shall include but not be limited to the following: a. Furnish all labour, supervision, services including facilities as required under statutory labour regulations, materials, scaffolds, Equipment, tools and plants, transportation, fencing, etc. Required for the work

5. Errors in the bill of quantities shall be dealt with in the following manner.

- a. In the event of any discrepancy between the rates quoted in words and the rates in figures the former shall prevail.
- b. In the event of an error occurring in the amount column of the bills of quantities as a result of the wrong extension of the unit rate and the quantity, the unit rate shall be regarded, as firm and extension shall be amended on the basis of the rates.
- c. All the errors in totaling in the amount column and in carrying forward the totals shall be corrected.

6) The tender shall be signed and dated at all places provided therein. Also all pages, drawings and corrections / alterations shall be initialed. The tender submitted on behalf of a firm shall be signed by all the partners of the firm or by a partner who has the necessary authority on behalf of the firm to enter into the proposed contract. Otherwise the tender may be rejected by OTPL.

7. The time allowed for completion of works is 7 months months from the date of commencement of the work is reckoned from the tenth day from the date of Letter of Intent. Time shall be considered the essence of contract.

8. It shall be the responsibility of the contractor to arrange for water and electricity required for completing construction.

9. The contractor whose tender is accepted will have to deposit as initial security deposit a further sum to make up 2% of the value of the accepted tender including GST . The initial security deposit will have to be made within 14 days from the date of acceptance of tender, failing which the OTPL at his discretion may revoke the letter of acceptance and forfeit the deposit if any.

10.IGST/CGST/SGST if applicable will be paid on the finished book being supplied as per the rate(%) Prevailing at the time of scheduled delivery period subjected to the supplier claiming the same as a separate item on their bill.the supplier shall furnish the following certificate on the body of the bill toward claiming the aforesaid amount for IGST/CGST/SGST.It is certified that the goods on which GST has been charged,have not been exempted under GSTact or the rules made there under.The amount charged under/on account of IGST/CGST/SGST on this goods are not more than what is payable under the provision of the relevent act for the rules made there under.

11-The will be retained in the case of the successful tenderer as part of the security for due fulfillment of the Contract. No interest shall be paid on this deposit. Failure to enter into the Contract agreement within the stipulated time of 14 days from the date of acceptance of work order shall entail the forfeiture of the Deposit. The of unsuccessful tenderers will be released after issue of work order, without anyinterest.

12.The tenderer shall submit his tender after carefully examining the whole of the tender document and the terms and conditions of contract, the drawings and specifications, the schedule of quantities etc., and also after examining the site and conditions prevailing in and aroundsite.

13.The OTPL does not bind himself to accept the lowest or any tender and reserve to them the right of accepting the whole or any part of the tender and tenderer is bound to perform the same at the rates quoted. The OTPL will not be bound to accept the lowest tender and reserves the right to accept or reject any or the entire tender without assigning any reasons whatsoever. The work may also be divided among the contracting agencies depending on the exigencies of theOTPL.

14.OTPL. does not bind itself to accept the lowest or any tender and will not assign any reason for the rejection of any or all tenders. Also, OTPL. reserves its right to negotiate with the lowest or any other Tenderer's.

15.Tenders shall remain valid for a period of 120 days from the date of opening of the tender which period may be extended by mutual agreement and the tenderer shall not cancel or withdraw the tender during the initial validity period of 120days.

16.The successful tenderer shall be bound to implement the Contract and mobilize and sign specified agreements within 14 days from the date of acceptance of workorder.

17.Tenderers must include in their rates Service Tax, sales tax (State & Central Govt.), education cess, excise duty, octroi, sales tax on works contract, GST and any other tax & duty or other levy by the central and state government applicable on the date of submitting tender. Deductions in respect of sales tax or turnover levied as per government notification and/or guidelines shall be made from the Contractor's interim and final bills, and deposited with the relevant authority by the OTPL, on his behalf. Any shortfall in deposit thereof shall be made up by the contractor, before submitting his final bill. Due to change in taxes structure by orders from Central Govt. / State Govt. after opening of tenders shall be reimbursed to the contractor as per actual and upon verifying the proof of having made thepayment.

18.This contract shall be an Item-Rate contract. The Contractor shall be paid for actual quantity of work done, as measured at site including any deviation plus or minus. The rate of any non- schedule items of work shall be decided as mentioned in the conditions ofcontract.

19.The tender drawings exhibited/enclosed are preliminary drawings intended for the guidance of the Contractor only. They may be subject to revision and alteration without vitiating any of the terms of the contract and the Contractor shall be bound to execute the works as shown on the final drawings without claiming any extrapayment.

20. Mobilization at site shall be done within 15 days from date of written intimation from OTPL. The exact date of start of work shall be reckoned based on certificate of Construction Manager,

21. No correspondence will be entertained in respect of this tender other than any clarifications strictly pertaining to this tender.

22. The tender price quoted by a tenderer shall be kept strictly confidential and shall not be divulged to any other party even approximately before the time limit for delivery of tender. The only exception be for obtaining an insurance quotation, you may give your insurance company or agent any essential information they ask for, so long as it is done in strict confidence. No information about other's tender price should be obtained and no arrangement with anyone else should be made whether or not he submit the tender.

23. For sanitary, water supply and drainage works, tenderers must possess respective valid licenses from the competent authority of the area where the site is located.

23. IMPLEMENTATION PROGRAM FOR THE PROJECT

The project is proposed to be implemented into the following are proposed to be implemented

MACHINERY & STORAGE UNIT

1-Raw material storage & Feeding unit

- a) Clinker yard
- b) Dolomite yard
- c) Gypsum yard

2-Hopper unit

3-cement mill unit

4-cement silo unit (including RCC silo & loading bay)

BUILDINGS:

1. Admin Building

2. MCC & LRS room

3. MCC room

4. Blower & compressor room

5. Laboratory

6. Sub station

7. PCC room

8. Admin Block

9. Store

10. Workshop

11. Canteen

12. Technical staff room

13. Engineering Office

14. Marking room
15. Empty Bag store room
16. Packed Bag Store room
17. Security room
18. Time Office
19. Weighbridge&room
20. Toilet cum wash room
21. Roads&Lawn
22. Compound Wall
23. Culvert,Over head water tank&UG water tank
24. Parking Area
25. Other civil Structures&buildings.

Detail Description of Buildings & Structure

The following table shows the description of building and structures envisaged for the project:

S. No.	Building/Structure	Description
1	1-Raw material storage&Feeding unit a) Clinker yard b) Dolomite yard c) Gypsum yard 2-Hopper unit 3-cement mill unit 4-cement silo unit (including RCC Silo&loading bay)	All units have to complete as per the details given in the drawing,with all sub structures and super structures,RCC Silo,Loading bay with concrete&steel cladded with colour coated aluminium sheet,Pocket Grouting,Flooring,painting,Plumbing,sanitary, doors,windows,ventilators and finishing work including ladders,hand rails,Pathways,Ramps,Pavements&Earth filling with acceptable or Issued materials. All upto the starting and preparation level for the erection of machineries,conveyors or Any other mechanical Equipment wherever required.

2	<p><u>BUILDINGS:</u></p> <ol style="list-style-type: none"> 1. MCC&LRS room 2. MCC room 3. Blower&compressor room 4. Laboratory 5. Sub station 6. PCC room 7. Admin Block 8. Store 9. Workshop 10. Canteen 11. Technical staff room 12. Engineering Office 13. Marking room 14. Empty Bag store room 15. Packed Bag Store room 16. Security room 17. Time Office 18. Weighbridge&room 19. Toilet cum wash room 20. Other building&civil structures. 	<p>All Buildings have to complete as per the details given in the drawing,with all sub structures and super structures with concreting&Brick works,Plastering, ladders,hand rails,Pathways,Ramps,Pavements&Earth filling,Flooring,painting, Electrical,Plumbing,sanitary,doors, windows,ventilators,Water tanks&Septic tanks and finishing work upto the required level shown in the drawing with acceptable or Issued materials..</p>
3	Roads&Lawn	<p>All roads shown in the keyplan have to be done as per Indian Standard by Maintaining the levels and the details given in the drawing with kerb stone,Earth Filling with acceptable or issued Materials,Lawn has to be construct along with kerbstone or suitable material with required level.</p>
4	Compound Wall	<p>All sub structures and super structures required for completing compound wall work including Installation of Gates,concreting,brickwork,Earth Filling,plastering(if need) have to be done as per the details given in the drawing or details given by the authorized person of OTPL.</p>
5	Culvert,Over head water tank&UG water tank	<p>All sub structures and super structures required for completing RCC water tanks as per detail given in the drawing. Culvert have to be construct with RCC at required place with Required Length.</p>
6	Parking Area	<p>Parking Area along With sheds,rest shelters,toilet cum Wash room,Barricades and Flooring have to done as per Drawing or requirement.</p>

22 Utilities and Other Services

Water Supply: No major process water requirement is envisaged for the proposed system. For drinking, sanitation and other purposes water will be stored in overhead. As the SIPCOT has well developed water distribution system, it is proposed to tap-off water lines from the existing pipelines and connected with the storage tanks.

Compressed Air Supply: Centralized compressor room shall be provided for the sake of overall economy, effectiveness and ease of operation and maintenance. The compressed air is required mainly for pneumatic handling of WOPC, dust collection equipment and operation of pneumatic valves.

Blowers: Blowers shall be suitably accommodated under buildings/ silos near points of utility.

24. Auxiliary Infrastructural Facilities.

Workshop cum store: It is proposed a shed as workshop cum store to take care of the regular maintenance/ repair jobs in the plant and for storing tools, spare parts, consumables, etc.

Offices: A suitable technical & administrative office, canteen and sales office shall be housed for the operation phase in a multi-story building.

Time and Security office: Time and security office shall be accommodated in the multi-story building near main entrance.

Weigh bridge: An electronic weigh bridge is envisaged to take care of the incoming and outgoing materials at the proposed OTPL WOPC. An electronic weigh bridge will be installed for weighing of Truck loaded cement in the packing plant.

Empty Bags Go down: Space shall be provided (around 3 lakh) in the packing plant building for the storage of empty bags.

Parking: As the space inside the plant boundary is marking some basic car parking shall be provided near the building, rest to park in the parking area.

Laboratory: Laboratory will be accommodated in near the packing plant area/Mill feeding area. The laboratory shall have the provision of chemical and physical testing facilities for raw materials and final products. The Laboratory space to be designed in such a way that it can accommodate all the testing equipments. Consultant also to give a detailed list of equipments for the testing to meet the Indian standard for testing of WOPC, Dolomite & Gypsum.

25. BIDDING FOR THE TENDER

Since OTPL have decided to implement the project the bidders are requested to quote separately the technical & commercial Bid in Cover I and Price bid as given in Cover II. But when the layout design or modification to the proposed layout is considered the entire project is to be taken into account. Total charges for Civil construction of the complete project of Civil foundation & structure work for the project. Machinery like mechanical, Electrical and Instrumentation, silo their erection supervision, commissioning of all the jobs coming immediately after completing civil foundation. **PRE-BID MEETING Date 22.03.2022 at 2.30PM**

A pre-bid meeting will be held on the date as indicated in Notice inviting Tender at Ottathingal

India Pvt Ltd,61/3731,Ravipuram Road, Valanjambalam,Ernakulam, Kerala,Pin 682016 during which the bidders will have an opportunity to visit the site and to obtain clarifications if any.Those who are participating in the pre-bid will have to intimate the details of the persons attending with Name, Designation and company name and copy of an ID proof, before two days of the vendor.

The bidders are advised to go through the various clauses of the tender document carefully and if there appears to be any ambiguity or discrepancy in the document or any clarification needed on the tender document shall send their queries email at least before 2 days of the Pre-bid meeting, addressed to O T P L , in the following Email ottathingalindia@gmail.com .It is to be noted that no queries, clarifications will be normally entertained after pre-bid meeting.

26.CORRESPONDENCE:

All the correspondence in connection with this Tender shall be addressed to:

MANAGING Director,
Ottathingal India Pvt Ltd, 61/3731,
Ravipuram Road, Valanjambalam,
Ernakulam, Kerala,Pin 682016
Email -ottathingalindia.com
ContactNo 9645986965 , 9072511551

27.AMENDMENT OF TENDER DOCUMENT

During the course of tender, OTPL may modify certain clauses/specifications of the tender, by amendment. The modification may be based on OTPL's own initiative or on some useful suggestions of the indenting bidders or on clarifications issued after pre-bidmeeting. Such amendments shall be displayed in the web site;www.ottathingal.com

The OTPL at its discretion may, if required extend the last date for submission of tenders in order to give a reasonable time to the bidders to take the amendments into account, for preparing their tenders and the same will be intimated through the websitewww.ottathingal.com

28.LANGUAGE

The tender and all the correspondences and supporting documents shall be in English language only.

29.THE TENDER PROPOSAL SHALL BE SUBMITTED IN TWO PARTS

Tender document can be submitted by Post on or before due date.

(A) Technical Proposal (Cover I)

The bidders shall furnish all the relevant technical details along with other commercial terms and conditions mentioned in the tender documents, without indicating the price/cost directly or indirectly.

(B) Price Proposal (Cover-II)

The price proposal shall be as per the Price Bid / Bill of Quantities (BOQ) should be indicated separately.

30.DOCUMENTS TO ACCOMPANY

(A) Technical Proposal (Cover I)

The tender shall be submitted online along with following and all other supporting documents. The bidders shall submit the details in the prescribed formats enclosed with this tender. The bidders may use additional sheets if required for the forms prescribed. However the following are only indicative and bidders are advised to submit all other documents relevant to the tender clauses.

1. Declaration letter by the bidder
2. Profile & Organizational Structure of the firm
3. List of competent persons in the firm and the details about their Technical expertise
4. Details of previous experiences of the firm to meet the Pre-qualification Criteria along with supporting documents.
5. Audited Annual financial statements (Balance Sheet and P&L Statement) of the firm/Company certified by Chartered Accountant for the last three years to meet the Pre-Qualification Criteria.
6. Documents to prove the PAN No. and Service Tax registration No.
7. Tender document downloaded from website, duly filled in with relevant details and signed on each page by the authorized signatory (EXCEPT PRICE BID)
8. Write up on Technical approach, methodology, work plan, Organization and staffing for executing the Project successfully.

(B) Price Proposal (Cover 2)

Duly filled in with all details as per Price Bid (BOQ) format

31.TENDER DOCUMENT

The original tender document can be submitted online in the designated two cover system by post on or before as per the date and time specified in the Notice Inviting Tender of this tender document.

Managing Director
OTTTATHINGAL INDIA PVT LTD
61/3731,Ravipuram Road,
Valanjambalam,
Ernakulam, Kerala,Pin 682016

**CIVIL/STRUCTURE WORK/SANITARY / PLUMBING FORSETTING UP 300TPD WOPC
MANUFATURING AT SIPCOT, THIRUNALVELI,TAMILNADU, FOR OTPL**

Sir,

1. We have read and examined the following documents as received byus:

- a) Notice InvitingTender
- b) Instructions to Tenderers
- c) Conditions ofContract.
- d) SupplementaryConditions.
- e) Specifications
- f) Drawings
- g) Schedule of Quantities.
- h) Addition condition ofcontract

Further to the above, we have visited and examined the site of the proposed works and have acquired the requisite information relating thereto as affecting the tender invited by OTPL.

2. We agree that any other terms or conditions of contract or any general reservation which may be printed on any correspondence emanating from us in connection with this tender or with any contract resulting from this tender shall not be applicable to this tender or to thecontract.
3. We have obeyed the rules about confidentiality of tenders and will continue to do so as long as they apply.
4. Subject to and in accordance with paragraphs 2 & 3 above and the terms and conditions contained or referred to in the documents listed in paragraph 1, we agree and offer to execute all the Works referred to in the said documents upon the terms and conditions contained or referred to therein and to carry out such deviations as may be ordered to be valued as per the conditions ofcontract.
5. We undertake to complete and deliver the whole of the works within a period i.e. 7months as specified in the contract and further confirm that the time allowed for completion is adequate. Time allowed for completion of entire job or part job assigned shall be reckoned from the tenth day of the date of acceptance of work order. We shall be under the obligation to pay the sum as stated in the contract for every day that the works shall remain incomplete, damages as compensation subject to the conditions of contract relating to extension oftime.
6. We hereby agree that unless & until a formal agreement is prepared & executed in accordance with the Articles of agreement, this tender together with your acceptance thereof, shall constitute a binding contract betweenus.
7. We agree to pay initial security deposit of 2% of the contract amount by way of DD/PO in favour of) ottathngal India pvt ltd, payable at Parappanagadi. This amount shall be released after virtual completion of work. We further agree for a deduction of 8% from the running bill as retention money till accumulating total securitydeposit.
8. The work may be split up in the first instance as per exigencies of the OTPL. But it may be split up in more parts or parts combined if so desired by the OTPL without assigning any reasons whatsoever. We will not have any claim either for loss of profit or revision inrates.

9. Adherence to the Bar chart will be ensured by us as the project is to be executed in a very strict timeframe.
10. Contactor will have to give as built drawings of the works in full details. Two set of hard copy and soft copy should be submitted along with final bill. The drawings should be submitted in 1:100 scale.
11. We are aware that the quantities of work indicated in the bill of quantities are approximate, may vary to any extent, even it may be omitted; we will not have any claim of any kind against the OTPL.

Signed in the capacity of duly authorized to sign tenders for and on behalf of

Address

TelephoneNo.....

Date:

4-PRE-QUALIFICATION CRITERIA

I. Technical Criteria :

1. HAVING EXPERIENCE IN CONSTRUCTION OF INTEGRATED CEMENT PLANT
 2. CEMENT GRINDING UNIT
 3. ANY CIVIL & STRUCTURAL WORK OF A ROTATING EQUIPMENT-GRINDING MILL (Ball mill) MINIMUM CAPACITY OF 15TPH AND RCC SILO CONSTRUCTION .
- THE BIDDER COMPLYING ANY ONE OF THE THREE AS THE CRITERIA ABOVE WILL BE THE PRIME BIDDER.

OR

BIDDER SHOULD HAVE SUPPLIED CONCRETE / EXECUTED CONCRETE WORK WITH FOR ANY PLANT/MANUFACTURING UNIT WITHIN LAST SEVEN YEARS ENDING ON LATEST DUE DATE OF BID SUBMISSION AGAINST ANY OF THE FOLLOWING:

- a) ATLEAST **10000 CUM** VOLUME OF CONCRETE WITHIN A COMMON PERIOD OF TWELVE CONSECUTIVE MONTHS IN CUMULATIVE OF TWO CONCURRENTLY RUNNING / COMPLETED CONTRACTS.

OR

- b) ATLEAST TWO **5000 CUM** VOLUME OF CONCRETE WITHIN A PERIOD OF TWELVE CONSECUTIVE MONTHS IN ONE RUNNING / COMPLETED CONTRACT. DOCUMENTS NEED TO BE SUBMITTED IN SUPPORT OF ABOVE.

IF THE ABOVE BIDDERS HAVE NOT HAVE ANY EXPERIENCE IN SILO CONSTRUCTION BIDDER HAVE TIE-UP WITH AN AGENCY OR JOINT VENTURE (JV) . THE AGENCY/JV HAVE AN EXPERIENCED IN SILO CONSTRUCTION, SUPPLY OF CIVIL/ STRUCTURAL WORK OF CONSTRUCTION ,ERECTION, & COMMISSIONING OF **RCC CEMENT STORAGE SILO HAVING CAPACITY MINIMUM 900 MT.**

THE AGENCY/JV EXPERIENCED & SUCCESSFULLY COMPLETED SIMILAR WORKS DURING LAST SEVEN YEARS ENDING LAST DAY OF MONTH PREVIOUS TO THE ONE IN WHICH APPLICATIONS ARE INVITED SHOULD BE EITHER OF THE FOLLOWING: COMPLETED TWO RCC SILO AT LEAST AND AND PROVIDE THE DOCUMENT FOR ANY ONE OF THE SILO CURRENTLY RUNNING THE SYSTEM SMOOTHLY.

II. Financial Criteria:

It is mandatory that all the agencies shall have registration for

GST/PAN/VAT/TIN/Service Tax. OR SIMILAR

Sl. No.	Criteria
1	Should have executed one similar work of Rs.5.00 Crores OR Should have executed two similar work of Rs.2.5 Crores OR Should have executed three similar works of Rs. 80 laks during last 7 years.
2	Average turnover for the last three years shall be Rs. 2.00 crore and above 18-19,19-20,20-21
3	Should have made profit at least in one year during last three years.

4.LIST OF ENCLOSURES:

ANNEXURE NO.	PARTICULARS	TICK IF ENCLOSED
I	Certificate of registration of Company /partnership deed.	
IIA, IIB, IIC, IID, IIE	Certificates of registration with Income Tax, Service Tax, EPF, ESI and VAT / TIN authorities.	
III	Solvency Certificate.	
IVA, IVB, IVC	Audited Balance Sheet Profit & Loss A/c.Statement for 2017-18, 18-19,19-20&20-21	
V	Certificates of Registration with Govt. /Public Sector /Private	
VI	Copies of work orders along with Xerox copies of relevant TDS certificate, satisfactory completion Certificate mentioning value of work.	
VII	Copies of performance certificate, work orders issued by valued clients, Govt., Semi-Govt, Private Bodies.	
VIIIA	Copies of income-tax returns / assessment orders for each year from 2015 to 2021	

Note: In absence of any of the above enclosures, your application is likely to be rejected.

DETAILS OF PREQUALIFYING WORKS – I

(Filling all details is mandatory without which application will be summarily rejected)

1.	NAME OF FIRM & ADDRESS FOR WHOM THE WORK IS EXECUTED	
2.	DETAILS OF WORK DONE BY THE FIRM	
3.	PHOTOGRAPHS OF WORK COMPLETED (PLEASE ENCLOSE COPY)	
4.	VALUE OF CONTRACT EXECUTED	
5.	BRIEF DISCRIPTION OF THE WORK	
6.	PERIOD DURING WHICH THE CONTRACT IS EXECUTED	
7.	WORK ORDER REFERENCE (PLEASE ENCLOSE COPY OF THE WORK ORDER)	
8.	COMPLETION CERTIFICATE REFERENCE (PLEASE ENCLOSE COPY OF THE COMPLETION OF WORK)	
9.	DELAY IN EXECUTION OF WORK	
10.	WHETHER TIME SCHEDULE IS ADHERED TO	
11.	ANY OTHER INFORMATION WHICH YOU CONSIDER WILL HELP US IN TAKING OUR DECISION.	

DETAILS OF PREQUALIFYING WORKS – II

(Filling all details are mandatory without which application will be summarily rejected)

1.	NAME OF FIRM & ADDRESS FORWHOM THE WORK IS EXECUTED	
2.	DETAILS OF WORK DONE BY THEFIRM	1.
3..	PHOTOGRAPHS OF WORK COMPLETED(PLEASEENCLOSE COPY)	
4.	VALUEOFCONTRACTEXECUTED	
5.	BRIEF DISCRPTION OF THE WORK	
6.	PERIOD DURING WHICH THE CONTRACT IS EXECUTED	
7.	WORK ORDER REFERENCE (PLEASE ENCLOSE COPY OF THE WORK ORDER)	
8.	COMPLETIONCERTIFICATE REFERENCE(PLEASEENCLOSE COPYOFTHECOMPLETIONOF WORK)	
9.	DELAY IN EXECUTION OF WORK	
10.	WHETHER TIME SCHEDULE IS ADHERED TO	
11.	ANY OTHER INFORMATION WHICH YOU CONSIDER WILL HELP US IN TAKING OUR DECISION.	

PLACE:

SIGNATURE WITH STAMP

DATE:

GENERAL

A.AFTER SATISFACTORY FULFILLMENT OF ALL THE ABOVE CRITERIA, OFFER SHALL BE CONSIDERED FOR FURTHER EVALUATION AS PER UNIT AND ALL OTHER TERMS OF THE TENDER.

B.IN CASE THE JOB IS UNDER EXECUTION/ ON GOING JOB, THE VALUE OF EXECUTED PORTION OF THE JOB SHALL BE AT LEAST CORRESPOND TO THE RESPECTIVE VALUES SPECIFIED ABOVE EVEN IF THE CONTRACT HAS NOT BEEN COMPLETED OR CLOSED.

C.THE BIDDER SHOULD HAVE ACHIEVED THE CRITERIA SPECIFIED IN THE PREQUALIFICATION CRITERIA, EVEN IF THE CONTRACT HAS NOT BEEN COMPLETED OR CLOSED.

D.BIDDER SHALL SUBMIT ABOVE PRE QUALIFICATION CRITERIA FORMAT, DULY FILLED IN, SPECIFYING RESPECTIVE ANNEXURE NUMBER AGAINST EACH CRITERIA AND FURNISH RELEVANT DOCUMENT IN THE RESPECTIVE ANNEXURES IN THEIR OFFER.

E.NO DEVIATION WITH RESPECT TO TENDER CLAUSES AND ANY ADDITIONAL CLAUSES/SUGGESTIONS/CLARIFICATION IN TECHNO COMMERCIAL BID /PRICE BID SHALL NORMALLY BE COSIDERED BY OTPL. BIDDERS ARE REQUESTED TO POSITIVELY COMPLY WITH THE SAME. OFFERERS WITH DEVIATION ARE LIABLE FOR REJECTION.

F. OTPL RESERVES THE RIGHT TO ACCEPT OR REJECT ANY OR ALL OFFER WITHOUT ASSIGNING ANY REASONS THEREOF. OTPL ALSO RESERVE THE RIGHT TO CANCEL THE OFFER WHOLLY OR PARTLY WITHOUT ASSIGNING ANY REASON THEREOF.

G.BIDDERS ARE FREE TO VISIT THE SITE AND STUDY THE PREVAILING SITE CONDITION INCLUDING LAW & ORDER ETC. BEFORE QUOTING (IF APPLICABLE). THEY MAY ALSO CONSULT THIS OFFICE BEFORE SUBMITTING THEIR OFFERS, FOR ANY CLARIFICATIONS REGARDING SCOPE OF WORK, FACILITIES AVAILABLE AT SITES OR ON TERMS AND CONDITIONS.

H. TENDER DOCUMENT CONTAINING ABOVE MENTIONED VOLUMES SHALL BE SIGNED & STAMPED IN ALL PAGES INCLUDING THIS COVERING LETTER. PRICE BID SHALL BE FURNISHED IN THE SPECIFIED FORMAT ENCLOSED WITH THE TENDER. ANY ADDITIONAL COPY, IF REQUIRED, MAY BE TAKEN BY PHOTOCOPYING FROM THE TENDER DOCUMENT GIVEN IN THE WEB.

I.THE BIDDER HAS TO SATISFY THE PRE-QUALIFYING REQUIREMENTS STIPULATED FOR THIS TENDER IN ORDER TO BE QUALIFIED. THE PRICE BIDS OF ONLY THOSE BIDDERS WILL BE OPENED, WHO WILL QUALIFY FOR THE SUBJECT JOB ON THE BASIS OF PRE-QUALIFICATION EVALUATION & TECHNO-COMMERCIAL BIDS ETC.

J. unsatisfactory past performance in the execution of a contract. OTPL's decision in this regard shall be final & binding.

K. The bidder shall submit documents in support of possession of 'Pre-Qualifying Requirements' duly self-certified and stamped by the authorized signatory, indexed and properly linked in the format for PQR. In case otpl requires any other documents/proofs, these shall be submitted immediately (if applicable).

L.The bidder may have to produce original document for verification if so decided by OTPL.

M.Price Bids shall be evaluated in the manner as prescribed in Price Schedule. However, Unit Rates shall also be furnished if applicable in the Price Schedule.

N.Taxes and duties shall be of the tender. Statutory variation of taxes and duties (plus or minus) in accordance with Govt. Notifications to the account of OTPL. Any imposition of new / additional Duty / Tax at the time of supply shall be borne by OTPL.

PLACE:

SIGNATURE WITH STAMP

DATE:

FORMAT OF CONFIDENTIAL REPORT

(To be submitted by the Client of applicant on their letter head insealed envelope to the OTPL - Mandatory requirement)

To:

OTTTATHINGAL INDIA PVT LTD
61/3731,Ravipuram Road,
Valanjambalam,
Ernakulam, Kerala,
Pin 682016

Confidential Report on M/s. _____ This is to certify that
M/s. _____ having Office
at _____ have completed the work of
. Confidential Report for our project executed is as under:

1.	DETAILS OF PROJECT EXECUTED BY THE FIRM	
2.	AREA OF CONSTRUCTION	
3.	DATE OF COMMENCEMENT OF PROJECT	
4.	DATE OF COMPLETION OF PROJECT	
5.	TOTAL VALUE OF PROJECT EXECUTED	
6.	QUALITY OF SERVICE RENDERED	
7.	COMPETENCE TO HANDLE WORKS	
8.	INTEGRITY AND RELIABILITY OF THE FIRM	
9.	DEALING IN EXECUTION OF WORK	
10.	WHETHER TIME SCHEDULE IS ADHERED TO	
11.	WHETHER ANY PENALTY IMPOSED FOR THE DELAY	
12.	GENERAL ATTITUDE OF THE FIRM	
13.	ANY OTHER INFORMATION WHICH YOU CONSIDER WILL HELP US IN TAKING OUR DECISION	

PLACE:

SIGNATURE: _____

NAME: _____

DATE:

DESIGNATION:
OFFICE SEAL

DECLARATION

I / We have read the instructions appended to the Proforma and I / We understand that if any false information is detected at a later date, any future contract made between ourselves and OTPL , on the basis of the information given by me / us can be treated as invalid by the OTPL and I / We will be solely responsible for the consequences.

I / We agree that the decision of OTPL of India in selection of contractors will be final and binding to me / us. All the information furnished by me hereunder is correct to the best of my knowledge and belief.

I / We agree that I / we have no objection if enquiries are made about the work listed by me / us in the accompanying sheets.

I / We agree that I / We have not applied in the name of sister concern for the subject empanelment process.

Place :

Date :

SIGNATURE
NAME & DESIGNATION
SEAL OF ORGANISATION

5.SUPPLEMENTARY CONDITION

INDEMNITY BOND

On the acceptance of his tender, the contractor will be required to execute an Indemnity Bond with-in 14 days of issue of work order in favor of the OTPL against third party claims, civil or criminal complaints, site mishaps and other accidents or disputes, against any damages, loss or expenses due to or resulting from any negligence or breach of duty on the part of the contractor, his subcontractors or his employees and agents etc., as per the appropriate Indemnity Bond attached.

It will also be covered by labour laws of the Govt. of India.

INDEMNITY BOND

(On Non-Judicial Stamp Paper of Rs. (200) -)

KNOW all men by these presents that I/We _____ do hereby execute Indemnity Bond in favour of the OTPL this _____ day of _____ 2022.

WHEREAS OTPL , (address of the office) _____, have appointed _____ as the Contractors for their Proposed OTPL's Project at _____.

THIS DEED WITNESS AS FOLLOWS:

I/We _____ hereby do Indemnify and save harmless OTPL of India, _____ against

1. Any third party claims, civil or criminal complaints/liabilities, site mishaps and other accidents or disputes and/or damages occurring or arising out of any mishaps at the site due to faulty work, negligence, faulty construction and/or for violating any law, rules and regulations in force, for the time being while executing/executed works by me/us.
2. Any damages, loss or expenses due to or resulting from any negligence or breach of duty on the part of me/us or my sub contractor's if any, servants or agents.
3. Any claim by an employee of mine/ours or of sub contractors if any, under the Workmen's Compensation Act and Owners Liability Act, 1939 or any other law, rules and regulations in force for the time being and any Acts replacing and/or amending the same or any of the same as may be in force at the time and under any law in respect of injuries to persons or property arising out of and in the course of the execution of the contract work and/or arising out of and in the course of employment of any workman/employee.

Any act or omission of mine/our sub-contractor's if any, our/their servants or agents which may involve any loss, damage, liability, civil or criminal action.

IN WITNESS WHEREOF THE _____ has set his/their hand on this day of _____ 2016.

SIGNED AND DELIVERED BY
THE NAME AND ADDRESS
AFORESAID IN THE
PRESENCE OF WITNESSES

(Contractor)

6.ARTICLES OF AGREEMENT

(Draft will be modified by OTPL)

DRAFT COPY OF ARTICLES OF AGREEMENT

Articles of Agreement made on this..... day ofbetween M/s____. having office at Ottathingal India Pvt Ltd 61/3731,Ravipuram Road, Valanjambalam,Ernakulam, Kerala,Pin 682016 (hereinafter referred to as the **OTPL** which expressions shall include his heirs, Executors, Administrators & Assigns) of the one part and M/s _____.

(Hereinafter referred to as the **Contractor** which expression shall include his heirs, Executors, Administrators & Assigns) of the other part. Whereas the OTPL is desirous of constructing ___ at SIPCOT Industrial Growth Centre, Tirunelveli and has caused drawings & specifications describing the work to be prepared by M/s _____, having its office at _____ (hereinafter referred to as the Engineer).

And WHEREAS the said drawings enclosed, the Specifications and the Schedule of Quantities have been signed by or on behalf of the parties hereto.

And WHEREAS the Contractor has agreed to execute upon and subject to the conditions set forth herein and to the conditions set forth in special conditions, unit rate specifications, technical specifications and in the schedule of quantities and conditions of contract (all of which are collectively hereinafter referred to as the said conditions and forming part and parcel of this articles of agreement) the work shown upon the said drawings and/or described in the said specifications and included in the said schedule of quantities at the respective rates therein set forth amounting to the sum as therein arrived at or such other sum as shall become payable there under (hereinafter referred to as the said contract amount).

NOW IT IS HEREBY AGREED AS FOLLOWS:

1. In consideration of the said contract amount to be paid at the time and in the manner set forth in the conditions, the Contractor shall upon and subject to the conditions execute and complete the work shown upon the said drawings and described in the said specifications and the schedule of quantities at the agreed rates.
2. The OTPL shall pay the Contractor the said contract amount or such other sum that may become payable at the times and in the manner hereinafter specified in the said conditions.
3. The term 'The Engineer' (in the said conditions) shall mean ___, having its office at _____ In the event of their ceasing to be the Engineer, for the purpose of this contracts such other person or persons as shall be nominated for that purpose by the OTPL, shall be the 'The Engineer', provided always that no persons subsequently appointed to be the Engineer under this contracts shall be entitled to disregard or over rule any previous decisions expressed in writing by the Engineer for the time being.
4. The said conditions and appendix thereto shall be read and construed as forming part of this

agreement and the parties hereto shall respectively abide by and submit themselves to the said conditions and perform the agreements on their part respectively in the said conditions.

5. The plans, agreements and documents mentioned herein above shall form the basis of this contract.
6. The contract is neither a fixed lump sum contract nor a piece work contract, but it is a contract to carry out the work in respect of the entire works to be paid for according to actual measured quantities at the rates contained in the schedule of rate and probable quantities or as provided in the said conditions.
7. The OTPL reserves to himself the right of altering the drawings and nature of the work by adding or omitting any items of work from the contract or having portions of the same carried out without prejudice to this contract.
8. Time shall be considered as of the essence of this Agreement and the Contractor do hereby agree to commence the work within seven days from the date of issue of formal work order/ Letter of Intent and immediately after handing over of site as provided for in the said conditions and to complete the entire works within the specified period subject nevertheless to the provisions for extension of times.
9. All disputes arising out of or in any way connected within this agreement shall be deemed to have arisen in Bangalore and only courts in Bangalore shall have jurisdiction to determine the same.
1. The several parts of this contract have been read by us and fully understood by us.

AS WITNESS OUR HAND THIS..... DAY OF 2022 .Signed by the Said Contractor In the presence of Address _____ signed by _____

Signed by
the said CONTRACTOR: In the
presence of:
Address:

Occupation: _____ Signed by
the said OTPL:
In the presence of:
Address: _____
Occupation: _____

IMPORTANT NOTE

Following points shall be taken care of while submitting the OTPL Guarantee: -

1. The OTPL Guarantee/agreement shall be on non-judicial stamp paper having a value of Rs. 500/- or as per requirement.
2. The stamp paper should be purchased in the name of the OTPL, who give the guarantee and not in the name of the supplier/Contractor.
3. The OTPL Guarantee/agreement shall be strictly as per the proforma.
4. The OTPL Guarantee should be from any of the Nationalized OTPLs or its subsidiaries only.
5. Correction made on the Guarantee should be endorsed by the OTPL with its official seal.

NOW IT IS HEREBY AGREED as follows:

1. The Contract Document is comprising of
 - i. Tender document including technical bid (Vol.-I) and pre-bid (Vol.-II).
 - ii. Notice Inviting Tender issued vide letter _____
 - iii. Subsequent letters issued by the OTPL vide _____
 - iv. Clarifications submitted by the contractor vide letter dt. _____.
 - v. Minutes of Meeting held on _____
 - vi. Rebate / Discount offered by the contractor vide letter _____
 - vii. Work Order issued by the OTPL vide letter _____
 - viii. Acceptance letter _____ from the contractor
 - ix. Drawings numbering as mentioned in the Annexure 11 of the Tender document enclosed along with the tender document.

Unless the context otherwise requires the contract documents above mentioned shall be harmoniously construed and in the chronological order.

Unless otherwise expressly provided under these presents, contract documents (iii) to (ix) above shall be construed as modifying only those general and special terms and conditions in tender document in so far and to the extent referable to the clauses in the said tender document.

Unless otherwise stated expressly hereunder, all the general and special terms and conditions shall apply and binding on the contractor.

2. The Contract Document is complimentary. What is called for in any one shall be as binding as called for by all. The aforesaid shall form integral part of contract and in the event of any inconsistency between any provisions herein the provisions of the Contract Documents shall prevail. When any of the General and Special Conditions are at variance, the condition stipulated in the Special Conditions of Contract shall supercede relevant provisions in General Conditions. For all matters not specifically provided for herein the provisions of General and Special Conditions in the Tender Documents shall apply and the rights and liabilities of the parties shall be decided accordingly. The decision of the OTPL in this regard shall be final and binding.

3. All time limits stated in the Contract Document are of the essence of the contract where the work has to be completed within 7 months failing which liquidated damages will be recovered @ 1% of contract amount for per week of delay subject to maximum recovery of 10% of the contract amount.
4. For the consideration hereinafter mentioned, the Contractor shall carry out and complete the Works in conformity with the contract documents and in accordance with the instructions issued by the consultant from time to time including all modifications extra and additional works and obligations to be carried out either on the Site or at any factory or work shop or any other place for subsequent incorporation as required for the due performance of the contract.
5. The general character and the scope of the Works is illustrated and defined by the specifications and the bills of quantities herewith attached and by the signed drawings. The scope includes furnishing all materials, labour, tools, equipment and management necessary for and incidental to the construction and completion of the Works. If the Contractor shall find any discrepancy in or divergence between the contract drawings and/or the contract bills he shall immediately give to the Consultant a written notice specifying the discrepancy or divergence and the Consultant shall issue instructions in regard thereto which shall be complied with by the Contractor.

6. INTENT

The intention of arrangement is to secure the performance of the Contractor's obligations to the satisfaction of the OTPL / Engineer / Consultant. All labour, material, equipment, constructional plant and transportation necessary for the proper execution of the Project is to be provided by the Contractor and should only be of the approved manufacturer/agencies respective kinds as described in the Contract Documents which is to be subjected from time to time to such tests as the Engineer/ Consultant's representative may direct. In case the required material/services of approved manufacturers/agencies are not available or are not upto the mark the Contractor shall procure material/ services from such other manufacturer/agencies as may be approved by the Consultant / OTPL and the Contractor shall submit rate analysis for such material.

7. EXTENT

The Contractor shall carry out and complete the Works in every respect in accordance with this contract and with the directions of and to the reasonable satisfaction of the Consultant. The Consultant may in their absolute discretion and from time to time issue further drawings, details and/or written instructions and written explanations whole of which are collectively referred to as Consultants' instructions. All such drawings and instructions shall be consistent with the Contract Document true developments thereof as reasonably inferable therefrom.

8. TYPE OF CONTRACT

The Contract is an Item- rate contract. The Contractor shall be paid for the actual quantity of Work done, as measured at Site, at the rate quoted by him in the Contract Bills. The contractors have

- i. Been informed that the schedule of quantities is liable to alteration by omission, deduction, substitution or additions at the discretion of the Consultant/OTPL without affecting the terms of the contract and no compensation to Contractor.
- ii. Fully and correctly understood the meaning of all the tender documents, the General

Conditions of Contract, Special Condition of Contract, Technical Specifications, Bill of Quantities and working drawings or part thereof.

9. CONTRACTORSCOVENANTS

- i. The Tender form conditions, priced schedule of quantities, contract drawings and General and Special Conditions of Contract, specifications, Drawings, priced Bill of Quantities, Schedule of Rates and Prices, if any, Tender, pre-contract correspondence, Letter of Intent/Acceptance, Work order, shall be read and construed as forming part of this agreement and the Contractor shall abide by and submit themselves to all the conditions and stipulations contained therein; which are not specifically incorporated herein;
- ii. The Contractor shall obtain necessary permissions/ certificates/ order from the Competent Authority in respect of workmen employed by them for the Project and shall keep the OTPL safe, harmless and reimburse all amounts/expenses incurred or suffered by the OTPL in connection with any such claim;
- iii. The Contractors shall have a duly authorized agent at the place of Work to accept services of notice and to agree to extras, omissions, additions and substituted items of Works and rates from the commencement of the Work until it is virtually completed.
- iv. In the event of any discrepancy between the details and/or description given in the Bill of Quantities, the Drawings and the Technical Specifications, such item shall be deemed to have been priced in accordance with the details and/or description confirming to the most superior provisions contained in any of the following:-
 - a) Bill of Quantities
 - b) Drawings
 - c) Technical Specifications
- v. It shall be understood that the details and/or description not specifically mentioned in the Bill of Quantities and/or the drawing shall be the same as those mentioned in the Technical Specification. Any further interpretation of above Clause shall be at the discretion of the Consultants, whose decision shall be final and binding on the parties to the contract.
- vi. The Contractors shall not make any claim for increase in the contract consideration on the basis of incorrectness and insufficiency of the information available at the time of submitting the Tender and/ or incorrectness and insufficiency of the rates and prices stated in the price bill of quantity and schedule of rates and prices or otherwise alleging insufficiency of the tender amount to cover their obligation under the contract or matters concerning the execution of the Project.
- vii. The Contractor shall be fully responsible for the adequacy, stability and safety of all site operations and methods of construction, provided that the Contractor shall not be responsible, except as may be expressly provided in the Contract, for the design or specification of the Permanent Works, or for the design or specification of any Temporary Works prepared by the Consultant.
- viii. The Contractor shall promptly inform the Consultant of any error, omission, fault and other defects in design, drawing or specifications for the Works, which are discovered while reviewing the Contract Documents or in the process of execution of the Works.

- ix. The Contractor shall arrange for the permits and licenses for release of materials, which are under Government control subject to the OTPL giving all the necessary assistance and upon being advised by the Consultant signing any forms or applications that may be necessary.
- x. The Contractor shall comply with the provisions of legislation prevailing during the currency of contract.

10. GENERAL CONDITIONS

- i. The schedule of Quantities given in the Contract Bill is provisional and is meant to indicate the intent of the Work and to provide a uniform basis for tendering. The OTPL reserves the right to increase or decrease any of the quantities or to totally omit any item of Work and the Contractor shall not claim any extras or damages on these grounds.
- ii. Any error in description or in quantity or omission of items from the Contract Bill shall be treated as a variation.
- iii. The rates quoted by the Contractor in the priced bill of quantities (Contract Bills) shall be treated as firm and the contract sum shall be deemed to have been calculated with reference to the cost of execution of Works as set out in Contract Documents and shall not be adjusted or altered for any reason.

iv. Notwithstanding anything contained elsewhere in any of the clauses of the tender, the prices/rates quoted for each item/Work in the Bills of Quantities shall be deemed to be inclusive of all direct and indirect costs, duties, Service Tax, sales tax, consignment tax, octroi/local tax, Works contract tax, etc. on any of inputs, royalty on quarried items etc. that may be involved in completing the item/Work as required in the fulfillment of all obligations under the contract and to the satisfaction of the Engineer. Additional Taxes / Levies by Central / State Government legislations after opening of tender shall be reimbursed to the contractors as per actual.

v. All the interim 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 shall not preclude the repairing of 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 any respect or the accruing of any claim, nor shall, it conclude, determine or affect in anyway the power of the OTPL under these conditions or any of them as to the final settlement and adjustment of the accounts or otherwise or in any other way vary or affect the contract. The final bill shall be submitted by the Contractor within one month of the date fixed for completion of the Work or of the date of certificate of completion furnished by the Consultant and payment shall be made within eight(8) weeks from the date of receipt of final Certificate from the Consultant.

11.INSURANCE

- i. Without limiting the obligations and responsibilities under Contract Clause for Care of Work the Contractor shall effect third party insurance with an insurer and in terms approved by the OTPL in the joint names of the OTPL and the Contractor-
- ii. against all loss or damage from whatever cause arising, other than the excepted risks stated in contract clause of the General Conditions for which the Contractor is to be held responsible under the terms of the Contract so as to cover the OTPL and the Contractor during the period beginning with commencement of the Works until the date stated in the Certificate of Completion for the whole of the Works.
- iii. Against any loss or damage occasioned by the Contractor in the course of any operations carried out by him for the purposes of completing the outstanding Work during the Defects Liability period pursuant to the Undertaking given at the time of applying for the issue of Certificate of Completion.
- iv. Against any loss or damage occasioned by the Contractor in the course of any operations carried out by him for rectifying any defect in perfection or fault appearing during the progress of the Work or during the Defects Liability Period.
- v. Against any loss or damage occasioned by the Contractor in the course of any operations carried out by him for searching the cause of any defect, imperfection or fault appearing during the progress of the Works or during the Defects Liability Period.
- vi. Against any liability for or in respect of any damages or compensation payable at law in respect of or in consequence of any accident or injury to any workmen or other person in the employment of the sub-Contractor provided the sub-contractors shall not have insured against such contingency. (Insurance against accident etc. to workman)
- vii. Unless otherwise instructed the Contractor shall insure the Works and keep them insured until the virtual completion of the contract against loss or damage by fire and/or earthquake, flood.
- viii. The Contractor shall maintain Contractors' all risks insurance policy covering loss, damage, theft, burglary etc. of all materials and equipments, temporary Works and the Work shall be insured for a total sum equal to the value of all such items plus 10% of such value.

Provided always that all the insurance under the contract documents shall be arranged by the Contractor from a first class insurance company having a branch near the site who can deal with all matters pertaining to the subject, the insurance must be placed with a company approved by the OTPL, in the joint names of the OTPL and the Contractor for such amount and for any further sum if called to do so by the OTPL, the premium of such further sum being allowed to the Contractor as an authorized extra.

12. The Contractor shall deposit the policy and receipt for premiums paid with the OTPL within 21 (twenty one) days from the date of issue of Work order unless otherwise instructed. In default of the Contractor insuring as provided above, the OTPL on his behalf may so insure and may deduct the premiums paid from any money due, or which may become due to the Contractor. The Contractor shall as soon as the claim under the policy is settled or the Work reinstated by the Insurance Company should they elect to do so, proceed with due diligence with the completion of the Works in the same manner as though the insured

risk/contingency has not occurred and in all respects under the conditions of the contract. The Contractor in case of rebinding or reinstatement after the occurrence of the insured risk/contingency shall be entitled to such extension of time for completion as the OTPL may deem fit.

Such insurance shall continue during the whole of the time of continuance of Work and/or during such time that any persons are employed by him on the Works and shall when required produce before the OTPL or the consultant, such policy of insurance and the receipt for payment of the earlier premium and the current premium.

The insurance shall be effective in such manner that the OTPL is indemnified under the policy. In the event of the sub-contractor having affected an insurance against accident etc. to the workmen the Contractor shall require such sub-contractor to produce to the OTPL / consultant when required, such policy of insurance and the receipt for the payment of the current premium, then in that event insurance under clause (vii) hereof by the Contractor shall not be necessary.

The Contractor shall provide for adequate cover to the OTPL as per the provisions of Workmen Compensation Act.

The Contractor shall make available the insurance cover note before the commencement of the Work and shall notify any change in the nature or extent of the Work and also make available additional insurance of Works if required in special circumstances.

13. DEFECTS LIABILITY

Any defects, shrinkages or other faults which shall appear within the Defects Liability Period of 12 months from the date of handing over the works and which are due to materials or workmanship not in accordance with this contract or on account of failure on the part of the Contractor to comply with any of his obligations expressed or implied shall be specified by the consultant in a schedule of defects which he shall deliver to the Contractor not later than 14 days after the expiration of the Defects Liability Period, and within a reasonable time after receipt of such schedule the defects, shrinkages and other faults therein specified shall be made good by the Contractor and (unless the consultant shall otherwise instruct, in which case the contract sum shall be adjusted accordingly) entirely at his own cost

The Contractor shall make good at his own costs and to the satisfaction of the consultant, all defects, shrinkages or small faults arising in the opinion of the consultant / engineer from Work or materials not being in accordance with the drawings or specifications or schedule of quantities or the instructions of the Engineer / consultant, which may appear within the **"Defects Liability Period of 12 months from the date of handing over completed site"** referred to in the Appendix to General Conditions. All defects, shrinkages or small faults arising from any other cause not attributable to the Contractor shall be rectified by the Contractor as an additional work.

In the event of failure of the Contractor to carry out any such work to the satisfaction of the Engineer / consultant, the OTPL shall be entitled to carry out the same at the Contractor's costs and all expenses consequential and incidental thereto shall be deducted by the OTPL from any monies due or to become due to the Contractor.

When in the opinion of the Engineer / consultant any defects, shrinkages or other faults which he may have required to be made good under sub-clause (1) and (2) of this condition shall have been made good he shall issue a certificate to that effect, and

completion of making good defects shall be deemed for all the purposes of this contract to have taken place on the day named in such certificate.

14. SPECIAL RISK

The Contractor shall not be liable for or in respect of any consequences arising out of any special risks as enumerated in relevant clause of the General Conditions. The responsibilities, rights and liabilities of the parties in such case shall be determined with respect to General Conditions.

15. STATUTORY OBLIGATIONS, NOTICES, FEES AND CHARGES

The Contractor shall comply with and give all notices required by any Act of Parliament, any instrument rule or order made under any Act of Parliament, or any regulation or byelaw of any local authority or of any statutory undertaker which has any jurisdiction with regard to the Works or with whose systems the same are or will be connected. The Contractor before making any variation from the contract drawings or the contract bills necessitated by such compliance shall give to the Engineer / consultant a written notice specifying and giving the reason for such variation and the Engineer / consultant may issue instructions in regard thereto. If within 7 days of having given the said written notice the Contractor does not receive any instructions in regard to the matter therein specified, he shall proceed with the Work confirming to the Act of Parliament, instrument, rule, order, regulation or byelaw in question and any variation thereby necessitated shall be deemed to be a variation required by the Engineer / consultant.

16. MATERIALS, WORKMANSHIP, SAMPLES, TESTING OF MATERIALS

OTPL asked the price bid (Cover II) with material and without material. After opening the price bid, OTPL will decide for the contract to Do With Or Without material for awarding the Contract.

Once The OTPL Decide to made a contract with the bidders with their Own cost/Production/Responsibility For Materials The Contractor have to provide all the material and consumables at Project site for executing civil and structural work, hence the contractor arrange the Allowable materials & labours for completing the work.

In the case of without material the contractor have to arrange the labour part only OTPL will provide all materials, the contractor shall carry out the labour part only, hence the price bid invited for both conditions.

All the Works specified and provided for in the specifications or which may be required to be done in order to perform and complete any part thereof shall be executed in the best and most workmanlike manner with materials of the best and approved quality of the respective kinds in accordance with the particulars contained in and implied by the specifications and as represented by the drawings or according to such other additional particulars, and instructions as may from time to time be given by the consultant / Engineer during the execution of the Work, and to his entire satisfaction.

If required by the consultant / Engineer the Contractor shall have to carry out tests on materials and workmanship in approved materials testing laboratories or as prescribed by the consultant / Engineer at his own cost to prove that the materials etc., under test conform to the relevant I.S. Standards or as specified in the specifications. The necessary charges

for preparation of mould (in case of concrete cube) transporting, testing etc., shall have to be borne by the Contractor. No extra payment on this account should in any case be entertained.

In case contractor is delaying or refusing or avoiding testing of material, the consultant/engineer shall arrange for carrying out testing of material and the necessary expenditure in carrying out the testing, transportation and incidental expenses shall be recovered from the contractor.

17. All the materials (except where otherwise described) stores and equipment required for the full performance of the Work under the contract must be provided through normal channels and must include charge for import duties, sales tax, octroi and other charges and must be the best of their kind available and the Contractor/s must be entirely responsible for the proper and efficient carrying out of the Work. The Work must be done in the best workmanlike manner. Samples of all materials to be used must be submitted to the Consultant/Engineer when so directed by the Consultant / Engineer and written approval from Consultant / Engineer must be obtained prior to placement of order.
18. During the inclement weather the Contractor shall suspend concreting and plastering for such time as the Consultant /Engineer may direct and shall protect from injury all Work when in course of execution. Any damage (during constructions) to any part of the Work for any reason due to rain, storm or neglect of Contractor shall be rectified by the Contractor in an approved manner at no extra cost
19. If the Work be suspended by reason of rain, strike, lock-outs or any other cause, the Contractor shall take all precautions necessary for the protection of Work and at his own expenses shall make good any damage arising from any of these causes.
20. The Contractor shall cover up and protect from damage from any cause, all new Work and supply all temporary doors, protection to windows, and any other requisite protection for the execution of the Work whether by himself or special tradesmen or sub-contractor and any damage caused must be made good by the Contractor at his own expenses.

In case OTPL provides The Construction Materials:(If need to incorporate more)

The contractor have to use their own Manpower/Machineries for Loading&Unloading,Shifting,storing the materials.

The contractor Responsibility to keep the material safe&Prevent from damages once received at site,if any damages,misuse or Wastages in materials found in the cost of ?% of materials will be deducted from the Upcoming or final invoice Raised by the contractor.

The contractor Responsibility to manage and handle the material at site without the disturbance of construction activity

The contractor Responsibility to manage and handle waste Of construction Material at site and make sure the clean environment,hazardous waste should be treated,disposed or stored properly for safety measures.

21. SUBSTITUTION

Should the Contractor desire to substitute any materials and workmanship, he/they must obtain the approval of the OTPL / Consultant in writing for any such substitution well in advance. Materials designated in this specification indefinitely by such term as "Equal" or "Other approved" etc. specific approval of the OTPL/Consultant has to be obtained in writing. The term equivalent means, if material specified is not available, then after satisfying to

the fact, the consultant / engineer may give other material to be used.

22. INSPECTION OF WORKS

All materials and workmanship shall be subject to inspection, examination and test at any and all times during construction. The Consultant may issue instructions requiring the Contractor to open up for inspection any Work covered up or to arrange for or carry out any test at any and all times.

The Consultant / OTPL's Engineer shall have the right to reject the defective workmanship or require its correction.

The Consultant / Engineer may issue instructions in regard to the removal from the site of any Work, materials or goods, which are not in accordance with this contract.

The Engineer may (but not reasonably or vexatiously) issue instructions requiring the dismissal from the Works of any person employed thereon.

23. REMOVAL OF IMPROPER WORK

The OTPL shall during the progress of the Work have power to order in writing from time to time the removal from the Work within such reasonable time or times as may be specified in the order of any materials which in the opinion of the Consultant / Engineer are not in accordance with specification or instructions, the substitution or proper re-execution of any Work executed with materials or workmanships not in accordance with the drawings and specifications or instructions. In case the Contractor refuses to comply with the order the OTPL shall have the power to employ and pay other agencies to carry out the Work and all expenses consequent thereon or incidental thereto as certified by the Consultant / Engineer shall be borne by the Contractor or may be deducted from any money due to or that may become due to the Contractor. No certificate which may be given by the Engineer shall relieve the Contractor from his liability in respect of unsound Work or bad materials.

24. PROTECTIVE MEASURES

The Contractor from the time of being placed in possession of the site must make suitable arrangements for watching, lighting and protecting the work, the site and surrounding property by day, by night, on Sundays and other holidays.

The contractor shall provide necessary temporary enclosures etc. for the protection of the work and materials and for altering and adopting the same as may be required and removing on completion of the works and making good all works disturbed.

25. NOTICE AND PATENTS OF APPROPRIATE AUTHORITY AND OWNERS.

The Contractor shall conform to the provisions of any Acts of the Legislature relating to the Work, and to the Regulations and Bye-laws of authorities, and/or any water, lighting and other companies, and/or authorities with whose systems the structures were proposed to have connection and shall before making any variations from the drawings or specification that maybe associated to so conform, give the Consultant / Engineer written notices, specifying the variations proposed to be made and the reasons for have making them and apply for instruction thereon. The Consultant / Engineer on receipt of such intimation shall give a decision within a reasonable time.

The Contractor/s shall arrange to give all notices required for by the said Acts, Regulations or Bye-laws to be given to any authority, and to pay to such authority or to any public officer all fees that may be properly chargeable in respect of the Work and lodge the receipts due with the OTPL.

26. ASSIGNMENT AND SUB-LETTING

The whole of the Works included in the contract shall be executed by the Contractor/Its Joint Venture and the Contractor shall not directly or indirectly transfer, assign or underlet the contract or any part, share or interest therein nor, shall take a new partner, without written consent of the OTPL and no subletting shall relieve the Contractor from the full and entire responsibility of the contract or from active superintendence of the Work during their progress.

The Contractor shall not assign the Contract or any benefit or interest therein or there under, otherwise than by a charge in favour of the Contractor's OTPL of any monies due or to become due under this Contract, without the prior written consent of the OTPL.

The Contractor shall not sub-let the whole of the Works except where otherwise provided by the contract, the Contractor shall not sublet any part of the Works without the prior written consent of the Engineer, which shall not be unreasonably withheld, 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 and neglects of any sub-contractor, his agents, servants or workmen as fully as if they were the acts, defaults or neglects of the Contractor, his agents, servants or workmen. Provided always that the provision of labour on a piecework basis shall not be deemed to be a subletting under this clause. The Contractor shall co-ordinate and shall be responsible for all aspects of his sub-contractor(s) without being relieved of any of his obligation under the contract.

If, the contracting agencies are violating the tender terms and sub-let the work without OTPL's consent and the same is brought to the notice of the OTPL, the OTPL will be entitled to recover 10% of such work as penalty besides initiating measures as provided in contract.

27. If, at any time during the execution of the Works, the Consultant / Engineer shall require the Contractor to make boreholes or to carry out exploratory excavation, such requirement shall be ordered in writing and shall be deemed to be an addition ordered under the provisions of the General Conditions unless a provisional sum in respect of such anticipated Work shall have been included in the Bill of Quantities.

28 The Contractor shall in connection with the Works provide and maintain at his own costs all lights, guards, fencing and watching when and where necessary or required by the Consultant / Engineer or the OTPL, or by any duly constituted authority, for the execution and for the protection of the Works, and/or for the safety and convenience of the public /others.

29. The Contractor shall, in accordance with the requirements of the Consultant / Engineer, afford all responsible opportunities for carrying out their Work to any other Contractors employed by the OTPL and their workmen and to the workmen of the OTPL and of any other duly constituted authorities who may be employed in the execution on or near the Site of any Work not included in Works. The Contractor will not be paid any compensation on this account.

30. Shall keep the Site reasonably free from unnecessary store of constructional plant and machinery, wreckage and rubbish during progress of Works and on completion leave the whole site clean and in a workmanlike condition to the satisfaction of the Consultant /Engineer.

31. Default of Contractor

If the Contractor

- i. being a company presents a petition for winding up and/or goes into liquidation (other than a voluntary liquidation for the purposes of amalgamation or reconstruction) or
- ii. shall make an assignment or a composition for the benefit of the greater part, in number of amount of his creditors or shall enter into a Deed or arrangement with his creditors, or
- iii. if a Receiver of the Contractor's firm appointed by the court shall be unable, within fourteen days after notice to him requiring him to do so, to show to the reasonable satisfaction of the OTPL that he is able to carry out and fulfill the contract, and if so required by the OTPL to give reasonable security therefore, or
- iv. if the Contractor shall suffer execution to be issued, or
- v. shall suffer any payment under this contract to be attached by or on behalf of and of the creditors of the Contractor, or
- vi. shall assign, charge or encumber this contract or any payments due or which may become due to the Contractor without the consent in writing of the OTPL first obtained, thereunder, or
- vii. shall agree to carry out the contract under a committee of inspections of his creditors, or
- viii. shall have an execution levied on his goods, or
- ix. shall use improper materials or workmanship in carrying on the Works, or
- x. shall in the opinion of the OTPL not exercise such due diligence and make such due progress as would enable the Work to be completed within due time agreed upon, and
- xi. the Consultant / Engineer certifies in writing that the Contractor has failed to commence the Works or failed to proceed with the Works after the suspension order when so called upon by the Consultant / Engineer, or
- xii. shall abandon the contract,
- xiii. without reasonable excuse has failed to commence the Works or have suspended the progress of Works for 14 days after receiving from the Consultant / Engineer written notice to proceed on
- xiv. has failed to remove materials from the site or to pull down or replace for 28 days after receiving from the Consultant / Engineer written notice that the said materials or Work has been condemned and rejected by the Consultant / Engineer under these conditions or
- xv. despite previous writings by the Consultant / Engineer in writing has failed to execute Works in accordance with the contract, or is persistently or flagrantly neglecting to carry out his obligations under the contract or as to the detriment of good workmanship or in defiance of the Consultant/Engineer's instructions to the contrary, sublet any part of the contract then and in any of the said cases the OTPL may notwithstanding previous waiver

- a) determine the contract by after giving 14 days notice in writing to the effect as hereinafter mentioned, but without thereby affecting the powers of the OTPL or the obligations and liabilities of the Contractor the whole of which shall continue in force as fully as if the contract, had not been so determined and as if the Works subsequently executed had been executed by or on behalf of the Contractor (without thereby creating any trust in favour of the Contractor)
- b) further the OTPL or his agent, or servants, may enter upon the Site and take possession of the Work and all Constructional Plant, amenities, unused materials, tools, scaffolding, sheds, machinery, steam and other power, utensils and materials lying upon premises or the adjoining lands or roads reserved for the execution of the Works and
- sell the same as his own property or
 - may employ the same by means of his own servants and workmen in carrying on and completing the Works or
 - by employing any other Contractors or other persons or person to complete the Works, and the Contractor shall not in any way interrupt or do any act, matter of thing to prevent or hinder such other Contractors or other persons or person employed from completing and finishing or using the materials and plants for the Works when the Works shall be completed, or as soon thereafter as conveniently may be, the OTPL shall give notice in writing to the Contractor to remove his surplus materials and plants and should the Contractor fail to do so within a period of 14 days after receipt by him the OTPL may sell the same by Public Auction and shall give credit to the Contractor for the amount so realized.
- Any expenses or losses incurred by the OTPL in getting the Works carried out by other Contractors shall be adjusted against the amount payable to the Contractor by way of selling his tools and plants or due on account of Work carried out by the Contractor prior to engaging other Contractors or against the Security Deposit.

Upon such entry and expulsion by the OTPL the Consultant / Engineer may adopt an appropriate mode at his discretion and certify the amounts, if any, that had at the time of such entry and expulsion reasonably been earned in respect of the work actually done by him and the value of any unused or partially used materials, any Constructional Plant and any amenities brought into existence exclusively for execution of the Works.

If the OTPL shall enter and expel [the Contractor] under this Clause, he shall not be liable to pay to the Contractor any money on account of the Contract, until the expiration of the Defects Liability Period and thereafter until the costs of execution, damages for delay in completion, if any, and all other expenses incurred by the OTPL have been ascertained and the amount thereof certified by the Consultant / Engineer. The Contractor shall then be entitled to receive only such sum or sums, if any, as the Consultant / Engineer may certify would have been payable to him upon due completion by him after deducting the said amount. If such amount shall exceed the sum which would have been payable to the Contractor on due completion by him, then the Contractor shall, upon demand, pay to the OTPL the amount of such excess and it shall be deemed a "debt due" by the contractor to the OTPL and shall be recoverable accordingly.

32. DEFAULT OF THE OTPL

The Contractor may, if—

- a. The OTPL does not pay to the Contractor the amount due on any certificate within six weeks from the receipt of Certificate from the Consultant honouring certificates named in the appendix to these conditions and continues such default for 7 days after receipt by registered post or recorded delivery of a notice from the Contractor stating that notice of determination under this condition will be served if payment is not made within 7 days from receipt thereof; or
- b. The OTPL interferes with or obstructs the issue of any certificate due under this contract; or
- c. The carrying out of the whole or substantially the whole of the uncompleted Works is suspended by the OTPL for a continuous period of 90 days;
- d. The OTPL becomes OTPLrupt or makes a composition or arrangement with his creditors or has a winding up order or (except for the purposes of reconstruction) a resolution for voluntary winding up passed or a receiver or manager of his business or undertaking is duly appointed, or possession is taken by or on behalf of the holders of any debentures secured by a floating charge, of any property comprised in or subject to the floating charge,
- e. if the OTPL gives a formal notice of his inability to meet his contractual obligations after giving 14 days prior written notice by registered post or recorded delivery to the OTPL with a copy to the Consultant / Engineer terminate the employment of the Contractor PROVIDED that such notice shall not be given unreasonably or vexatious.

Upon the expiry of 14 days notice referred to herein, the Contractor shall with all reasonable dispatch remove from the site all constructional plant brought by him thereon.

Upon such determination, without prejudice to the accrued rights or remedies of either party or to any liability which may accrue either before the Contractor or any sub-contractors shall have removed his temporary buildings, plant, tools, equipment, goods or materials or by reason of his or their so removing the same, the respective rights and liabilities of the Contractor and the OTPL shall be as follows, that is to say:

- a. The Contractor shall with all reasonable dispatch and in such manner and with such precautions as will prevent injury, death or damage of the classes in respect of which before the date of determination he was liable to indemnify the OTPL remove from the site all his temporary buildings, plant, tools, equipment, goods and materials and shall give facilities for his sub-contractors to do the same;
- b. After taking into account amounts previously paid under this contract the Contractor shall be paid by the OTPL for:
 - The total value of Work completed at the date of determination;
 - The total value of Work begun and executed but not completed at the date of determination, the value being ascertained if such Work were a variation required by the Consultant / Engineer;
 - The cost of materials or goods properly ordered for the Works for which the Contractor shall have paid or for which the Contractor is legally bound to pay, and on such payment by the OTPL any materials or goods so paid for shall become property of the OTPL;

- The reasonable cost of removal under paragraph (a) of this sub-clause.
- And in addition the amounts payable in respect of any preliminary item, so far as the work or service comprised therein has been carried out or performed and a proper proportion ascertained by the Consultant / Engineer of any such item, work or service comprised in which has been partially carried out or performed.
- The reasonable costs of repatriation of all the Contractor's staff and workmen, employed on or in connection with the Works at the time of such termination.

Provided always that against any payment due from the OTPL under this sub-clause, the OTPL shall be entitled to be credited with any outstanding balances due from the Contractor for advances in respect of constructional plant and materials and any other sums which at the date of termination were recoverable by the OTPL from the Contractor under the terms of the Contract. The OTPL shall also return all OTPL Guarantees and Retention after proper accounts have been settled between the Contractor and the OTPL.

Provided that in addition to all other remedies the Contractor upon such determination take possession of and shall have a lien upon all unfixed goods and materials, which may have become the property of the OTPL until payment of all monies due to the Contractor from the OTPL.

If a war or other circumstances outside the control of both the parties, arises after the Contract is made, so that either party is prevented from fulfilling his contractual obligations, or under the law governing the Contract, the parties are released from further performance, then the sum payable by the OTPL to the Contractor in respect of the Work executed shall be the same as that which would have been payable under Clause 26 hereof as if the Contract had been terminated under the provisions of Clause 26 hereof. Performance of obligations becoming more onerous shall not be considered as a cause for "Frustration".

33. NOTICES

All certificates, notices or written orders to be given by the OTPL or by the Consultant / Engineer to the Contractor under the terms of the Contract shall be served by sending by registered post or by Courier or delivering the same to the Contractor's principal place of business, or such other address as the Contractor shall nominate for this purpose.

All notices to be given to the OTPL or to the Consultant / Engineer under the terms of the Contract shall be served by sending by registered post or by Courier or delivering the same to the respective addresses nominated for that purpose in Part II of these conditions.

Either party may change a nominated address to another address in the country where the Works are being executed by prior written notice to the other party and the Consultant / Engineer may do so by prior written notice to both parties.

34.ARBITRATION

Wherever, in any of the documents forming part of the Contract, the OTPL's General Manager/Managing Director , has been vested with the final powers, his decision, opinion, certificate or any other discretion shall be final conclusive and binding on the parties and shall be without appeal. All other matters shall be subject to the right of arbitration. All disputes or differences of any kind whatsoever save and except matters referred to in clause 1) arising out of or in connection with the Contract, whether during the progress of Work or after Completion and shall after written notice by either party to the contract to the other of them and to the OTPL hereinafter mentioned be referred for adjudication to two Arbitrator, one each to be nominated by the Contractor and the OTPL, who shall thereafter appoint an Umpire. The provisions of Indian Arbitration and Conciliation Act 1996 shall apply for the purposes. The Work under the Contract shall, however, continue during the arbitration proceedings and no payment due or payable to the Contractor shall be withheld on account of such proceedings. The Arbitrator shall be deemed to have entered on the reference on the date he issued notice to both the parties fixing the date of the first hearing.

The Arbitrator may from time to time, with the consent of the parties, enlarge the time for making and publishing the award.

The Arbitrator shall give a separate award in respect of each dispute or difference referred to him. The Arbitrator shall decide each dispute in accordance with the terms of the contract and give a reasoned award. The venue of arbitration shall be such place as may be fixed by the Arbitrator in his sole discretion.

The fees, if any, of the Arbitrator shall, if required to be paid before the award is made and published, be paid half and half by each of the parties. The cost of the reference and of the award including the fees, if any, of the Arbitrator who may direct to and by whom and in what manner, such costs or any part thereof shall be paid and may fix or settle and amount of costs to be so paid.

The award of the Arbitrator shall be final and binding on both the parties. Subject to aforesaid the provisions of the Arbitration & Conciliation Act 1996 or any statutory modification or re-enactment thereof and the rules made thereunder, and for the time being in force, shall apply to the arbitration proceeding under this clause.

The OTPL and the Contractor hereby also agree that arbitration under clause shall be a condition precedent to any right to action under the contract with regard to the matters hereby expressly agreed to be so referred to arbitration

AS WITNESS the hands of the said Parties.

Signed by the said
In the presence of OTPL

Witness

Name:

Address

Signed by the said
In the presence of Contractor

Witness

s

Name:

Address

7. GENERAL INSTRUCTIONS TO CONTRACTORS AND SPECIAL CONDITIONS

- 1) Canvassing in connection with tenders is strictly prohibited and the tenders submitted by the contractors who resort to canvassing will be liable to rejection.
- 2) The Tender Form must be filled in English and all entries must be made by the hand and written in ink, if any of the documents is missing, or unsigned, the Tender may be considered invalid by the OTPL in its discretion.
- 3) 50% of retention money and initial security deposit will be returned after I) issue of virtual completion certificate by the Consultant of the work. II) upon issuing as-built drawings. III) Contractor's removal of his material, equipments, labour force, temporary sheds / stores, etc. from the site (excepting for small presence required, if any, for defect liability period and approval by the OTPL)

Balance 50% of retention money and security deposit shall be released to the contractor fourteen days after the end of completion of defect liability period after

I) issue of virtual completion certificate by the Consultant of the work and provided he has satisfactorily carried out all the works and attended to all the defects in accordance with the conditions of contract including site clearance.

- 4) The contractor shall not assign the contract. He shall not sub-let any portion of the contract except with the written consent of the OTPL. In case of breach of these conditions, the OTPL may serve a notice in writing on the contractor rescinding the contract whereupon the Security Deposit shall stand forfeited to the OTPL, without prejudice to his other remedies against the contractor. Central Govt. / State Govt. organization will not be allowed to sublet the work on back to back basis.
- 5) The contractor shall carry out of all the work strictly in accordance with Drawings, details and instructions of the Engineer, Consultant and the OTPL. If in the opinion of the Engineer, consultant or the OTPL, changes have to be made in the design and with the prior approval in writing of the OTPL, they desire the contractor to carry out the same, the contractors shall carry out the same without any extra charge. The OTPL's decision in such cases shall be final and shall not be open to arbitration.
- 6) A Schedule of probable quantities in respect of each work and specifications accompany these special conditions. The Schedule of probable quantities is liable to alteration by omission, deductions or additions at the discretion of the Engineer/ OTPL. No claim will be entertained from the contractor on account of loss of profit over revising the tender rates.
- 7) The Tenderer must obtain for himself on his own responsibility and at his own expenses all the information which may be necessary for the purpose of filling of Tender and for entering into a contract and must examine the drawings and must inspect the site of the work and acquaint himself with all local conditions, means of access to the work, nature of the work and all matters pertaining thereto. No compensation will be paid on account of not getting proper information.

- 8) The rates quoted in the Tender shall be inclusive of all charges for clearing of site before commencement as well as after completion, water, electrical consumption, meters, double- scaffolding, centering, boxing, staging, planking, timbering and pumping out water, including bailing, fencing, planking, timbering and pumping out water, including bailing, fencing, hoarding, plant and equipment, storage sheds, watching and lighting by night as well as day, including Sundays and Holidays, temporary plumbing and electric supply, protection of the public and safety of adjacent roads, streets, cellars, vaults, open pavements, walls, houses, buildings and all other erections, matters or things and the contractor shall take down and remove any or all such centering, scaffolding, staging, planking, timbering, strutting, shoring, etc. as occasion shall require or when ordered so to do, and fully reinstate and make good all matters and things disturbed during the execution of the work and to the satisfaction of the OTPL /Consultant.
- 9) Time allowed for carrying out the work as mentioned in the Memorandum shall be strictly observed by the contractor and its shall be reckoned from the 10 days after acceptance of order to commence the work or the date of handing over the site to the contractor whichever is later. The work shall throughout the stipulated period of the contract be proceeded with all due diligence and if the contractor fails to complete the work within the specified period i.e.7 months, he shall be liable to pay compensation as defined in the conditions ofcontract.
- 10) The contractor shall not be entitled to any compensation for any loss suffered by him on account of delays in commencing or executing the work, whatever the case of delays may be, including delays arising out of modifications to the work entrusted to him or in any sub- contract connected therewith or delays in awarding contracts for other trades if the project or in commencement or completion of such works or in procuring government controlled or other building materials or in obtaining water and power connections for construction purposes or for the other reasons whatsoever and the OTPL shall not be liable for any claim in respect thereof. The OTPL does not accept liability for any sum besides the Tender amount, subject to such variations as are provided forherein.
- 11) The successful Tenderer is bound to carry out any items of work necessary for the completion of the job even though such items are not included in the quantities and rates. Schedule of instructions in respect of such additional items and their quantities will be issued in writing by the Engineer / consultant with the prior consent in writing of theOTPL.
- 12) The successful Tenderer must co-operate with the other contractors appointed by the OTPL so that the work shall proceed smoothly with the least possible delay and to the satisfaction of the Engineers /Consultant.
- 13) The contractor must bear in mind that all the work shall be carried out strictly in accordance with the specifications made by the Engineer / Consultant and also in compliance of the requirements of the Authorities concerned and no deviation on any account will bepermitted.
- 14) (i) The rates quoted in the Schedule rates also include the expenditure for providing all the water required for the work and the contractor shall make his own arrangements for the supply of good quality water including obtaining Municipal connection for his labour as well as for construction purpose and all charges shall be borne by him. If Municipal water connection is not available and should it become necessary for the contractor to drill a bore well for obtaining water for construction purposes or to bring water from outside by Tankers, The OTPL shall not be liable to pay any charges in connectiontherewith.

- (ii) The rates quoted in the Tender shall also include Electric consumption charges for Power. If no power is available at site, the contractor shall have to make his own arrangement to obtain electric power connection and maintain at his own cost an efficient service of electric light and power and shall pay for the electricity consumed.
 - (iii) For water and power, the contractor to whom the work is allotted shall maintain the same in good working conditions.
 - (iv) Contractor for other trades appointed by the OTPL shall also be allowed to use water and power available by fixing reasonable charges mutually agreed.
 - (v) Any dispute regarding payment for water and power charges by the other contractor and or by subsidiary agencies appointed by the OTPL to the contractor, who has obtained the temporary connections and allowed sub-connections, will be settled by the OTPL / Consultant and the decision taken by the OTPL / Consultant shall be final and shall be that of the contractor.
 - (vi) The OTPL as well as the Consultant shall give all possible assistance to the Contractor to obtain the requisite permission from the various authorities, but the responsibility for obtaining the same shall be that of the contractor.
 - (vii) If no such facility is available at the site of work and if available found inadequate, it shall be the responsibility of the contractor to make his own arrangement for obtaining water and power at his cost.
- 15) The contractor will have to obtain completion / clearance certificate in respect of services such as water supply, sewerage, etc. The contractor will also obtain permanent water connection for the entire project. The OTPL will pay necessary fee to be made to Govt. authorities. The Contractor shall strictly comply with provision of safety code annexed hereto.
- 16) The contractor shall indemnify OTPL, against any claim or legal action arising out of the said Act due to the failure of non-compliance of the provisions of the said Act and the penalty or any other amount levied by the authorities, shall be recoverable from the payments due to the contractors.
- The Contractor shall comply with the provision of the Apprentices Act, 1961, and the Rules and Orders issued there under from time to time. Failure to do so will be in a breach of the contract and the Engineer / consultant and the OTPL may in their discretion cancel the contract. The contractor shall also be liable for any pecuniary or other liabilities arising on account of any violation by him of the provisions of the Act.
- 17) The Security Deposit of the successful Tender will be forfeited if he fails to comply with any of the conditions of the contract.
- 18) The contractor shall be responsible for the observance of all Central Rules and Regulation framed by the Central Government under the Contract Labour (Regulation and Abolition) Act, 1970. The OTPL shall be entitled to deduct all damages, which it might suffer on account of non-observance of these rules by the Contractor, from the amount payable to the Contractor.
- 19) Contractors are not allowed to remove materials brought at Site against which advances have been paid.

- 20) The Contractor is to provide at all times during the progress of the works and the maintenance period / defect liability period proper means of access, with ladders, gangways, etc., and the necessary attendance to move and adopt as directed for the inspection or measurement of the works by the Consultant or their representatives. Materials shall be of approved quality and the best of their kind available and shall generally conform to I.S. Specifications. The Contractor shall order all the materials required for the execution of work as early as necessary and ensure that such materials are on site well ahead of requirement for use in the work. The work involved calls for approved standard of workmanship combined with speed and to the entire satisfaction of the Engineer/ consultant. All the material shall be approved by the Consultant / OTPL before use. Contractor to arrange samples well in time.
- 21) The Contractors shall after completion of the work clear the Site of all debris and left over materials at his own expenses to the entire satisfaction of the OTPL / Consultant and Municipal or other public authorities.
- 22) Contractors are requested to note that no extra item or deviated item of work to be executed without taking prior permission, the OTPL shall not be held responsible for the payment of such works executed. Contractors will have to submit all the particulars including purchase bills/price list for the materials along with the rate analysis for verification of Rates.
- 23) If it is observed the existing compound wall, gates railings are damaged then the contractors will have to make good the same at their own cost. If contractors fail to pay the taxes/royalties to the Authorities concerned, the OTPL reserve their rights to recover the said amount from the amount payable to the contractor and pay the same to the Authorities concerned.
- 24) Work is to be executed & measurements are to be paid as per the detail specification & description of item given in the Standard Specification Book except for the items which are specifically mentioned in the tender for which the details of item and mode of measurements to be followed as indicated separately in the conditions of contractors.
- 25) If there are any contracting clauses mentioned in the tender, the interpretation of the same will be done by the Engineer / consultant. However, the decision of the OTPL will be final and binding.
- 26) After awarding the work, contractor shall get registered with the office of the Labour commissioner and inform OTPL accordingly. Contractors shall follow all rules and regulations stipulated by the Labour Commissioner strictly.
- 27) Contractors shall quote consistent rates for the items of similar nature or analogous in specifications for the sections in schedule of quantities. If it is observed that the rates quoted for similar nature of items or analogous in specification under different sections, are inconsistent, then the OTPL reserves his right to consider the lowest of rates for all such items and work out the final amount for payment, unless the competent authority finds that there is justifications for such inconsistent rates.
- 28) Erection ; The Contractor shall supply all suitable plant, hoisting gears and tackles for the erection of the steelwork and shall provide all temporary baulks, struts, shores, etc. Steelwork damaged due to inadequate precautions being taken during the storage, transport and erection of the steelwork shall be made good to the satisfaction of the Employer at the Contractor's expense. All shop connections shall be made by electric welding.

All site connections shall be bolted unless otherwise specified in drawings or directed by the Employer. Encased steelwork and steel in foundations shall be solidly encased in concrete with a minimum cover of 100 mm. Anchors of the required structural strength shall be used as holding down anchors in concrete foundations for columns. Sole plate of the column shall be grouted with low shrinkage grout of 50 mm nominal thickness. The grout shall be shaped with an inclination of 45° from the lower edge of the sole plate to avoid stagnant water.

29. The list of small items to be furnished shall contain but not be limited to the following: steel sections, bent plate sections and square bars for construction of: metallic stairs, platforms and walkways railing for stairs, platforms, walkways and protective around floor openings corner and edge protection for concrete steps and concrete structural parts such as columns, beams, removable cover slabs, etc. support of any equipment foundation joint covers anchors, ties, hangers, inserts, slots, embedded steel parts, etc. steel pipes and plain round bars for making guardrails and ladders steel plates, chequered and/or flat, for fabrication of removable covers open steel grating for metal steps, platforms, and walkways

Water ; Construction water of required quality will be made available before start of work at one point from work premises free of cost to the Bidder. Bidder has to install the required cum Capacity of water storage tank in area. Further necessary network for construction & drinking water system shall be done by the bidder at his own cost. Contractor should arrange on their own, drinking water in their labour pool. OTPL shall not be responsible for any inconvenience or delay caused due to any interruption of water supply and the contractor shall claim no compensation for delay in work for such interruption. Contractor may make standby arrangement for water for which no separate payment shall be made by OTPL. Contractor will have to arrange for storage of water to meet the day to day requirement. Bidder will ensure adequate supply of construction water to meet the requirement of water during major concreting..

30. ELECTRICITY

OTPL Shall Provide Construction Power free of charge at 415V level at one point within the workplace , bidder has to make his own distribution arrangement to draw electricity. However, During Construction Power interruption, vendor has to keep their DG back-up to maintain steady production of Concrete till end of contract. The bidder will have to procure & install adequate area illumination system during construction right from start of his work. This system will include temporary pole lighting, portable lighting towers with sufficient DG back-up for area lighting at different working areas for execution of the work & safety of workmen within the quoted rate. The illumination should be such that minimum illumination requirement as specified in specification or any-where for general illumination is maintained.

GENERAL: - If any other voltage level (other than normally available) is required, the same shall be arranged by the contractor from power supply as above. Contractor will have to provide at his own cost necessary calibrated energy meters (tamper proof, suitably housed in a weather proof box with lock & key.

30. SPECIAL CONDITIONS OF CONTRACT

Supply of electricity shall be governed by Electricity Act and Installation Rules and other Rules and Regulation as applicable. The contractor shall ensure usage of electricity in an efficient manner and the same may be audited by OTPL time to time. In case of any major deviation from normally accepted norms is observed, OTPL will reserve the right to impose penalty as deemed fit for such cases.

The bidder shall have to provide earth leakage circuit breaker at each point wherever human operated electrical drives / T&Ps are deployed. The power supply will be from the available source of customer. OTPL shall not be responsible for any inconvenience or delay caused due to any interruption of power supply / variation in voltage level and no compensation for delay in work can be claimed by the contractor due to such non supply on the grounds of idle labour, machinery or any other grounds. Bidder will have to arrange sufficient illumination at their own work areas.

The contractor should ensure that the work in critical areas is not held up in the event of power breakdown. In the event of breakdown in the electric supply, if the progress of work is hampered, it will be the responsibility of the contractor to step up the progress of work after restoration of electric supply so that overall progress of work is not affected. The contractor shall have to make arrangement at their own cost for illumination that will be required in the working area for execution of the work & safety of workmen. The contractor shall have to make arrangement at their own cost for illumination etc in worksite. However there may be provision of Chargeable

31. SAFETY & ACCIDENT PREVENTION

It shall be the Contractor's responsibility to maintain throughout the construction period, a safety and accident prevention program satisfactory to the Employer which meets the requirements of Applicable Laws and of all other Governmental Authorities authority having jurisdiction over the Works. The rules and regulations laid down in the Health, Safety and Environment (HSE) Plan must be adhered to at all times.

32. SCAFFOLDS:

(As per IS 3696 or any international standard)

The safe and efficient erection, use, dismantling, and storage of scaffolds, ladders and elevated work platforms are considered important objectives in maintaining a safe work environment. This procedure provides the guidelines for erection, use, dismantlement, and storage of scaffolding and elevated work platforms. There is no such thing as a temporary scaffold. All scaffolds must be erected and maintained to conformed standard. The Scaffold Tagging defines satisfactory, incomplete or defective scaffolds. Management must ensure or have each worker who performs work while on a scaffold trained by a person qualified in the subject matter to recognize the hazards associated with the type of scaffold being used and to understand the procedures to control or minimize those hazards.

Employees must be competent for the type of scaffolding work they are undertaking and should have received appropriate training relevant to the system they are working on.

All scaffolds shall be erected / dismantled by scaffolding crew under direct supervision of **competent scaffolding supervisors.**

All scaffolds shall be capable of supporting 4 times maximum intended load and erected on sound, rigid footing, capable of carrying the maximum intended load without settling or displacement. Bambo scaffolding is not permitted for use on site.

Guard rails and toe boards shall be installed on all open sides and ends of platforms more than (2) meters above ground or floor

Scaffold planks must be at least 5 cm x 25 cm (2" x 10") full thickness lumber scaffold grade or better.

Scaffold planks shall not span distances greater than 2.5 meters (8 feet).

Scaffold planks shall extend over end supports not less than 6 inches nor more than 12 inches and be secured to the scaffold. Scaffolding and accessories with defective parts shall be immediately repaired or replaced.

All scaffolding must be a minimum of two planks wide. No one may work from a single plank.

Scaffold planks must be inspected before use. Planks that have been damaged must be removed from the site.

Access ladders must be provided for each scaffold. Climbing the end frames is prohibited unless the design incorporates an approved ladder.

Adequate mudsills or other rigid footing capable of withstanding the maximum intended load must be provided.

Scaffolds more the 6 meters (20 feet) in height must be tied to the building or structure at intervals which do not exceed 4 meters (13 feet) vertically and 6 meters (20 feet) horizontally.

Do not overload scaffolds. Material should be brought up as needed. Scaffolding must not be loaded in

34. Lifting Operations:

All the cranes and lifting tools & tackles shall be inspected on daily basis and as well as formal monthly by expert and as per the law third party for annual certification. These shall be tested and certificates of fitness shall be obtained from 3rd party govt approved competent agency before deploying at site and later periodically. The last date of Third Party Inspection and the next Due date shall be conspicuously displayed on all cranes. A copy of certificate shall be pasted on operators cabin of all the lifting equipment. The record shall be maintained in Form-24

The manufacturer's instruction for maintenance shall also be followed. All safety measures shall be followed. All tools tackles, lifting appliances; material-handling equipment etc used by the contractor shall be of safe design and construction. The operators, slingers and signalers shall be qualified as per IS 13367 (part-1):2003 "Safe use of cranes- code of practices". There shall be a person responsible for co-ordination
11.1 Personnel Lifts (Man-Basket): (To be treated as a T&P item)

A Personnel Man-Basket permit shall be completed prior to lifiting any people, along with a rigging plan. Man-basket shall be used where access through ladders or scaffolding is not feasible. Man-baskets shall be designed and engineered by a manufacturer (job made man-baskets are not allowed, unless designed and tested by a certified engineer), and built robust with MS Angles and flats or plates or channels only.

Guard rails top and mid, must be in place and screened-in to avoid material from falling out of basket. The factor of safety shall be 200%. It shall have a door with double latches and shall open inside. Anchor points shall be identified within the man-basket. The man-basket shall be thoroughly inspected and load tested and a trial run performed without personnel before being put to job. It shall be treated as a lifting tool and shall undergo same certification cycle and inspection as other lifting equipments.

An additional sling of required lifting capacity shall be fixed to the man-basket main lifting point and attached to the crane above the ball or block. While lifting man-basket, the crane shall maintain a uniform speed of lift without any swing. Once man-basket reaches the destination, the lift brakes shall be locked as long as the basket remains at that point. The same care shall be taken in its descent. As for hanging man-basket, the same shall be hung off a rigid structure with help U-shaped handle welded to man-basket. This shall be tested once in a year by a competent person

Crane and Hoisting Equipments; Cranes have an Anti Two Block safety device installed. This procedure provides the guidelines to ensure proper rigging and lifting activities. Are accomplished safely and in accordance with an applicable specification, code and regulations. On every crane or piece of hoisting equipment notices of all rated load capacities, recommended operating speeds, and any hazard warnings or special instructions and warning shall be visible from the equipment operator's station. No Part of the lifting equipment for its load shall be within the distance as specified in the Indian Electricity Act from an energised *powerline*.

All areas within swing radius of cranes that are potentially accessible by pedestrian, vehicular, or equipment movement shall be barricaded to prevent anyone or any vehicle or equipment from being struck by the crane or hoisting equipment, or its load(s)

(Erection or crane work should not clash with on going construction activity or concreting, welding, it have to be planned according to the priority of work or decided by the circumstance of suspended load)

35. SECURITY

The Contractor shall be solely responsible for the security of all equipment and materials incorporated or to be incorporated in the Work by him and all equipment, materials, tools, supplies, structures, facilities and others properly used in the execution of the Work while in his care and custody. The Contractor shall conform so to any specific security requirements of Employer but such compliance shall not relieve the Contractor from the total responsibility for security.

36. HOUSING & TRANSPORT

The Contractor shall arrange for suitable housing units together with furnishing and utilities in the close proximity of the construction Site for accommodation of all his expatriate personnel. If the services of any expatriate personnel of the Contractor or its Subcontractors. If the Contractor decides in consultation with the Employer that the health or safety of any of his personnel is or might be jeopardized by political or health hazards in Tirunelveli, the Contractor may, after forty-eight (48) hours' notice, order its employees and the employees of its Subcontractors and suppliers to return to their headquarters or other safe location, in which case the Work will be deemed to be suspended for the duration.

The Contractor shall provide to the extent agreed transport vehicles for use during construction period by the expatriate as well as local personnel.

37.CONTRACT PLANNING AND CONTROL

Before starting the Work at the Site, the Contractor shall submit the detail site management organization for approval by the Employer. Such proposals shall show clearly the Contractor's key key personnel.

The Contractor's Representative, site manager and senior key personnel who will be responsible for working closely with the Employers staff to achieve efficient execution of the Contract shall be competent to conduct meetings and communications in the English language. The management organization shall include a planning and programming tools covering the Work, and shall apply the latest techniques in communication and analysis. The Contractor shall nominate a planning engineer to co-ordinate all planning activities.

38.RECEIVING, TRANSPORTING, HANDLING AND STORAGE

The Contractor shall receive, transport, handle, store and install all materials and equipment furnished under these specifications, or otherwise involved in the implementation of this Contract. It shall be the responsibility of the Contractor to determine the availability and capacity of transportation and unloading facilities (including for the transportation, delivery and receipt of all equipment, materials, Plant to the Site) and to make the required arrangements to secure the necessary facilities for the same. The Contractor shall be responsible for the prompt unloading of all equipment or materials. The Contractor shall pay any demurrage incurred due to delay in unloading and for any other reasons. The Contractor shall handle materials and equipment carefully to prevent damage or loss. The use of bare rope slings for handling will not be permitted unless specifically approved by the Engineer. Special handling devices shall be used when necessary to avoid damage. In addition the Contractor shall also comply with the requirements of Technical Specification with respect to the receipt, transportation, handling and storage.

8.THE CONDITIONS HEREIN BEFORE REFERRED TO

1. Definition of terms /interpretation:

In construction these conditions, the specification schedule of quantities and contract agreement, the following words shall have the meanings herein assigned to them expect where the subject or context otherwise requires.

- (a) "OTPL/ / owner / OTPL" shall mean Ottathingal India Pvt Ltd , any of its employees representatives authorized on theirbehalf.

"Engneer / consultant" – shall mean M/s.CPW, hariyana /MEP consultant Palakkad, QS Cost Consultant Palakkad, or in the event of his or their ceasing to be Engneer / Consultant for the purpose of this contract such other person as the OTPL shall nominate for thepurpose.

- (b) "Contractors" (in case of partnership) shall mean andtrading as partners in the name and style ofand shall include partners for the time being of the said firm and the legal representatives of a deceased partner.

"Contractors" (in case of individuals)shall mean.....and..... trading in the name and style ofand shall include his / their heirs, legal representative assigns or successors.

"Contractors" (in case of company) shall mean.....a company incorporated under 19.....and having its registered office atand shall include its successors and assigns.

- (c) "Site" shall mean "Work Place located at _____ include any building and erections thereon and any other land (inclusively), as aforesaid, allotted by the OTPL for the contractor's use.
- (d) Site Engineer / Engineer: The Engineer appointed by the OTPL / Engineer / Consultant for the management of the project.
- (g) "The daily works" shall mean the work or works to be executed or done under this contract.
- (h) "This Contract" shall mean Articles of Agreement, the special conditions, the general conditions of contract, the appendix, the schedule of quantities and specifications, attached hereto and duly signed.
- (i) "Notice in writing" or written notice shall mean a notice in written, typed or printed characters sent (unless delivered personally or otherwise proved to have been received), by registered post to the last known private or business address or registered office of the addressee and shall be deemed to have been received when in the ordinary course of post, it would have been delivered.
- (j) "Act of Insolvency" shall mean any Act of Insolvency as defined by the Presidency Towns Insolvency Act, or the Provincial Insolvency Act or any amending such original.
- (k) "The Schedule of Quantities" shall mean the schedule of quantities as specified and forming part of this contract.
- (l) "Priced Scheduled of Quantities" shall mean the schedule of quantities duly priced with the accepted quoted rates of the contractor.
- (m) "Net Prices" If in arriving at the contract amount, the contractor shall have added to or deducted from the total of the items in the Tender any sum either as a percentage or otherwise, then the net price of any item in the Tender shall be the sum arrived at by adding to or deducting from the actual figure appearing in the Tender as the price of that item a similar percentage or proportion of the sum so added or deducted of the sum so added or deducted by the contractor the amount of any Prime Cost items and provisional sums of money shall be deducted from the total amount of the Tender. The expression "net rates" or "net prices" when used with reference to the contract or accounts shall be held to mean rates or prices so arrived at.

1.SCOPE OF WORK:Detail Description of Buildings & Structure

Manufacture, supply, civil / structural work, construction, for the erection of Plant and machinery for and one **RCC CEMENT STORAGE SILO for FEEDING & EXTRACTION of WOPC.**

1.0 ACTIVITY WISE BREAK UP OF TOTAL SCOPE OF WORKS IS AS UNDER:-

- 1) Civil foundation & Structure the plant
- 2) Construction of Adminstarive building and other buildings
- 3) Civil works viz. Excavation & Foundation, Columns, sand, shuttering material / TMT bars, sheet metal, paints (Red oxide & Enamels),Cement Grouting etc. is under the scope of Tenderer.
- 5) Erection :- RCC Cement Silo structure
- 6) When air lift system will be in use, the suitable arrangement of venting shall be designed to cater the release of excess air through dust extraction system installed on the Silo top. Air slide with blower with Vibration Damping Pads is to be provided for Silo feeding from both Bucket Elevators and Air lift of Cement Mill. The discharge of dust extraction system is to be provided in Silo only. Equipment (**Compressor**) only for compressed air used for any system below tank will be arranged by OTPL . Apart from device, pipeline and its connection is in the scope of OTPL
- 7) Complete electrical and instrumentation work as per necessary for successful running of complete feeding and extraction system including Silo aeration system with level measuring device by OTPL
- 8) Layout, G. A. Drawings of RCC Cement Steel Silo With Feeding & Extraction System By OTPL

The following table shows the description of building and structures envisaged for the project:

S. No.	Building/Structure	Description
1	1-Raw material storage&Feeding unit d) Clinker yard e) Dolomite yard f) Gypsum yard 2-Hopper unit 3-cement mill unit 4-cement silo unit (including loadin bay)	All units have to complete as per the details given in the drawing,with all sub structures and super structures,RCC Silo,Loading bay with concrete&steel cladded with colour coated aluminium sheet,pocket grouting,Flooring,painting,Plumbing,sanitary, doors,windows,ventilators and finishing work including ladders,hand rails,Pathways,Ramps,Pavements&Earth filling with acceptable or Issued materials. All upto the starting and preparation level for the erection of machineries,conveyors or Any other mechanical Equipment wherever required.
2	<p><u>BUILDINGS:</u></p> <ol style="list-style-type: none"> 1. MCC&LRS room 2. MCC room 3. Blower&compressor room 4. Laboratory 5. Sub station 6. PCC room 7. Admin Block 8. Store 9. Workshop 10.Canteen 11.Technical staff room 12.Engineering Office 13.Marking room 14.Empty Bag store room 15.Packed Bag Store room 16.Security room 	All Buildings have to complete as per the details given in the drawing,with all sub structures and super structures with concreting&Brick works,Plastering, ladders,hand rails,Pathways,Ramps,Pavements&Earth filling,Flooring,painting, Electrical,Plumbing,sanitary,doors, windows,ventilators,Water tanks&Septic tanks and finishing work upto the required level shown in the drawing with acceptable or Issued materials..

	17. Time Office 18. Weighbridge & room 19. Toilet cum wash room	
3	Roads & Lawn	All roads shown in the keyplan have to be done as per Indian Standard by Maintaining the levels and the details given in the drawing with kerb stone, Earth Filling with acceptable or issued Materials, Lawn has to be construct along with kerbstone or suitable material with required level.
4	Compound Wall	All sub structures and super structures required for completing compound wall work including Installation of Gates, concreting, brickwork, Earth Filling, plastering (if need) have to be done as per the details given in the drawing or details given by the authorized person of OTPL.
5	Culvert, Over head water tank & UG water tank	All sub structures and super structures required for completing RCC water tanks as per detail given in the drawing. Culvert have to be construct with RCC at required place with Required Length.
6	Parking Area	Parking Area along With sheds, rest shelters, toilet cum Wash room, Barricades and Flooring have to done as per Drawing or requirement.

09. Utilities and Other Services

Water Supply: No major process water requirement is envisaged for the proposed system. For drinking, sanitation and other purposes water will be stored in overhead. As the SIPCOT has well developed water distribution system, it is proposed to tap-off water lines from the existing pipelines and connected with the storage tanks.

Compressed Air Supply: Centralized compressor room shall be provided for the sake of overall economy, effectiveness and ease of operation and maintenance. The compressed air is required mainly for pneumatic handling of WOPC, dust collection equipment and operation of pneumatic valves.

Blowers: Blowers shall be suitably accommodated under buildings/ silos near points of utility.

10. Auxiliary Infrastructural Facilities.

Workshop cum store: It is proposed a shed as workshop cum store to take care of the regular maintenance/ repair jobs in the plant and for storing tools, spare parts, consumables, etc.

Offices: A suitable technical & administrative office, canteen and sales office shall be housed for the operation phase in a multi-story building.

Time and Security office: Time and security office shall be accommodated in the multi-story building near main entrance.

Weigh bridge: An electronic weigh bridge is envisaged to take care of the incoming and outgoing materials at the proposed OTPL WOPC. An electronic weigh bridge will be installed for weighing of Truck loaded cement in the packing plant.

Empty Bags Go down: Space shall be provided (around 3 lakh) in the packing plant building for the storage of empty bags.

Covered Car Parks: As the space inside the plant boundary is marking some basic car parking shall be provided near the building, rest to park in the parking area. The following parking provision shall be foreseen: in the area of the administration building: min. 5 shaded car parking lots: Min 20 shaded motor bicycle parking lot dividing stripes shall be marked.

Control Room

The sizes of the control building have to be determined according to the requirements for the electrical and instrumentation/control equipment. The following rooms shall be accommodated in this building: control room telecommunication SCADA rooms with AC. **Description of the building** structure: reinforced concrete floors: one flooring: reinforced concrete, vitrified tile flooring. The control room shall be of noble appearance and receive e.g. sound absorbing wall cladding and suspended ceiling. air conditioning ; centralized air conditioning ventilation:

The control room(s) shall have windows with sunshades

Laboratory: Laboratories shall be incorporated in the main buildings as required Near control Room. The laboratory rooms shall have suspended ceilings and tiled floors and shall be air conditioned. It shall be furnished with work benches, chemical fumes exhausting systems, acid proof sinks linked with acid collecting tanks respective connected to neutralization systems and shall have different rooms for different tasks e.g. Secure storage rooms for chemicals and emergency however facilities are required.

Store

Open storage area

A free area of min. 2500 m², paved with interlocking blocks shall be arranged in the immediate vicinity of the workshop/store for the future installation of a camp of containers used during the maintenance works of the plant equipment.. To the scope of works belong the water, electrical power, telephone etc. The area shall be enclosed with chain link fence with pedestrian and vehicle gate

Main gatehouse

The main gatehouse located inside of the plant site serves for control of the entrance. From the working place the gate keeper shall be able to watch the areas in the front and behind the gate house and to release the pedestrian and vehicle gates. The main gate house symbolizes the entrance of the plant and shall be of a good esthetical appearance. Electrically operated road barrier/gates are included in the scope. The following rooms shall be accommodated in this building: security staff offices ,time office incl. time machine .reception area lounge safety induction center

Maintenance workshops On the plant area Maintenance Workshops shall be provided as permanent construction sheds for repair and maintenance issues. The locations shall be: mill maintenance workshop (70 m² with EOT) mill maintenance workshop (with cylinder holding fixtures, sand blasting facility) fan maintenance bay (with monorail) coal handling plant workshop Where applicable, workshops can be combined with other facilities.

Description of building: structure: steel structure floors: one floor flooring: concrete or paving walls: double skin steel cladding roof: double skin galvanized steel sheet doors: sandwich steel doors with insulation windows: double glazed ventilation: mechanical air conditioning: window/split air conditioning system

The work consists of construction of Civil /structure / Plumbing & Sanitary / Terrace garden Installation and all other related works in accordance with drawings, schedule of quantities. The civil, sanitary, plumbing, e Installation, external sewerage / drainage, water supply works and construction of internal road and pathways , compound wall etc, are within the scope of this project. All materials and consumables will supply by OTPL at project site. Tender It includes furnishing all , labour, tools and equipment and management necessary for and incidental to the construction and completion of the work. All work, during its progress and upon completion shall conform to the lines, elevations and grades as shown on the drawings furnished by the OTPL / Engineers. Should any detail essential for efficient completion of the work be omitted from the drawings and specifications it shall be the responsibility of the contractor to inform the OTPL / Consultant and to furnish and install such detail with OTPL / Consultant's concurrence, so that upon completion of the proposed work the same will be acceptable and ready for use.

For the Civil foundation, structure, sanitary, plumbing, drainage etc OTPL will supply the steel, cement, granite, bricks, beams and channels. Claddings, consumables like welding rod, gases etc to the contractor at OTPL proposed site stor

Cable and pipe ducts/pipe bridges

For cables and pipes the Contractor shall provide ducts in such areas where installation above ground is not possible or advisable. Cables and pipes shall be laid in separate ducts. In general, ducts shall be avoided, as appropriate. Pipe bridges shall be provided for supporting and routing of various pipes and electrical cables between the plant components.

Bolting

The threaded portion of each bolt shall project through the nut by at least one thread. Approved high strength friction grip bolts, preferably the type with indicated load, shall be used where specified and shall be tightened strictly in accordance with the manufacturer's instructions and the relevant regulations. The surfaces in contact shall not be painted and shall be free of oil, dirt, loose rust, burrs and other defects, which would prevent proper seating of the parts or interfere with the development of friction between them. When connections are made using high strength friction grip bolts the relevant standards shall be observed

Interlocking paving blocks

Footpaths and areas to be paved with interlocking concrete blocks shall be excavated and placed with 300 mm depth of compacted material at the exact levels and falls required for the finished work. If parts of the base are found to be unstable the Contractor shall excavate further to a firm bed and fill with layers of fine crushed rock or aggregate, thoroughly compacted. The upper surface of the base shall reflect the exact profile, fall or contour of the final paving, irregularities shall not be compensated by varying the depth of sand bedding. Compaction of formation and base for interlocking concrete slabs shall be as Clauses (Compaction of SubGrade), (Road Base), (Tests on SubBase and Road Base). A stable edge shall be provided to retain the paving units and sand bedding by means of precast concrete edging unit or kerbs set in situ concrete. The sand bedding shall be a fine, well graded sand in a dry to moist condition and laid to an uncompacted thickness of 50 mm. The mix for paving blocks shall contain a water repelling additive. The paving blocks shall be laid in accordance with the manufacturer's instructions. The interlocking block shall be a minimum of 80 mm thick and the concrete quality must be approved by the Employer

Road drainage system

The drainage system of the roads shall comply with the respective standards. The arrangement of the drain lines discharge collectors shall suit the traffic requirements, simplicity and reliability, having maintenance facilities to make sure that the system is working properly.

Manholes

Manholes shall be provided for the above described drainage systems, at each change in gradient or direction, and at maximum intervals of **50 m**. The diameter of manhole shall be chosen as a function of the pipe cross section. Either prefabricated or cast insitu concrete manholes may be used.

Shaft and manhole covers shall be made from cast iron and reinforced concrete, of watertight construction, to suit local requirements. Shaft and pit covers shall have a test load suited to the traffic conditions. Trash gratings shall be of cast steel.(we don't need any manholes we can use it iff its need on the over head water tank)

Traffic signs

Traffic signs shall be reflectorized and shall comply with the latest revision of the latest Indian standard. Numbertype and position of the signs have to be as agreed with the EmployerMounting posts shall be of circular hollow steel section structural steel. Single post signs will generally be cast directly into a concrete base.

Guardrails

Guardrails shall be provided where the occupants of a vehicle or passersby can be endangered by a vehicle leaving the road. Guardrails are to be used also to protect pipes and structures located at traffic areas and are to be designed to withstand impact forces in accordance to the traffic type and speed. Railings shall be of galvanized steel, which shall be epoxy-painted in addition. Plastic guideposts with glass reflector elements shall be used where required.

1.1.CONTRACTOR'SRESPONSIBILITY

The Contractor shall carry out and complete the said work in every respect in accordance with this contract and with the directions of and to the satisfaction of Consultant /Engineer . The Consultant may in his absolute discretion and in consultation with the OTPL (with prior approval from the OTPL) and from time to time issue drawings and/or written instruction, details directions and explanations which are hereafter collectively referred to as "Consultant /OTPL's Instruction".

In regard to:-

- a. The variations or modifications of the design, quality or quantity of works or the additions or omission or substitution of anywork.
- b. Any discrepancy in the drawings or between the schedule of quantities and/or drawings and or drawings and orspecification.
- c. The removal from the site of any defective materials brought thereon by the contractor and the substitution of any other materialsthereof.
- d. The removal and/or re-execution of any works executed by thecontractor.
- e. The dismissal from the works of any person employedthereupon.
- f. The opening up for inspections of any work coveredup.
- g. The amending and making good of any defects under clauses 19 hereof and those arising during the maintenance / defect liabilityperiod.

The contractor shall forthwith comply with and duly execute any work comprised in such Consultant /OTPL instructions, provided always that the verbal instructions, directions, and explanations given to the contractor or his representative upon the works by the Consultant

/OTPL shall, if involving a variation, be confirmed in writing by the contractor within seven days, and if not dissented from in writing within a further seven days by the Consultant, such shall be deemed to be Consultant /OTPL instructions within the scope of the Contract.

- h. The contractor should get approval from the Engineer, with the necessary shop drawings prepared by him, Wherever clarity is required.
- i. The contractor should prepare complete as built drawings showing all the hidden lines both the electrical and plumbing. Sewage water supply drawings should be submitted in soft copy and hard copy.
- j. Plumbing drawings should be prepared by necessary Licensed Persons with the necessary drawings of the Licensed persons, they should get the municipal water supply connection.

2. VISIT TO SITE

The contractor shall visit the site and make himself thoroughly acquainted with the local site condition, nature and requirements of the works, facilities of transport condition, effective labour and materials, access and storage for materials and removal of rubbish. The tenderer shall provide in their tender for cost of carriage, freight and other charges as also for any special difficulties and including police restriction for transport, etc. for proper execution of work as indicated in the drawings. The successful tenderer will not be entitled to any claim of compensation for difficulties faced or losses incurred on account of any site condition which existed before the commencement of the work or which in the opinion of the OTPL or Consultant might be deemed to have reasonably been inferred

3. TO BE SO EXISTING BEFORE COMMENCEMENT OF WORK AGREEMENT

The successful contractor is required to sign agreement as may be drawn up to suit local conditions and shall pay for all stamps and legal expenses, incidental thereto.

4. PERMITS AND LICENSES

Permits and licenses for release of materials which are under Government control will be arranged by the contractor. The OTPL will render necessary assistance, sign any forms or applications that may be necessary.

The contractor shall at his own cost arrange for storage shed adequate for taking delivery and storing of the quantity of controlled materials released by the authorities or supplied by the OTPL. The costs of storing, transporting, etc. of all materials including those under Government control are to be included by the tenderer in his quoted rates.

The OTPL / Consultant shall be indemnified against all Government or legal actions for theft or misuse of any controlled materials in the custody of the contractor.

5. GOVERNMENT AND LOCAL RULES

The contractor shall conform to the provisions of all local Bye-laws and Acts relating to the work and to the Regulations etc. of the Government and Local Authorities and of any company with whose system the structure is proposed to be connected. The contractor shall give all notices required by said Act, Rules, Regulations and Bye-laws, etc. and pay all fees payable to such authority / authorities for execution of the work involved. The cost, if any, shall be deemed to have been included in his quoted rates, taking into account all liabilities for license, fees for footpath encroachment and restorations etc. and shall indemnify the OTPL against such liabilities and shall defend all actions arising from such claims or liabilities.

6. QUANTITY OF WORK TO BE EXECUTED

The quantities shown in the schedule of quantities are intended to cover the entire new structure indicated in the drawings but the OTPL reserves the right to execute only a part or the whole or any excess thereof without assigning any reason therefore. The quantity may vary to any extent and even the same will be omitted. No separate payment / compensation / revision in the rates will be entertained.

7. VARIATIONS TO BE APPROVED BY THE OTPL /CONSULTANT

Notwithstanding anything herein contained, the Consultant or his representative shall not, without prior concurrence in writing of the OTPL, issue any instructions, verbal or in writing, the Consultant can get the work done upto an amount of Rs.50,000.00 (Rupees Fifty thousand only) and all instruction issued to the contractor should forthwith be brought to the notice of the OTPL. The contractor shall submit through the Consultant, a statement of variations giving rise quantity and rates duly supported by analysis of rates, vouchers, etc. The rates on scrutiny and final acceptance by the OTPL shall form a supplementary tender. The OTPL shall not be liable for payment of such variations until these statements are sanctioned by the OTPL.

8. DRAWINGS AND SCHEDULE OF QUANTITIES AND AGREEMENT.

The contractor on the signing hereof shall be furnished by the Consultant free of cost one copy of each of the said drawings and of the specifications and one copy of all further Drawings issued during the progress of the works. Any further copies of such drawings required by the contractor shall be paid by him. The contractor shall keep one copy of all drawings on the works and the Consultant / OTPL or their representatives shall at all reasonable times have access to the same.

9. WORK TO BE PROVIDED FOR BY THE CONTRACTOR

The work to be provided for by the Contractor, unless otherwise specified shall include but not be limited to the following:

- a) Furnish all labour, supervision, services including facilities as may be required under statutory labour regulations, materials, forms, templates, supports, scaffolds, approaches, aids, construction equipment, tools and plants, transportations, etc. required for the work.
- b) Provide all incidental items not shown or specified in particular but reasonably implied or necessary for successful completion of the work in accordance with the drawings, Specification and schedule of items.
- c) For supply of certain material normally manufactured by specialist firm, the contractor may have to produce, if directed by engineer, a guarantee in approved proforma for satisfactory performance for a reasonable period as may be specified, binding both the manufacturers and the Contractor, jointly and Separately.

10. Conformity with Design

The Contractor will prepare check lists in approved proforma, which will be called 'Pour Cards'. These Pour Cards will list out all items of work involved. The Contractor will inform the Engineer, sufficiently in advance, whenever any particular pour is ready for concreting. He shall accord all necessary help and assistance to the Engineer for all checking required in the pour. On satisfying himself that all details are in accordance to the drawings and specifications, the Engineer will give written permission on the same 'Pour Card' allowing the Contractor to commence placement of concrete. Details of all instructions issued by the Engineer and the records of compliance by the Contractor, deviations allowed by the Engineer and any other relevant information will be written on accompanying sheets attached to the Pour Cards. These sheets, termed as 'Progress Cards', will be prepared by the Contractor on approved proforma. The Pour Cards along with accompaniments will be handed over to the Engineer before starting placement of concrete. One of the mix designs developed by the Contractor as per the IS Specifications and established to the satisfaction of the Engineer by trial mixes shall be permitted to be used by the Engineer, the choice being dictated by the requirements of designs and workability. The methods of mixing, conveyance, placement, vibration, finishing, curing, protection and testing of concrete will be as approved or directed by the Engineer.

11. Materials to be used

General Requirement

All materials whether to be incorporated in the work or used temporarily for the construction shall conform to the relevant IS Specifications unless stated otherwise and be of best approved quality.

CONTRACTOR TO PROVIDE EVERYTHING NECESSARY:

The contractor shall provide everything necessary for the proper execution of the works according to the intent and meaning of the Drawings, Schedule of quantities and Specification taken together whether the same may or may not be particularly shown or described therein provided that the same can be reasonably be inferred there from, and if the contractor finds any discrepancies therein, he shall immediately and in writings, refer the same to the OTPL / Consultant whose decision shall be final and binding. The contractor shall provide himself for ground and fresh water for carrying out of the works at his own cost. The OTPL shall on account be responsible for the expenses incurred by the contractor for hired ground or fresh water obtained from elsewhere.

- (i) The rates quoted against individual items will be inclusive of everything necessary to complete the said items work within the contemplation of the contract, and beyond the unit price no extra payment will be allowed for incidental or contingent work, labour and /or materials inclusive of all taxes and duties whatsoever except for specific items, if any, stipulated in the tender documents.
- (ii) The contractor shall supply, fix and maintain at his own cost, for the execution of any work, all tools, tackles, machineries and equipments and all the necessary centering, scaffolding, staging, planking, timbering, strutting, shoring, pumping, fencing, boarding, watching and lighting by night as well as by day required not only for the proper execution and protection of the said work but also for the protection of the public and safety of any adjacent roads, streets, walls, houses, buildings, all other erections, matters and things and the contractor shall take down and remove any or all such centering, scaffolding, plumbing, timbering, strutting, shoring etc., as occasion shall be

required or when ordered so to do, and shall fully reinstate and make good all matters and things disturbed during the execution or when ordered so to do, and shall fully reinstate and make good all matters and things disturbed during the execution of works to the satisfaction of the OTPL /Consultant.

- (iii) The Contractor shall also provide such temporary road on the site as may be necessary for the proper performance of the contract and for his own convenience but not otherwise. Upon completion, such roads shall be broken up and leveled where so required by the drawings unless the OTPL shall otherwise direct.

The contractor shall at all times give access to workers employed by the OTPL or any men employed on the buildings and to provide such parties with proper sufficient and if required, special scaffolding, hoists and ladders and provide them with water and lighting and leave or make any holes, grooves etc., in any work, where directed by the OTPL as any be required to enable such workman to lay or fix pipes, electrical wiring, special fittings etc. The quoted rates of the tenderers shall accordingly include all these above-mentioned contingent works. AUTHORITIES NOTICES AND PATENTS The contractor shall confirm to the provisions of any Act of the legislature relating to the works, and to regulations and bye-laws of any authority, and or any water electric supply and other companies and /or authorities with and whose the systems the structures is proposed to be connected, and shall, before making any variations from the drawing or specifications that may be associated to so confirming, give to the Engineer written notice, specifying the variations proposed to be made and the reason for making it and apply for instructions thereon. In case the contractor shall not within ten days receive such instructions he shall proceed with the work confirming to the provisions, regulations, or byelaws in questions, and variations so necessitated shall be dealt with under clause 13 hereof.

The contractor shall bring to the attention of the Consultant / OTPL all notices required by the said Acts, regulations or bye-law to be given to any authority and pay to such authority, or to any public office, all fees that may be properly chargeable in respect of the said work, and lodge the receipt with the Consultant /OTPL.

The contractor shall indemnify the OTPL against all claims in respect of patent rights, royalties, and damages to buildings, roads or members of public in course of execution of work and shall defend all actions arising from such claims and shall keep the OTPL saved harmless and indemnified in all respects from such actions, costs and expenses.

12.CLEARING SITE AND SETTING OUTWORKS

The site shall be cleared of all obstructions, loose stone, and material rubbish of all kind. All holes or hollows either originally existing or produced by removal of loose stone or material shall be carefully filled up with earth, well rammed and leveled of as directed at his own cost. The contractor shall set out the works and shall be responsible for the true and perfect setting out of the work and for the correctness of the positions, dimensions, levels and the alignment of all the parts thereof. If at any time any error in this respect shall appear during the progress of any part of work or within the period of one year from the completion of the works, the contractor shall at his own expenses rectify such error to the satisfaction of the Consultant / OTPL.

13.DATUM

The average ground level will be considered as the crown of the nearest road, which should be taken as "Datum" which is however, subject to final confirmation by the OTPL / Consultant. All levels shown in the drawings are to be strictly adhered to.

14.BENCHES

The contractor is to construct and maintain proper benches of all the main walls, in order that the lines and levels may be accurately checked at all times.

These benches will consist of salwood post of adequate length and minimum diameter 75mm to be driven in the ground at suitable distance as directed encased with brickwork. The wire nails will be driven on the top of salwood post on the center lines of columns, walls, inside and outside faces of foundation trenches, in order that lines may be stretched between the benches and accurate intersection of excavation. Centre line of walls, columns, etc. may be clearly indicated and checked at any time if it is so required.

19.CONTRACTOR IMMEDIATELY TO REMOVE ALL OFFENSIVE MATTERS

All soil, filth or other matters of any offensive nature taken out of any trench, sewer, drain, cesspool or other place shall not be deposited on the surface but shall be at once carted away by the contractor to place provided by him. The contractor shall keep the foundations and works free from water and shall provide and maintain at his own expenses electrically or other power driven pumps and other plant to the satisfaction of the OTPL for the purpose, until the building is handed over to the OTPL. The contractor shall arrange for the disposal of the water so accumulated to the satisfaction of the OTPL and local authority and no claims will be entertained afterwards if he does not include in his rates for the purpose.

20.MATERIALS, WORKMANSHIP, SAMPLES, TESTING OF MATERIALS:

All the works specified and provided for in the specifications or which may be required to be done in order to perform and complete any part thereof shall be executed in the best and most workman like manner with materials of the best and approved quality of the respective kinds in accordance with the particulars contained in and implied by the specifications and represented by the drawings or according to such other additional particulars and instructions as may from time to time be given by the OTPL / Consultant during the execution of the work, and to his entire satisfaction.

The contractor shall have to carry out test on materials and workmanship in approved materials testing laboratories or as prescribed by the OTPL / Consultant at own cost to prove the materials quality and test sample, confirm to the relevant I.S. Standard or as specified in the specifications. The necessary charges for preparation of mould (in case of concrete cube) transporting testing etc. shall have to borne by the contractors. No extra payment on this account should in any case be entertained.

All the materials (except where otherwise described) store and equipment required for the full performance of the work under the contract must be provided through normal channels and must include charges for import duties, sales tax, octroi and other charges and must be the best of their kind available and the contractors/must be entirely responsible for the proper and efficient carrying out the work. The work must be done in the best workman like manner. Samples of all materials to be used must be submitted to the OTPL / Consultant when so directed by the Engineer/ Consultant and written approval from OTPL / Consultant must be obtained prior to placement of order.

The Contractor shall set up a field laboratory with necessary equipment for day to day testing of material like sand, brick, aggregate etc.

21. INCLEMENT WEATHER

During the inclement weather the contractor shall suspend concreting and plastering for such time as the OTPL / consultant may direct and shall protect from injury all work when in course of execution. Any damage (during construction) to any part of the work for reasons due to rain, storm, or neglect of contractor shall be rectified by the contractor in an approved manner at no extra cost.

Should the work be suspended by reason of rain, strike, lockouts or any other cause, the contractor shall take all precautions necessary for the protection of work and at his own expenses shall make good any damage arising from any of these causes. The contractor shall cover up and protect from damage, from any cause, all new work and supply all temporary doors, protection to window, and any other requisite protection for the execution of the work whether by himself or special tradesmen or sub-contractor and any damage caused must be made good by the contractor at his own expenses.

22. MATERIALS AND WORKMANSHIP TO CONFORM TO DESCRIPTIONS:

All materials and workmanship shall so far as procurable be of the respective kinds described in the schedule of quantities and / or specifications and in accordance with the Consultant's instructions, and the contractor shall upon the request of the Consultant furnish him with all invoices, accounts, receipts and other vouchers to prove that the materials comply therewith. The contractor shall at his own cost arrange for and / or carry out any test of any materials which the Engineers may require.

22. CONTRACTOR'S SUPERINTENDENCE & REPRESENTATIVE ON THE WORKS.

The contractor shall give all the necessary personal superintendence during the execution of the works, and as long thereafter as the OTPL / Consultant may consider necessary until the expiration of the defects liability period stated in the Appendix hereto. The contractor shall also during the whole time the works are in progress employ;

An experienced qualified Civil Engineers (1 Nos., graduate engineer having experience of 3 years or more in field + 1 diploma holder having experience of 5 years) as required who shall be in constantly attendance at work while the men are at work. Any directions, explanations, instructions, or notices given by the OTPL / Consultant to such representative shall be held to be given to the contractor.

For non-compliance an amount of Rs.20, 000/- pm / per Engineer shall be deducted from the contractor for the period required engineers are not provided. However, deduction of payment shall not exonerate contractor for his responsibility for executing quality work.

23. DEPLOYMENT OF LABOURS

No labourer below the age of eighteen years shall be employed on the work.

Any labourer supplied by the contractor to be engaged on the work on day-work basis either wholly or partly under the direct order or control of the OTPL or his representative shall be deemed to be a person employed by the contractor.

24. FACILITIES TO BE PROVIDED TOWORKERS

The contractor shall comply at his own cost with the order of requirement of any Health Officer of the State or any local authority or of the OTPL regarding the maintenance of proper environmental sanitation of the area where the contractor's labourers are housed or accommodated, for the prevention of small pox, cholera, plague, typhoid, malaria and other contagious diseases. The contractor shall provide, maintain and keep in good sanitary condition adequate sanitary accommodation and provide facilities for pure drinking water at all times for the use of men engaged on the works and shall remove and clear away the same on completion of the works. Adequate precautions shall be taken by the contractor to prevent nuisance of any kind on the works or the lands adjoining the same.

The contractor shall arrange to provide first-aid treatment to the labourers engaged on the works. He shall within 12 hours of the occurrence of any accident at or about the site or in connection with execution of the works, report such accident to the OTPL and also the competent authority where such report is required by law.

25. DISMISSAL OF WORKMEN

The contractor shall at the request of the OTPL / Consultant immediately dismiss from the works, any person employed thereon by him who may in the opinion of the OTPL / Consultant incompetent or misconduct himself and such person shall not be engaged again. Such discharges shall not be the basis of any claim for compensation or damages against the OTPL or any of their officer or employee.

26. ACCESS TO WORK

The OTPL / Consultant and their responsible representative shall at all reasonable times have free access to the works and/ or to the workshops, factories or other places where materials are being prepared or constructed for the work and also to any place where the materials are lying or from where they are being obtained the contractor shall give every facility to the OTPL, the Consultant and their representative necessary for inspection and examination and test of the materials and the workmanship. No. persons not authorized by the OTPL or the Consultant except the representatives of Public Authorities shall be allowed on the works at any time.

27. ASSIGNMENT /SUB-LETTING

The whole of the works included in the contract shall be executed by the contractor and the contractor shall not directly or indirectly transfer, assign, or under-let the contract or any part share there of or any interest therein without the prior written consent of the OTPL and no undertaking shall relieve the contractor of the full and entire responsibility of the contract or from active superintendence of works during their progress. Central Govt. / State Govt. companies shall not be allowed to sublet the work on back to back basis / labour basis without approval from the OTPL. In case, in case contractor sub-let the work, the OTPL will be entitled to deduct 10% of cost of work executed besides initiating other measures provided in the contract.

28. VARIATIONS

No alterations, omissions or variations shall vitiate this contract, but in case the Engineer thinks proper at any time during the progress of the works to make any alterations in, or additions to or omissions from, the work or any alteration in the kind or quality of materials to be used therein and shall give notice thereof in writing under his hand to the contractor, the contractor shall alter, add to, or omit from, as the case may be, in accordance with such notice, but the contractor shall not do any work extra to or make any alterations or additions to or omissions from the works or any deviations from any of the provisions of the contract, stipulation specifications or contract drawings without the previous consent in writing of the consultant /Engineer / OTPL and the values of such extras, alternations, additions or omissions shall in all cases be determined by the Consultant with the prior approval in writing of the OTPL in accordance with the provision of the Clause hereof, and the same shall be added to, or deducted from the contract amount, as the case may be accordingly.

29. SCHEDULE OF QUANTITIES

The Schedule of quantities, unless otherwise stated shall be deemed to have been prepared in accordance with the standard method of quantity measurement.

Any error in description or in quantity or in omission of items from the Schedule of quantities shall not vitiate this contract but shall be rectified and the value thereof shall be added to or deducted, from the contract amount (as the case may be), provided that no rectification of errors, if any, shall be allowed in the contractor's Schedule of rates.

The contractor shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of this tender for the works and the prices stated in the Schedule or quantities

and or the schedule of rates and prices which rates and prices shall cover all his obligations under the contract and all matters and things necessary for the proper completion of works.

The quantities of work may vary to any extent or may be omitted, the contractor cannot claim loss of profit / overhead on this account.

30. MEASUREMENT OF WORKS

- (i) The Consultant may from time to time intimate to the contractor and the OTPL that he requires works to be measured, and the contractor shall forthwith attend or send a qualified agent to assist the Consultant in taking such measurements and calculations and to furnish all the particulars or to give all assistance required by any of them.
- (ii) The Engineer will take measurement of the work jointly with the contractor and enter the same in measurement books. Based on these measurements the contractor will raise the bill as per the prescribed format. Consultant to verify the bill/measurement and issue certificate stating that the work completed is as per the specifications and the measurement claimed for the works are actually executed at site. This certificate shall be issued within 7 days after bill submission by the Contractor. The OTPL will release bill amount within 14 working days. If for some reason checking of the bill / measurement is not completed, 75% of the bill amount at least shall be released within 10 working days and the balance within 21 working days.

- (iii) Should the contractor not attend or neglect or omit to send such agent then the measurement taken by the Engineer or a person approved by him shall be final and binding on the contractors.
- (iv) The contractor or his also supply without charge the requisite number of persons with means and materials necessary for the purpose of measurements or examinations at any time and from time to time of the work or counting weighting of the materials,etc.
- (v) All authorized extra works, omissions and all variations made without the Consultant's knowledge, if subsequently sanctioned by him in writing (with the prior approval in writing of the OTPL) shall be included in such measurement.
- (vi) All measurements are checked&verified by the details of drawing.measurements overyhan the drawings will not be accepted&paid.
- (vii) All measurements are taken in cum/sqm/weight/ Regarding to the work.
- (viii) Only For excavtion/backfilling measurements are taken from the ground level of the site
- (ix) Edge to edge measurement are taken for billing upto the completion from the first&last date of month.
- (x) Measurements shall be recorded as per IS 1200 mode measurement and in metric system.Such measurement shall be recorded by the Engineer or OTPL's officer and not by contractor. M.B. shall be kept in the custody of the consultant /OTPL.

31.PROCEDURE FOR MEASUREMENT AND BILLING OF WORK INPROGRESS:

- i) Concreting
- ii) Brickwork
- iii) Structure Erection work
- iv) Sheeting/Cladding work
- (iii) Flooring / Walltiles
- (iv) Aluminum /steel / wooden window and doorframe
- (v) Plumbing / Sanitary / Pipes and fittings
- (vi) Road work
- (vii) Any other Civil Work.

OTPL will conduct Three inspection

1-Before start the work

2-on the time of working process whenever need(must be in concreting.....etc)

3-After completing the work for verifying the bill of quantity raised by the contractor.

The contractor have to request the Engineer/competant authority for inspection from otpl before doing the work

For inspection Contractor have to submit the measurement details and quantity of work with the description of the working area.

After the inspection done and approved by the otpl side the Contractor can complete the work

Contractor must inform the Engineer/authority person before doing concreting

After completion of the work OTPL Authority will inspect and close the inspection file While the contractor submitting the BOQ for the claim the OTPL Team will check the BOQ by Inspection request measurement deatails and visit to the site then the final bill will be approved by the SITE Authority and forwarded to the MANAGERS/DIRECTORS Contractor Have to submit the separate inspection request for the individual works and Areas

Contractor Have to maintain the same format for the inspection request and bill claiming

The Contractors will have to submit the bills for the materials purchased, in triplicate, to verify the cost of the materials purchased and brought at Site.

No advances against perishable materials purchased and brought at Site will be made. The Contractors will have to keep the materials at Site under their safe custody and at their risk and cost.

The OTPL is not responsible for damages and losses of such materials brought at site. The contractor to submit undertaking marking lien on the material brought at site against which OTPL has granted advance payment.

a.INSPECTION REQUEST FORMAT

S.No	Date	Description	co-ordinades(or)			Area	Inspected by	signature/Date
			length	width	height			

b. Running Account Payments to be regarded asAdvances:

All running account 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 accepted and shall not preclude the requiring of 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 effect in any way the powers of the OTPL / consultant under these conditions or any of them as to the powers of the OTPL / consultant under these conditions or any of them as to the final settlement and adjustment of the accounts or otherwise, or in any other way vary/affect the contract.

The final bill shall be submitted by the contractor within two months of the date fixed for completion of the work, otherwise the Consultant / Engineer-in-charge’s certificate of the measurement and of the total amount payable for the work accordingly shall be final and binding on allparties.

09.COMPLETIONCERTIFICATE

(i) APPLICATION FOR COMPLETIONCERTIFICATE

The Consultant /Engineer-In-Charge shall normally issue to the contractor the completion certificate within one month after receiving, an application thereof from the contractor and after verifying from the completion documents and satisfying himself that the work has been completed in accordance with and as set out in the construction and erection drawing and contract documents.

The contractor, after obtaining the completion certificate, is eligible to present the final bill for the work executed by him under the terms of contract.

(ii) CompletionCertificate

Within one month of the completion of the work in all respects, the Contractor shall be furnished with a certificate by the Consultant / Engineer-In-Charge of such completion but no certificate shall be given nor shall the work be deemed to have been completed until all scaffolding, surplus materials and rubbish is cleared of the site completely. The work will not be considered as complete and taken over by the OTPL, until all the temporary works, labour

and staff colonies etc., constructed, are removed and the works site cleared to the satisfaction of the Consultant / Engineer. Statutory paper enclose the contractor.

If the Contractor shall fail to comply with the requirements of this clause on or before the date fixed for the completion of the work, the Consultant / Engineer-In-Charge may at the expenses of the contractor remove such scaffolding, surplus materials and rubbish and dispose off the same as he thinks fit and clean up the site and the contractor shall forthwith pay the OTPL for all expenses so incurred and shall have no claim in respect of any such scaffolding or surplus materials as **aforsaid except of any sum actually** realized by the sale thereof.

(iii) CERTIFICATE (to be issued by the consultant /engineer)

It is certified that various items of works claimed in the RA Bill by

Contractor has been completed to the extent claimed and at appropriate rates and that the items are in accordance with and fully confirming to the standard and/or prescribed specifications and drawings. Quality and rates verified. The material supplied and work done conform tender specifications. We further certify that we have checked the measurement to the extent of 100 per cent of each item claimed in this bill. As net amount of Rs.....(Rupees)

is recommended to be paid to the contractor making the total upto date payment of Rs.....

(Rs)

DATE

:

iv. CEMENT CONSUMPTION STATEMENT

Cod e	Description of item of work	Unit	Quantity of cement to be used per unit quantity of work(Bags)
1	2	3	4
Cement Concrete (Cast-in-Situ)			
1.	1:1.5:3 (1 Cement : 1.5 sand : 3 graded aggregate)	Cu.M.	8.00
2.	1:2:4 (1 Cement : 2 sand : 4 graded aggregate)	Cu.M.	6.40
3.	1:3:6 (1 Cement : 3 sand : 6 graded aggregate)	Cu.M.	4.40
4.	1:4:8 (1 Cement : 4 sand : 8 graded aggregate)	Cu.M.	3.40
Burnt Brick Masonry			
5.	In CM 1:3 (1 Cement : 3 mortar)	Cu.M.	2.56
6.	In CM 1:4 (1 Cement : 4 mortar)	Cu.M.	1.90
7.	In CM 1:6 (1 Cement : 6 mortar)	Cu.M.	1.06
Half Brick Masonry			
8.	In CM 1:3 (1 Cement : 3 mortar)	100Sq.M.	28.56
9.	In CM 1:4 (1 Cement : 4 mortar)	100Sq.M.	21.28
Random Rubble Masonry			
10.	In CM 1:6 (1 Cement : 6 mortar)	Cu.M.	1.70
Course Rubble Masonry			
11.	In CM 1:6 (1 Cement : 6 mortar)	Cu.M.	1.50
Flooring			
12.	40 mm thick in PCC (1:2:4)	Sq.M.	0.34

13.	18 mm thick in Skirting	Sq.M.	0.32
Cement Plaster			
14.	12 mm thick in CM (1:3)	100Sq.M.	14.68
15.	12 mm thick in CM (1:4)	100Sq.M.	10.94
16.	15 mm thick in CM (1:4)	100Sq.M.	13.08
17.	15 mm thick in CM (1:6)	100Sq.M.	8.60
18.	20 mm thick in CM (1:4)	100Sq.M.	17.02
19.	20 mm thick in CM (1:6)	100Sq.M.	11.20
20.	6 mm thick in CM (1:3)	100Sq.M.	7.34
21.	6 mm thick in CM (1:4)	100Sq.M.	5.48

SITE ENGINEER / CONSULTANT

The above certification shall be endorsed in the relevant Measurement Books also by the Consultant.

10.FORMAT FOR RUNNING BILL (To be submitted by thecontractor)

Name of the Contractor:

Sr.no.of the Bill:

S.No	RFI Date	Description	co-ordinades(or)			Area	Completion/ Measurement Date	Inspected/ Checked by	signature/Date
			length	width	Height				

Note :

1. If part rate is allowed for any item, it should be indicated with reasons for the allowing such a rate.
2. Consumption of Cement/Steel statement to be submitted along with each R.A.Bills.

11.DUTIES OFENGINEER

- i. To make a thorough study of contract documents, Engineerural/Structural drawings and other details so as to bring out ambiguities/discrepancies between them and to obtain clarification from the Competent Authority well in time to avoiddelays.
- ii. To render a certificate to the Competent Authority to the effect that he has studied the contract documents, drawings and specifications.
- iii. To approve the centerline layout of building pegged out on site by the contractor and the benches for ground floor and otherlevels.
- iv. To take charge of objects of value and antiquity found on site or in excavations, immediately, after their discovery, to hold them in safe custody and to hand them over to the Competent Authority of the OTPL for furtheraction.
- v. To approve the foundation strata when the appropriate depth of excavation is reached in consultation with theEngineers.
- vi. To ensure that the quality of materials and workmanship as laid down in the contract is maintained and the accuracy of dimension shown on drawings is attained in theconstruction.
- vii. To watch the validity of the building permission issued by the Local Authority and to ensure that the revalidation, if necessary, is obtained well intime.
- viii. To arrange periodical reconciliation of cement and steel account and ensure that proper recoveries are affected from contractor's running accountbills.
- ix. To maintain the undernoted records at the site of work, in addition to normal routine requirements of anoffice:
 - a. Weekly Progress Record.
 - b. Work Site OrderBook.
 - c. Instruction by OTPL'sOfficers.
 - d. Cement Statement(Receipt/Consumption/Balance).

- e. Steel Register/any other costly Material Register.
- f. Contract Pour Reports including Slump Test Record.
- g. Concrete Cube Test Register.
- h. Test Registers of other materials/fittings, fixtures, equipments as stipulated in the tender.
- i. Register of Drawings and Working Details.
- j. Log Book of Defects.
- k. The Site Engineer should maintain in a Hindrance Register giving details of commencement and removal of each hindrance.
- l. Supply and consumption register of scarce/costly materials like bitumen, lead, laminates, special paint etc.
- m. Record of cement used/received: Day to day record of cement used/received shall be entered in the register and signed by the Site Engineer of the OTPL as well as contractors representative at site.
- n. Record of reinforcement bars received at site: Necessary entry for reinforcement bars of each category shall be made in the register for steel and signed by the site engineer of OTPL and the contractor daily.
- x. To study the quality of approved coarse and fine aggregate and get the design of the concrete mix in accordance with modern practice. The Site Engineer shall ensure that the mix design for RCC work shall be carried out by the Engineer/Structural Consultant, if applicable.
- xi. To record measurements of completed work jointly with the Contractor and to process them in running account bills.
- xii. To receive running account bills from the contractor and to forward them after checking, to the Competent Authority with his comments and recommendations and accompanied by all supporting documents.
- xiii. To submit to the Competent Authority the Progress Report fortnightly.
- xiv. To watch that the concerned contract does not lapse for want of extension of time. Therefore, to keep it alive and in operation from point of consideration that "Time is the essence of contract".
- xv. To ensure that progress on every contract is in accordance with the appropriate stage of its Time and Progress Chart.
- xvi. To prevent contractor from proceeding with any work on which the contractor has got intentions of raising claims of extra/deviated items, until the Competent Authority approves the work to continue.
- xvii. To receive the Final Bill from the contractor, to check it, and forward it with his comments and recommendations to the Competent Authority with all the supporting documents duly attached.
- xviii. To submit the final summary of costs for the project to the Competent Authority.
- xix. To submit the Competent Authority authentic information on and the under noted records pertaining to the completed work in order to enable the Competent Authority to finalise them in the due course:
 - a) Record i.e. as completed drawings. Record of Standard Measurements for periodical services
 - b) Record of Standard Measurements for periodical services.

PRICES FOR EXTRAS ETC. ASCERTAINMENT OF NON-TENDER ITEMS:

The contractor may, when authorized, and shall, when directed in written by the Engineer / Consultant with the approval of the OTPL, add to, omit from, or vary the works shown upon the drawings, or described in the specification or included in the schedule of quantities, but contractor shall make no addition, omission or variation without such authorization or direction. A verbal authority or direction by the Engineer / Consultant shall, if confirmed by them in written seven days, be deemed to have been given in writing. Any such extra is herein referred to as authorized extra and shall be made in accordance with the following provisions:

- (a) (i) The net rates or prices in the original tender shall determine the valuations of the extra tender shall determine the valuation of the extra work where such extra work is of similar character and executed under similar conditions as the work priced therein.
- (ii) Rates for all items, wherever possible, should be derived out of the rates given in the priced schedule of quantities/ DSR
- (b) The net prices of the original tender shall determine the value of the items omitted, provided if omissions vary the conditions under which any remaining items of works are carried out, the prices for the same shall be valued under sub-clause Chereof.
- (c) Where the extra works are not of similar character and /or executed under similar conditions as aforesaid or where the omissions vary the conditions under which any remaining items of works are carried out or if the amount of the whole of the contract works or to any part thereof shall be such that in the opinion of the Engineer the net rate or price contained in the priced schedule of quantities or tender or for any item of the works involves loss or expense beyond that reasonably contemplated by the contractor or is by reason unreasonable or inapplicable, the Engineer shall fix such other rate or price as in the circumstances he shall feel reasonable and proper, with the prior approval in writing of the OTPL.
- (d) Where extra work cannot be properly measured or valued prices as the priced schedule of quantities or, if not so stated, then in accordance with the local day work rates and wages for the district; provided that in either case vouchers specifying the daily time (and if required by the Engineer, the workman's name) and materials employed to be delivered for verification to the Engineer, or his representative at to the Engineer or his representative at or before the end of the week following that in which the work has been executed.

Actual cost of materials	Rs.
Add for Labour charges	Rs.
Add for Taxes, Transportation, If any.	
		Rs. Add for
Wastage of Materials (Upper Limit 5% wherever applicable).....		Rs.
Add for water and electricity Charges if any required, upper limit 2% of basic cost of materials.....		Rs.
Add for 15% towards contractor's overheads and profit.....		Rs.
Final rate arrived.		Rs

2. REMOVAL OF IMPROPER WORKS

The Engineer/OTPL shall, during the progress of the works, have power to order in writing from time to time the removal from the work within such reasonable time or times as may be specified in order, of any materials which in the opinion of the Engineer/OTPL are not in accordance with the specifications or the instructions, the substitution of proper materials, the removal and proper re-execution of any work executed with materials or workmanship not in accordance with the drawings and specification instruction and the contractor shall forthwith carry out such order at his own cost. In case of default on the part of the contractor to carry such order, the OTPL shall have the power to employ and pay other persons to carry out the same and all expenses consequent thereon, or incidental thereto, shall be deducted by the OTPL from any money due or that may become due, to the contractor.

No certificate, which may have been issued by the Engineer, shall relieve the contractor from his liability in respect of unsound work of bad materials.

31. DEFECTS AFTERCOMPLETION

The contractor shall make good at his own cost and to the satisfactions of the OTPL all defects, shrinkage, settlements or other faults, which may appear within 12 months after completion of the work. In default the OTPL may employ and pay other persons to amend and make good such damages, losses and expenses consequent thereon or incidental there to shall be made good and borne by the contractor and such damages, loss and expenses shall be recoverable from him by the OTPL or may be deducted by the OTPL, in lieu of such amending and making good by the contractor, deduct from any amount due to the contractor, a sum equivalent to the cost of amending such work and in the event of the amount retained being insufficient, recover that from the contractor from the amount retained as retention money together with any expenses the OTPL may have incurred in connectiontherewith

The contractor shall make good at his own cost and to the satisfactions of the OTPL all defects, shrinkage, settlements or other faults, which may appear within 12 months after completion of the work. In default the OTPL may employ and pay other persons to amend and make good such damages, losses and expenses consequent thereon or incidental there to shall be made good and borne by the contractor and such damages, loss and expenses shall be recoverable from him by the OTPL or may be deducted by the OTPL, in lieu of such amending and making good by the contractor, deduct from any amount due to the contractor, a sum equivalent to the cost of amending such work and in the event of the amount retained being insufficient, recover that from the contractor from the amount retained as retention money together with any expenses the OTPL may have incurred in connectiontherewith.

32. CONCEALEDWORK:

The contractor shall give due notice to the OTPL / Engineers whenever any work is to be buried in the earth, concrete or in the bodies of walls or otherwise becoming inaccessible later on, in order that the work may be inspected and correct dimensions taken before such burial, in default whereof the same shall, at the opinion of the OTPL / Engineer be either opened up for measurement at the contractor's expense or no payment may be made for such materials. Should any dispute or differences arise after the execution of any work as to measurements etc., or other matters which cannot be conveniently tested or checked, the notes of the OTPL / Engineers shall be accepted as correct and binding on thecontractor

33. CERTIFICATE OF VIRTUAL COMPLETION & DEFECTS LIABILITYPERIOD

The work shall not be considered as completed until the Engineer has certified in writing that they have been virtually completed. The defects Liability Period shall commence from the date indicated in the virtual completion certificate issued by the Engineer.

34. NOMINATEDSUB-CONTRACTORS

All specialist, Merchants, Tradesmen and others executing any work of supplying and fixing any goods for which prime cost prices or provisional sums are included in the Schedule of Quantities and/or Specifications who may be nominated or selected by the Engineer/ OTPL are hereby declared to be Sub-Contractors employed by the Contractors and are herein referred to as nominated Sub-Contractors.

No nominated Sub-Contractor shall be employed on or in connection with the works against whom the Contractor shall make reasonable objection or (save where the Engineer and Contractor shall otherwise agree) who will not enter into a Contract providing:-

Payment shall be made to the nominated Sub-Contractor within fourteen days of his receipt of the Engineer's Certificates provided that before any certificate is issued, the contractor shall upon request furnish to the Engineer proof that all nominated Sub-Contractor's accounts included in the previous Certificate have been duly discharged; in default whereof the OTPL may pay the same upon a Certificate or the Engineer and deduct the amount thereof from any sums due to the Contractor. The exercise of this power shall not create privacy of Contract as between OTPL and Sub-Contractor.

39. OTHER PERSONS ENGAGED BY THE OTPL

The OTPL reserves the right to execute any part of the work included in this contract by other agency or persons and contractor shall allow all reasonable facilities and use of his scaffolding for the execution of such work. The main contractor shall extend all co-operations in this regard

12.INSURANCE

a. IN RESPECT OF DAMAGE TO PERSONS AND PROPERTY

- (i) The contractor shall be responsible for all injury to the work or to persons, animals or things, and for all damages to the structural and / or decorative part of the property which may arise from the operation or neglect of himself or of any nominated sub-contractor or any of his / sub-contractor's employee, whether such damage/ injury arises from carelessness, accident or any other cause whatsoever in any way connected in the carrying out of this contract. This clause shall be held to include inter alia, any damage to buildings, whether immediately adjacent or otherwise, and any damage to the roads, streets, foot-paths, bridge or ways as well as damage caused to the building and work forming the subject of this contract by rain, wind or other inclement of the weather. The contractor shall indemnify the OTPL and hold it harmless in respect of all and any expense arising from such injury or damage to persons or property as aforesaid and also in respect of any claim made in respect of injury and damage under any Act of any Legislature or otherwise and also in respect of any award of compensation or damage consequent upon such claims.
- (ii) The contractor shall reinstate all damage of every sort mentioned in this clause, so as to deliver up the whole of the contract works complete and perfect in every respect and so as to make good or otherwise satisfy all claims for damage to the property or third parties.
- (iii) The contractor shall indemnify the OTPL against all claims which may be made against the OTPL by any member of the Public or third party in respect of anything which may arise in respect of the works or in consequence thereof and shall at his own expense arrange to effect and maintain, until the virtual completion of the contract, with an approved office, a Policy of Insurance in the name of the OTPL and the contractor against such risks and deposit such policies with the OTPL from time to time during the currency of this contract. The contractor will also similarly indemnify the OTPL of all claims which may be made upon the OTPL whether under the Workmen's Compensation Act or any other statute in force during the currency of this contract or at common law in respect of any employee of the contractor or any sub-contractor and shall at his own expense effect and maintain, until the virtual completion of the contract, with an approved office, a Policy of Insurance in the joint name of the OTPL and the Contractor against such risks and deposit such policy or policies with the OTPL from time to time during the currency of the contract.

- (iv) The contractor shall be responsible for any liability which may be excluded from the Insurance Policies above referred to and also for all other damages to any person animal or property arising out of incidental or defective carry in out of this contract. He shall also indemnify the OTPL in respect of any cost, charges or expenses arising out of claims or proceeding and also in respect of any award of composition and damages arisingtherefrom.
- (v) The OTPL shall be entitled to deduct the amount of any damage, compensation, cost, charges and expenses arising from or accruing from, or in respect of, any such claims or damage from any or all sums due or to become due to the contractor without prejudice to the OTPL's other rights in respectthereof.

b. FIREINSURANCE

- (i) The Contractor shall, within fourteen days from the date of commencement of works, insure the works at his cost and keep them insured until the virtual completion of the contract, against loss or damage by fire and / or earthquake, flood with an office to be approved by the Engineer in the joint name of the OTPL and the Contractor (the name of the former being placed first in the policy), for the contract amount only. The Contractor shall deposit the policy and receipts for the premium with the owner within 21days from the date of issue of work order, unless otherwise instructed by commencement of the works, unless otherwise instructed by the Engineer. In default of the Contractor insuring as provided above, the OTPL or the Engineer on his behalf, may so insure the works and may deduct the premium paid from any money due or which may become due to the Contractor without prejudice to the other rightsof

the OTPL in respect of such default. In case it becomes necessary to suspend the works, the Contractor shall as soon as the claim under the policy is settled, or work reinstated by the Insurance office should they elect to do so, proceed with all due diligence with the completion of the works in the same manner as though the incident had not occurred and in all respects under the same conditions of the Contract. The contractor in case of rebuilding or reinstatement after fire, shall be entitled to such extension of time for completion as the OTPL / Engineer deemedfit.

- (ii) The amount so due as aforesaid shall be the total value of the works duly executed and of the contract materials and goods delivered upon the site for use in works upto and including a date not more than seven days prior to the date of the said Certificate less the amount to be retained by the OTPL (as hereinafter provided) and less any installments previously paid under this clause. Provided that such Certificate shall only include the value of the said materials and goods as and from time to time as they are reasonably, properly and not prematurely brought upon the site and then only if properly stored and/or protected againstweather.

c) The Contractors will have to take out following Insurance Policies:

- 1) Contractors All Risks Insurance Policy to cover- Earthquake- Fire & Shock
Landslide/Rockslide/Subsidence.
Flood/Inundations.
Storm/Tempest/Hurricanes/Typhoon /Cyclone
Collapse.Theft/Burglary.
Damage to material brought at Site and to be subsequently used in the work.

- 2) Third party Insurance Policy
 - a. For accidental loss or damage caused to the property of other persons.
 - b. For fatal or non-fatal injury to any person other than insured own employees or work men of employees of the owner of the works any other construction work thereon, or member of the Insured's family or of any of the aforesaid; directly consequent upon of solely due to the construction of any property described in the Schedule.
 - c. Workmen's Compensation Insurance.

43. ACCOUNTS RECEIPTS & VOUCHERS:

The contractor shall, upon the request of the OTPL furnish them with all the invoices, accounts, receipts and other vouchers that they may require in connection with the works under this contract. If the contractor shall use materials less than what he is required under the contract, the value of the difference in the quantity of the material he was required to use and that he actually used shall be deducted from his dues. The decision of the OTPL shall be final and binding on the contractor as to the amount of materials the contractor is required to use for any work under this contract.

45. LIQUIDATED DAMAGES / DAMAGES FOR NON-COMPLETION

If the Contractor fails to complete the works by the date stated in the Appendix or within any extended time and the Engineer certifies in writing that in his opinion, the same ought reasonably to have been completed, the Contractor shall pay the OTPL liquidated damages attract penalty @ 0.5% delay per fortnight of the total contract value subject to the maximum ceiling of 5% of the total contract value the contract amount

46. TOOLS, STORAGE OF MATERIALS, PROTECTIVE WORKS AND SITE OFFICER REQUIREMENTS

- i) The contractor shall provide, fix up and maintain in an approved position proper office accommodation for the contractor's representative and staff which offices shall be open at all reasonable hours to receive instruction notices or communications and clear away on completion of the works and make good all work disturbed.
- ii) The contractor shall provide at his own cost all artificial light required for the work and to enable other contractors and sub-contractors to complete the work within the specified time.
- iii) The contractor shall provide a suitable temporary hut for the watchmen and clear away the same when no longer required and to provide all necessary attendance, lights, etc. required.
- iv) The contractor shall arrange for temporary latrines for the use of workers and field staff and keep the same in a clean and sanitary condition to the satisfaction of the Public Health Authorities and shall cause such latrines and soil to be cleared away whenever necessary, drinking water and shall make good all the works disturbed by these conveniences,.

- vi) Every precaution shall be taken by the contractor to prevent the breeding of mosquitoes on the works during the construction and all receptacles, cisterns, water tanks, etc., used for the storage of water must be suitably protected against breeding of mosquitoes. The contractor shall indemnify the OTPL against any breach of rules in respect of anti-malarial measures.
- vii) The contractor shall not fix or place any placards or advertisement of any description or permit the same to be fixed or placed in or upon any boarding, gantry, building structure other than those approved by the OTPL.

47. **PROTECTIVE MEASURES**

The contractor from the time of being placed in possession of the site must make suitable arrangements for watching, lighting and protecting the work, the site and surrounding property by day, by night, on Sundays and other holidays.

Contractor shall indemnify the OTPL against any possible damage to the building, roads or members of the public in course of execution of the work.

The contractor shall provide necessary temporary enclosures, gates, entrances, etc. for the protection of the work and materials and for altering and adoption the same as may be required and removing on completion of the works and making good all works disturbed.

Storage of materials: The contractor shall provide and maintain proper sheds for the proper storage and adequate protection of the materials etc. and other work that may be executed on the site including the tools and materials of sub-contractors and remove same on completion.

Cement godown shall be constructed for storing about six weeks' requirement of cement and stored as per norms with a stack of 10 bags each and 2 feet opening all around with 2 feet passage of each stack. Structure shall be water-proof from all the sides and top. Cement should be stored one foot above the ground level and have pucca raised floor.

So also reinforcement bars are to be stored above the ground level to prevent the same from getting rusted.

Tools: Theodolite levels, prismatic compass, chain, steel and metallic taps Weighing machine up to 5kg, beaker, slum cone, cube mould and all other surveying instruments found necessary on the works shall be provided by the contractor for the due performance of this contract as instructed by the site engineer.

All measuring tapes shall be of steel and suitable scaffolding and ladders that may be required for safely taking measurement shall be supplied by the contractor.

The mistries and the supervisors on the works shall carry with them always a one meter or two meter steel tape, a measuring tape of 30 meters, a spirit level, a plum bob and a square and shall check the work to see that the work is being done according to the drawing and specifications. The Site Engineer will use any or all measuring instruments or tools belonging to the contractors as he chooses for checking the works executed or being executed on the contract. The contractor should cover in his rates for making provisions for all reasonable facilities for the use of his scaffolding, tools and plant etc. by sub-contractors for their work.

48. DATE OF COMMENCEMENT & COMPLETION

The Contractor shall be allowed admittance to the Site on the "Date of Commencement" stated in the Appendix hereto, or such later date as may be specified by the Engineer / Consultant and he shall there upon and forthwith begin the works and shall regularly proceed with and complete the same (except the painting or other decorative works the Engineer / Consultant may desire to delay) on or before the "Date of Completion" stated in the Appendix subject nevertheless to the provision for extension of time hereinafter contained.

49. TIME OF COMPLETION, EXTENSION OF TIME & PROGRESSCHART

- (i) Time of completion: The entire work is to be completed in all respects within the stipulated period i.e. 12 months. The work shall be deemed to be commenced within 10 days from the date of acceptance of work order or date of handing over of site, whichever is later. Time is the essence of the contract and shall be strictly observed by the contractor. The work shall not be considered as complete until the OTPL / Engineers have certified in writing that this has been completed and the Defects Liability Period shall commence from the date of such certificate.
- (ii) Extension of time: If in the opinion of the Engineer / Consultant the work has been delayed
 - (a) By force majeure; or
 - (b) By reason of any exceptionally inclement weather or
 - (c) By reason of proceedings taken or threatened by or dispute with adjoining or neighboring owners or public authorities arising otherwise than through the Contractor's own default or
 - (d) By the works or delay or the other Contractors or tradesmen engaged or nominated by the OTPL or the Engineer and not referred to in the Schedule of Quantities and/or specification or
 - (e) By reasons of the Engineer's instructions as per clause 2 hereof or
 - (f) By reason of any combination of workmen or strike or lock-out affecting any of the building trades or
 - (g) in consequence of the Contractor not having received in due time necessary instructions from the Engineer for which he shall specifically apply in writing or
 - (h) From other cause which the OTPL may consider as beyond the control of the Contractor or
 - (i) In the event, the value of work exceeds the value of the Priced Schedule of Quantities owing to variation, the Engineer may with the previous approval in writing of the OTPL make a fair and reasonable extension of time for the completion of the Contract works.

In case of such strike or lockout, the Contractor shall as soon as give written notice thereof to the Engineer / Consultant, but the Contractor nevertheless constantly use his endeavor to prevent delay and shall do all that may be reasonably required to the satisfaction of the Engineer/OTPL to proceed with the work and on his doing so that it will be ground of consideration by the OTPL for an extension of time as above provided. The decision of the OTPL as to the period to be allowed for an extension of time for completion hereunder (which decision shall be final and binding on the contractor) shall be promulgated at the conclusion of such strike or lock-out and the OTPL shall then, in the event of an extension being granted, determine and declare the final completion date. The provision in clause with respect to payment of liquidated damages shall, in such case, be read and construed as if the extended date fixed by the OTPL were substituted for and the damage shall be deducted accordingly.

(iii) **PROGRESS OF WORK:** During the period of construction the contractor shall maintain proportionate progress on the basis of a Programme Chart submitted by the contractor immediately before commencement of work and agreed to by the OTPL / Engineers. Contractor should also include planning for procurement of scarce material well in advance and reflect the same in the Programme Chart so that there is no delay in completion of the project.

50. **FAILURE BY CONTRACTOR TO COMPLY WITH ENGINEER / CONSULTANT'S INSTRUCTION**

If the Contractor after receipt of written notice from the Engineer / Consultant requiring compliance within ten days fails to comply with such further drawings and/or Engineer's instructions, the OTPL may employ and pay other persons to execute any such work whatsoever the may be necessary to give effect thereto, and all costs incurred in connection therewith shall be recoverable from the Contractor by the OTPL on the Certificate of the Engineer / Consultant as a debt or may be deducted by him from any moneys due to the Contractor.

51. **Idle labour:**

Whatever the reasons may be no claim for idle labour, additional establishment cost of hire and labour charges of tools and plants would be entertained under any circumstances.

52. **Suspension:**

If the contractor except on account of any legal restraint upon the OTPL preventing the continuance of the work or in the opinion of the OTPL shall neglect or fail to proceed with due diligence in the performance of his part of the contract or if he shall more than once make default, the OTPL shall have the power to give notice in writing to the contractor requiring the work to be proceeded within a reasonable manner and with reasonable dispatch, such notice purport to be a notice under this clause.

After such notice shall have been given the contractor shall not be at liberty to remove from the site of the works or from any ground contiguous thereto any plant or materials to subsist from the date of such notice being given until the notice shall have been complied with. If the contractor fails to start the work within seven days after such notice has been given to proceed with the works as therein prescribed, the OTPL may proceed as provided in clause Termination of Contract by OTPL.

53. **TERMINATION OF CONTRACT BY THE OTPL**

If the Contractor being a individual or a Firm, commits any "act of insolvency" or shall be adjudged an Insolvent or being an Incorporate company, shall have an order for supervision of the court and the official Assignee or the Liquidator in such acts of insolvency and winding up, as the case may be, shall be unable within seven days after notice to him requiring him to do so, to show the reasonable satisfaction of the Engineer that he is able to carry out and fulfill the Contract and to give security therefore, if so required by the Engineer / Consultant.

OR if the Contractor (whether an individual, Firm or Incorporated Company) shall suffer execution or other process of court attaching property to be issued to the Contractor.

OR shall suffer any payment under this Contract to be attached by or on behalf of any of the creditors of the Contractors.

OR shall assign or sublet this Contract without the consent in writing of the OTPL first obtained.

OR shall charge or encumber this Contract or any payment due or which may become due to the Contractor hereunder.

54. Certificates & payments:

The Contractor shall be paid by the OTPL from time to time by installments under Interim certificates to be issued the Engineer / Consultant to the Contractor on account of the works executed when in the opinion of the Engineer, work to the approximate value named in the appendix as value of work for Interim Certificates (or less at the reasonable discretion of the Engineer / Consultant has been executed in Accordance with this contract, subject, however, to a retention of the percentage of such value named in the appendix hereto as "retention percentage from Interim Certificate", until the total amount retained shall reach the named in the Appendix as "Total Retention Money", after which time the installments shall be upto the full value of the work subsequently so executed and fixed in the building. The Engineer / Consultant may in his discretion include the Interim Certificate, such amount, as hemay

OR if the Engineer / consultant shall certify in writing to the OTPL that the contractor:

- i. Has abandoned the Contract,or
- ii. Has failed to commence the works, or has without any lawful excuse under these conditions suspended the progress of the works for fourteen days after receiving from the Engineer notice to proceed,or
- iii. Has failed to proceed with the works with such due diligence and failed to make such due progress as would enable the works to be completed within the time agreed upon,or
- iv. Has failed to remove materials from the Site or to pull down and replace work within seven days after receiving from the Engineer written notice that the said materials or work were condemned and rejected by the Engineer under these conditionsor,
- v. Has neglected or failed persistently to observe and perform all or any of the acts, matters or things by this Contract to be observed and performed by the contractor to observe or perform thesame.

Then and in any of the said cases the OTPL may, notwithstanding any previous waiver, after giving seven days notice in writing to the Contractor, determine the Contract but without thereby affecting the powers of the Engineer/OTPL or obligations and liabilities of the Contractor, the whole of which shall continue in force as fully as if the contract has not been so determined, and as if the work subsequently executed had been executed by or on behalf of the Contractor, And further, the OTPL by his agent or servants may enter upon and take possession of the work and all plant, tools, scaffoldings, shed, machinery, steam and other power utensils and materials lying upon the premises or on the adjoining land or roads and use the same as his own property or may employ the same by means of his own servants and workmen in carrying on and completing the works or by the employing any other contractor or person or persons to complete the works and the contractor shall not in any way interrupt or do any act, matter or thing to prevent or hinder such other contractor or other person or persons employed for completing or finishing or using the materials and plant for the work. When the work shall be completed or as soon as thereafter as convenient the Engineer shall give a notice to the Contractor to remove his surplus materials and plant, and should the Contractor fail to do so within the period of fourteen days after receipt thereof by him, the OTPL may sell the same by public auction, and give credit to the Contractor for the net amount realized. The Engineer shall thereafter ascertain and certify in writing under his hand what (if anything) shall be due or payable to, or by the OTPL, for the value of the said plant and materials so taken possession of by the OTPL and the expense or

loss which the OTPL shall have been put to in procuring the works to be completed and the amount, if any, owing to the Contractor and the amount, which shall thereupon be paid by the OTPL to the Contractor or by the Contractor to the OTPL, as the case may be and the certificate of the Engineer shall be final and conclusive between the parties.

consider proper on accounts of material delivered upon the site by the contractor for use in the works. And when the works have been virtually completed and the Engineer / Consultant shall have certified in writing that they have been completed, the contractor shall be paid by the OTPL in accordance with the certificate to be issued by the Engineer / Consultant the sum of money named in the Appendix "Installment after virtual completion" being a part of the said Total Retention Money. And the contractor shall be entitled to the payment of the Final Balance in accordance with the Final Certificate to be issued in writing by the Engineer at the expiration of the period referred to as "The Defects Liability Period" in the appendix hereto from the date of virtual completion, or as soon after the expiration of such period as the works shall be finally completed and all defects made good according to the true intent and meaning and hereof whichever shall last happen, provided always that the issue of the Engineer / Consultant of any certificate during the progress of the works or at or after the completion shall not relieve the contractor from his liability under clause 2 and 20 nor relieve the Contractor from his liability in case of fraud, dishonesty or fraudulent concealment relating to the works or materials or to any matter dealt with in the certificate, and in case of all the defects and insufficiencies in the works or materials which is a reasonable examination would not have disclosed. No certificate of the Engineer shall of itself be conclusive evidence that any works or materials to which it relates are in accordance with the contract, neither will the contractors have a claim for any amounts which the Engineer / Consultant might have certified in any interim bill and paid by the OTPL and which might subsequently be discovered as not payable and in this respect the OTPL's decision shall be final and binding.

The Engineer / Consultant shall have power to withhold any Certificate if the works or any parts thereof are not being carried out to his satisfaction.

The Engineer / Consultant may by any certificate make any correction in any previous certificate, which shall have been issued by him.

No certificate of payment shall be issued by Engineer if the contractor fails to insure the works and keep them insured till the issue of Virtual completion certificate.

All the interim 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 shall not preclude the requiring of 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 any respect or the accruing of any claim nor shall it conclude determine or affect in any way the power of the OTPL under these conditions or any of terms as to the final settlement and adjustment of the accounts or otherwise or in any other way vary or affect the contract.

55. EXCEPTED MATTERS / MATTERS TO BE FINALLY DECIDED BY THE OTPL:

The decisions, opinion, direction, certificate with respect to all or any of the matters under this tender shall be final and conclusive and binding on the contractor and shall be without appeal. Any other decision, opinion, direction, certificate or valuation of the Engineer or any refusal of the Engineer to give any of the same, shall be subject to the right of arbitration and review. The Engineer / Consultant to give recommendations/ opinion in respect of interpreting the various clauses. However, the decision from the competent authority of the OTPL shall be final and binding.

56. SETTLEMENT OF DISPUTES BY ARBITRATION

Wherever, in any of the documents forming part of the Contract, the OTPL has been vested with the final powers, his decision, opinion, certificate or any other discretion shall be final bill of the works and the final bill of the contractor including all supporting vouchers, abstracts, etc., to be made at the time of payment of the final bill. If as a result of this examination or otherwise any sum is found to have been overpaid or over certified, it shall be lawful for the OTPL to recover the sum. The OTPL reserves the right to alter/reduce amount certified by Consultant / Engineer, if noticed that certification is not proper.

conclusive and binding on the contractor and shall be without appeal. All other matters shall be subject to the right of arbitration.

All disputes or differences of any kind whatsoever save and except matters referred to in clause

- 1) arising out of or in connection with the Contract, whether during the progress of Work or after Completion and shall after written notice by either party to the contract to the other of them and to the OTPL hereinafter mentioned be referred for adjudication to two Arbitrator, one each to be nominated by the Contractor and the OTPL, who shall thereafter appoint an Umpire. The provisions of Indian Arbitration and Conciliation Act 1996 shall apply for the purposes.

The Work under the Contract shall, however, continue during the arbitration proceedings and no payment due or payable to the Contractor shall be withheld on account of such proceedings.

The Arbitrator shall be deemed to have entered on the reference on the date he issued notice to both the parties fixing the date of the first hearing.

The Arbitrator may from time to time, with the consent of the parties, enlarge the time for making and publishing the award.

The Arbitrator shall give a separate award in respect of each dispute or difference referred to him. The Arbitrator shall decide each dispute in accordance with the terms of the contract and give a reasoned award. The venue of arbitration shall be such place as may be fixed by the Arbitrator in his sole discretion.

The fees, if any, of the Arbitrator shall, if required to be paid before the award is made and published, be paid half and half by each of the parties. The cost of the reference and of the award including the fees, if any, of the Arbitrator who may direct to and by whom and in what manner, such costs or any part thereof shall be paid and may fix or settle and amount of costs to be so paid.

The award of the Arbitrator shall be final and binding on both the parties.

Subject to aforesaid the provisions of the Arbitration & Conciliation Act 1996 or any statutory modification or re-enactment thereof and the rules made thereunder, and for the time being in force, shall apply to the arbitration proceeding under this clause.

The OTPL and the Contractor hereby also agree that arbitration under clause shall be a condition precedent to any right to action under the contract with regard to the matters hereby expressly agreed to be so referred to arbitration.

The OTPL and the contractor hereby also agree that arbitration under clause shall be a condition precedent to any right to action under the contract with regard to the matters hereby expressly agreed to be so referred to arbitration.

Jurisdiction: All matters arising out of or in any way connected with this contract shall be deemed to have arisen in Ernakulam and only the courts in Ernakulam shall have jurisdiction to determine the same.

57. RIGHT OF TECHNICAL SCRUTINY OF FINAL BILL

The OTPL shall have right to cause a technical examination of the works and the final

The subject work will be scrutinized by the Chief Technical Examiner's Office, a technical wing of Central Vigilance Commission and other Vigilance and Audit Authorities of the OTPL. Decision of this Authority shall be binding on the contractor. Any discrepancy noted or defect shall be rectified by the contractor free of cost or appropriate amount will be recovered from the contractor's payment.

58. OTPL ENTITLED TO RECOVER COMPENSATION PAID TO WORKMEN:

The OTPL is obliged, by the virtue of the provisions of the workmen's compensation Act, 1923, or any statutory modification or re-enactment thereof to pay compensation to a workman employed by the contractor in execution of the works, the OTPL shall be entitled to recover from the contractor the amount of compensation so paid, and without prejudice to the rights of the OTPL under said Act. The OTPL shall be at liberty to recover such amount or any part thereof by deducting it from the security deposit or from any sum due to the contractor under this contract or otherwise. The OTPL shall not be bound to contest any claim made against it under the said Act, except on written request of the contractor and upon his giving to the OTPL full security to the satisfaction of the OTPL for all costs for which the OTPL might become liable in consequence of contesting such claim.

59. ABANDONMENT OF WORKS:

If at any time after the acceptance of the Tender, the OTPL shall for any reasons whatsoever not require the whole or any part of the works to be carried out, the Engineer / OTPL shall give notice in writing to the contractor who shall have no claim to any payment of compensation or otherwise whatsoever on account of any profit or advantage which he might have derived from the execution of the whole works but which did not derive in consequence of the foreclosure of the whole or part of the work.

60. RETURN OF SURPLUS MATERIALS:

Notwithstanding anything to the contrary contained in any or all the clauses of this contract, where any material for the execution of the contract is procured with the assistance of the OTPL by purchase made under orders or permits or licenses issued by the Government, the contractor shall hold the said materials economically and solely for the purpose of the contract and not dispose of them without the prior written permission of the OTPL, if required by the OTPL, at the price to be determined by the

Engineer having due regard to the condition of the materials, the price to be determined not to exceed the purchase price thereof inclusive of Sales Tax, Octroi Duty and other such levies paid by the contractor in respect thereof. In event of the breach of the aforesaid condition, the contractor shall, in addition to being liable to action for contravention of the terms of license or permit and /or criminal breach of trust, be liable to OTPL for all such moneys, advantage or profits resulting or which in the usual course would have resulted to him by reason of such breach.

61. RIGHT OF OTPL TO TERMINATE CONTRACT IN THE EVENT OF DEATH OF CONTRACTOR IF INDIVIDUAL.

Without prejudice to any of the rights or remedies under this contract, if the contractor, for such termination. Successor continue

63. Office accommodation for Site Engineer.

The contractor shall provide, erect, and maintain at his cost a separate simple watertight office accommodation for the Site Engineer. This accommodation shall be well lighted and ventilated and provided with windows, door with lock. The site engineer's / PMC office shall be minimum of 150 Sq.Ft. and the contractor shall provide a desk, chairs, drawers, for keeping drawing, a cupboard having proper lock and a tack board for displaying drawings. The

accommodation shall be demolished when directed. The contractor has to provide one peon for the said office who shall keep the office neat and Asst. The contractor shall also make arrangement for toilet facilities and drinking water. The office shall be provided with fan / air-cooler / air-condition as required.

64. Security arrangement at Site

Upon taking possession of the site, the contractor shall make arrangement of security by posting required number of security guards and flood light arrangement.

13.APPENDIX / TO CONDITIONS OF CONTRACT

Initial security deposit	The amount of ISD shall be 2% of final price.
Date of commencement	14 th day from the date of acceptance of work order OR date of site possession, whichever is later.
Time for completion of Work	As per time schedule given in tender document i.e. 7 months.
Retention money to be deducted from the bills.	8% of the certified gross value of each running bill, till accumulating total security deposit including ISD.
Total Security Deposit	10% of Contract Value of final Bill amount whichever is maximum.
Defect Liability Period	Twelve months from the virtual completion. However, if all the works or more than one works awarded to one contractor the defects liability period will be reckoned from the date of virtual completion of last work.
Period of Measurement Final	2 months.
Liquidated damages	Shall be 1% of contract amount per week of delay subject to ceiling of 10% of the accepted contract amount.
Value of works for Interim Certificates	Value not less than Rs.50.00 lacs (Rs. Fifty Lakhs only) or as decided by the OTPL.
Payment after virtual completion	50% of total security deposit will be returned after (i) issue of virtual completion certificate by the project Engineer. (ii) As-built drawings. (iii) Contractor's removal of his material, equipments, cleaning of site and against OTPL Guarantee. Balance 50% of retention money shall be released 14 days after satisfactory completion of defect liability
	period.
Period for honouring interim certificate.	75% of the bill amount shall be honoured within 14 working days after getting certificate from project Engineer and submitting to the OTPL. Balance 25% bill amount payable within 21 working days after checking by the OTPL.
Recovery towards taxes.	As per rules applicable from time to time.

14.SAFETY CODE

1. Scaffolds

- i. Suitable scaffolds shall be provided for workmen for all works that cannot safely be done from the ground, or from solid construction except in the case of short duration work which can be done safely from ladders. When a ladder is used, it shall be of rigid construction made either of good quality wood or steel. The steps shall have a minimum width of 450 mm and a maximum rise of 300 mm. Suitable hand holds of good quality wood or steel shall be provided and the ladder shall be given an inclination not steeper than $\frac{1}{4}$ to 1 ($\frac{1}{4}$ horizontal and 1 vertical).
- ii. Scaffolding or staging more than 4 m. above the ground floor, swung or suspended from an overhead support or erected with stationary support shall have a guard rail properly bolted, braced or otherwise secured, at least 1 m. above the floor or platform of such scaffolding or staging and extending along the entire length of the outside and ends thereof with only such openings as may be necessary for the delivery of materials. Such scaffolding or staging shall be so fastened as to prevent it from swaying from the building or structure.
- iii. Working platforms, gangways and stairways shall be so constructed that they do not sag unduly or unequally and if the height of the platform, gangway or stairway is more than 4 m. above ground level or floor level, they shall be closely boarded and shall have adequate width and be suitably fenced as described in (ii) above.
- iv. 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 1 m.

Wherever there are open excavations in ground, they shall be fenced off by suitable railing and danger signals installed at night so as to prevent persons slipping into the excavations.

- v. Safe means of access shall be provided to all working places. Every ladder shall be securely fixed. No portable single ladder shall be over 9 m. in length while the width between side rails in rung ladder shall in no case, be less than 290 mm. for ladder up to and including 3 m. in length. for longer ladders this width shall be increased at least 20 mm. for each additional meter of length.
- vi. A sketch of the ladders and scaffolds proposed to be used shall be prepared and approval of the Engineer obtained prior to construction.

2. Other Safety Measure

- vii. All personnel of the contractor working within the plant site shall be provided with safety helmets. All welders shall wear welding goggles while doing welding work and all metal workers shall be provided with safety gloves. Persons employed on metal cutting and grinding shall wear safety glasses.
- viii. Adequate precautions shall be taken to prevent danger from electrical equipment. No materials on any of the sites of work shall be so stacked or placed as to cause danger or inconvenience to any person or the public.

3. Excavation & Trenching

- ix. All trenches, 1.25 m. or more in depth shall at all times be supplied with at least one ladder for each 30 m. in length or fraction thereof. The ladder shall be extended from bottoms of the trench to at least 1 m. above the surface of the ground. Sides of trenches which are 1.5 m. or more in depth shall be stepped back to give suitable slopes or securely held by timber bracing so as to avoid the danger of sides of collapsing. The excavated materials shall not be placed within 1.5 m. 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.
- x. The contractor shall take all measure on the site of the work to protect the public from accidents and shall be bound to bear the expenses of defence of every suit, action or other proceedings at law that may be brought by any persons for injury sustained owing to neglect of the above precautions and to pay any such persons or which may with the consent of the contractor, be paid to compromise any claim by any such person.

4. Demolition

- xi. Before any demolition work is commenced and also during the process of the work:
 - a. All roads and open areas adjacent to the work site shall either be closed or suitably protected.
 - b. No electric cable or apparatus which is liable to be a source of danger over a cable or apparatus used by the operator shall remain electrically charged.
 - c. All practical steps shall be taken to prevent danger to persons employed from the risk of fire or explosion or flooding. No floor, roof or other part of the building shall be so overloaded with debris or materials as to render it unsafe.

5. Personal Safety Equipments

- xii. All necessary personal safety equipment as considered adequate by the Engineer should be kept available for the use of the person employed on the site and maintained in a condition suitable for immediate use, the contractor should take adequate steps to ensure proper use of equipment by those concerned.
 - a. Workers employed on mixing asphaltic materials, cement and lime mortars shall be provided with protective footwear and protective goggles.
 - b. Those engaged in white washing and mixing or stacking of cement bags or any material which is injurious to the eyes shall be provided with protective goggles.
 - c. Those engaged in welding works shall be provided with welder's protective eyesight lids.
 - d. Stone breaks shall be provided with protective goggles and protective clothing and seated at sufficiently safe intervals.
 - e. Penalty impose for nor wear helmet
 - f. When workers are employed in sewers and manholes, which are in use, the contractor shall ensure that the manhole covers are opened and are ventilated at least for an hour before the workers are allowed to get into manholes and the manholes so opened shall be cordoned off with suitable railing and provided with warning signals or boards to prevent accident to the public.

- g. The contractor shall not employ men below the age of 18 years and women on the work of painting with products containing lead or any toxic material in any form. Wherever men above the age 18 are employed on the work of such painting the following precautions should be taken:
- h. No paint containing lead or lead products shall be used except in the form paste or readymade paint. Paints like vinyl and epoxies having toxic fumes should be applied after following all precautions laid down by manufacturers.
- ii. Suitable face masks should be supplied for use by the workers in the form of spray or a surface having lead paint dry rubbed and scrapped.
- iii. 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.
- xiii. When the work done near any public place where there is risk of drawings 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 provision should be made for prompt first aid treatment of all injuries likely to be sustained during the course of the work.

6. Hoisting Machines

- xiv. Use of hoisting machines and tackle including their attachments anchorage and supports shall conform to the following standards or conditions:
These shall be of good mechanical constructions sound material and adequate strength and free from patent defect and shall be kept in good repair and in good working order.
Every rope used in hoisting or lowering materials or as means of suspension shall be of durable quality and adequate strength and free from patent defects.
- ii. Every crane driver or hoisting appliance operator shall be properly qualified and no person under the age of 21 years shall be in charge of any hoisting including any scaffolding winch or give signals to operator.
- iii. In case of every hoisting machine and of every chain ring hook, shackle shovel 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.
- iv. In case of departmental machines, the safe working load shall be notified by the Engineer. As regards contractor's machines, the contractor shall notify the safe working load of the machine to the Engineer whenever he brings any machinery to site of work and get verified by the Engineer concerned.
- xv. Motors, gearing, transmission, electrical wiring and other dangerous parts of hoisting appliances should be provided with efficient safeguards. Hoisting appliances should be provided with such means as will reduce to the minimum of 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, should be provided. The workers should not wear any rings, watches and carry keys or other materials which are good conductors of electricity

- xv. All scaffolds, ladders and other safety devices mentioned or described herein shall be maintained in safe condition and no scaffold, ladder or equipment shall be altered or removed while it is in use.
Adequate washing facilities should be provided at or near places of work.
- xvi. These safety provisions should be brought to the notice of all concerned by display on a notice board at a prominent place at work spot. The person responsible for compliance of the safety code shall be named therein by the contractor.
- xvii. 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 Labour Officer, Engineer of the Department or their representatives.
- xviii. Notwithstanding the above clause from (i) to (xviii), there is nothing in these to exempt the contractor from the operation of any other Act or Rule in force in India.

15.ADDITIONAL CONDITIONS

1. **Tenderer to inspect Site:** The tenderer shall visit and examine the construction site and satisfy himself as to the nature of the existing roads or other means of communications, the character of the soil and the excavation, the extent of magnitude of the work and facilities for obtaining material and shall obtain generally his own information on all matters affecting the execution of the work. No extra charges made in consequence of any misunderstanding or incorrect information on any of these points or on grounds of insufficient description will be allowed. All expenses incurred by the contractor in connection with obtaining information for submitting this tender including his visits to the site or efforts in compiling the tender shall be borne by the Tenderer and no claim for reimbursement thereof shall be entertained.
2. **Access to Site:** The tenderer is to include in his rates for forming access to the Site with all temporary roads gangways required for the works.
3. **Setting out:** The tenderer shall set out the building in accordance with the plans. All grid/centre lines shall be pegged out to satisfaction of the Engineers. The tenderer shall be responsible for the correctness of the lining out and any inaccuracies are to be rectified at his own expenses. He will be responsible for taking ground levels of the Site before setting out and recording them without any extra charge.

The tenderer shall construct and maintain proper benches at the intersection of all main walls, columns, etc., in order that the lines and levels may be accurately checked at all times.

4. **Treasure Trove:** Should any treasure, fossils, minerals, or works of art of antiquarial interest be found during excavation or while carrying out the works, the tenderer shall give immediate notice to the Engineers of any such discovery and shall make over such finds to the OTPL.
5. **Attendance upon all Trades :** The general tenderer shall be required to attend on all the Tradesman or Sub-contractor/ contractors appointed by the OTPL for Water-Supply & Sanitary, Electrical installation, Air-conditioning, Security Equipment, Hardware, Telephone and other special contractors. The rates quoted shall be inclusive of attendance and also allow the contractors and retain until such times the relevant Sub-contract works are completed.
6. **Gate-Keeper and Watchmen:** The tenderer from the times of being placed in possession of the Site must make arrangements for watching, lighting and protecting the work, all materials, workmen and the public by day and night on all days including Sundays and holidays at his own cost.
7. **Sheds for materials :** The contractor shall provide all necessary sheds of adequate dimensions for shortage and protection of materials like cement, lime, timber, and such other materials including tools and equipments which are likely to deteriorate by the action of sun, wind, rain or other natural causes due to exposure in the open. Cement godown shall be constructed for storing about six weeks' requirement of cement and stored as per norms with a stack of 10 bags each and 2 feet opening all around with 2 feet passage of each stack. Structure shall be waterproof from all the sides and top. Cement should be stored one foot above the ground level and have pucca raised floor.

Reinforcement bars are to be stored above the ground level to prevent the same from getting rusted.

All such sheds shall be cleared away and the whole area left in good order on completion of the contract to the satisfaction of the Engineers.

8. All materials which are stored on the site such as bricks, aggregate, etc. shall be stacked in such a manner as to facilitate rapid and easy checking of quantum of such materials. **Cost of transporting:** The tenderer shall allow in his cost for all transporting, unloading stacking and storing or supplies of goods and materials for this work on the site and in the places approved from time to time by the Engineers. The tenderer shall allow in his price for transport of all materials controlled or otherwise to the site.
9. **W.C and Sanitary accommodation and office Assessors and accommodation:** The tenderer shall provide at his own cost and expense adequate closet and sanitary accommodation complying in every respect to the rules and regulations in force of the local authorities and other public bodies, for his workmen of nominated sub-contractors and other contractors working in the building, the assistant engineer and other OTPL's agent connected with this building project and maintain the same in good working order.

The tenderer shall also provide at his own expense adequate office and shall maintain the same in a satisfactory condition and shall provide light, fan and attendant, etc... for the same and shall remove them after completion of works. He shall arrange to supply at his own expense, office furniture with drawing assessors for the official use of the assistance engineer and at all times maintain in good working order a dumpy level and a Theodolite at Site, to enable the Site Engineer to check the lines and levels of work.

10. **Materials, Workmanship & Samples:** Materials shall be of approved quality and the best of their kind available and shall generally conform to I.S. Specifications, The Contractor shall order all the materials required for the execution of work as early as necessary and ensure that such materials are on site well ahead of requirement for use in the work. The work involved calls for high standard of workmanship combined with speed and to the entire satisfaction of the Engineers.
11. **Rate to include:** The rates quoted shall be for all heights and depths and for finished work. The contractor shall ascertain from other contractors as directed by the Engineers all particulars relating to their work with regard to the order of its execution and the position in which cases, holes and similar items will be required, before the work is taken in hand as no claims for extras will be allowed for cutting away work already executed in consequence of any neglect by the contractors to ascertain these particulars beforehand. Before ordering materials, the contractors shall get the samples approved from the Engineers well in time.
12. **Testing of work and material:** The contractors will have to carry out testing of the material at regular interval to proof quality, soundness and efficiency of the material. Expenditure required for testing and transportations shall be borne by the tenderer. All the test should be as under:

LIST OF MANDATORY TESTS

MATERIALS	TEST	TEST PROCEDURE	MINIMUM QUANTITY	FREQUENCY
1	2	3	4	5
Lime	Chemical and Physical Properties of lime	IS-6932	15 Mt.	10 mt or part thereof
Sand	a) Silt Content	Field	40 Cu.M.	40 Cu.M. or part thereof
	b) Bulking	Field	40 Cu.M.	50 Cu.M. or part thereof
	c) Particle size distribution	Field	80 Cu.M.	Every Cu.M. required in R.C.C. Work
Stone Aggregate	Particle size distribution		250 Cu.M.	Every 250 Cu.M. or part thereof for R.C.C. work. For rest of work as desired.
Cement	- Setting time - Strength - Soundness	IS-269 and other applicable I.S.		Every batch of Consignment and as directed wherever there is a change of source.

Cement Concrete or R.C.C.	1. Slump			Once a day or as desired.
	2. Cube strength		20 Cu.M. in	Every 20 Cu.M. of a

			slab beams & connected columns 5 Cu.m.in column.	days concrete. Every 5 Cum. In column concrete.
Bricks	1. Water absorption & Efflorescence		Designation - 35	One test for each source of manufacture.
	2. Compressive strength		Designation - 35	1,00,000 or part thereof. Two test for 1st lot of 1,00,000 & One test later for every 2,00,000 & part thereof.
Timber	Moisture		1 Cu.M.	Every three Cu.M. & part thereof.
Aluminum doors or Windows fitting	Thickness of anodic coating	IS-5523	Rs.5000.00	Rs. 10000 or part thereof.
Mortice Locks	Testing of springs		50 os.	100 or part thereof.
Steel	a) Tensile Strength	IS-1529	20 ton	Every 20 Tonne or part thereof.
	b) Bend strength		-----do-----	-----do-----
Marble/Mosaic/Terrazo Tiles	1) Transverse Strength	IS-1237	10000 tiles	10000 tiles or part Thereof
	2) Water Absorption	-----do-----	-----do-----	-----do-----
	3) Abrasion test	-----do-----	-----do-----	-----do-----
White glazed Tiles	1) Water Absorption	IS_777	10000 tiles	10000 tiles or part Thereof
	2) Cracking		-----do-----	-----do-----
	3) Impact		-----do-----	-----do-----
Flush door	1) End Immersion		IS-2202	Destructive tests no.
	2) Knife			No. of shutters
	3) Adhesion		22-65	1
			66-100	2
			101-180	2
			181-300	3
			301-500	4
			501-above	5

- Cost of testing and transport will be borne by contractors.
- Any other materials will be tested by contractors at his own cost as per the instruction of Engineer and OTPL from time to time.
- Frequency stated above is minimum and the Contractor may have to test materials with any frequency or as instructed by OTPL/Engineers without any cost.
- If any material used is found defective it should be fully replaced at contractor's cost. Any cost suffered indirectly to OTPL and for running in operation should be compensated by the contractor.

- If after any such test the work or portion of works is found in the opinion of the Engineer to be defective or unsound, the contractor shall pull down and re-do the same at his own cost. Defective materials shall immediately be removed from the site.

13. **Mechanical Plant:** The contractor will be required to provide and maintain in working order the following power-driven equipments during the constructions work:-

- i. Concrete Mixers of more than 200 Liters capacity (7C.ft.).
- ii. Devices to lift up materials to the highest level of the building of the capacity in R.C.C. beams, columns and partition wall and surface type vibrators shall be maintained on the site ofwork.
- iii. Pumps for bailing outwater.
- iv. Any other machinery ordered by theEngineers.

14. **Foremen and Tradesmen:** All tradesmen shall be experienced men properly equipped with suitable tools for carrying out the work of carpentry and joinery and other specialist trades in a first class manner and where the Engineers deemed necessary, the contractor shall provide any such tools, special or ordinary which are considered necessary for carrying out the work in a propermanner.

All such tradesmen shall work under an experienced and properly trained foremen, who shall be capable of reading and understanding all drawings, pertaining to this work and the contractor shall also comply with other conditions set out in Clause 9 of the conditions of the contract.

18. **Work Programme / weekly progressreport:**

The contractor shall prepare and submit to Engineers for approval, a bar chart showing the programme of construction of various items, fitted within the period stipulated for completion, within 15 days of the communication of the acceptance of the tender. The contractor shall also furnish necessary particulars to the site engineer for compiling weekly progress reports in the form furnished by the Engineers.

18. **Photographs:** The contractor shall at his own expense supply to the Engineers with triplicate copies of large photographs not less than 25cm x 20cm (10"x8") of the works taken from two approved portions of each building, at intervals of not more than three months during the progress of the work, or at every important stage ofconstruction.

19. **Preparation of building for occupation and use oncompletion:**

The whole of the work shall be thoroughly inspected by the contractor and all deficiencies and defects put right. On completion of such inspection, the contractor shall inform the Engineers in writing that he has finished the work and it is ready for the Engineer's inspection.

On completion, the contractor shall clean all windows and doors and all glass panes, including cleaning of all floors, staircases and every part of the building including oiling of all hardware. He will leave the entire building neat and clean and ready for immediate occupation and to the satisfaction of the Engineers.

Contractor should submit the completion report to municipal authorities and organize the inspection for getting the completion/occupancy certificates.

20. **Clearing of Site:** The contractor shall after completion of the work clear the site of all the debris and left over materials at his own expense to the entire satisfaction of the Engineers and Municipal or other public authorities.

The whole of the work shall be thoroughly inspected by the contractor and all deficiencies and defects put right. On completion of such inspection, the contractor shall inform the Engineers in writing that he has finished the work and it is ready for the Engineers inspection.

21. **Contractor to provide etc:** The contractor shall provide a notice board on proper supports 2 m. x 1.5m (6' x 4'-6") in a position approved by the Engineers. He shall allow for painting and lettering stating name of work, name of Engineers, Structural consultants, general contractor

- (a) Obtaining approvals from local Authorities as required for occupation and use of the Works and handing over such certificates to the Engineer as follows:-

and Sub-contractor. All letters except that of the name of the work shall be in letters not exceeding 5 cm. in height and all to the approval of the Engineers.

22. **Vouchers:** The contractor shall furnish the Engineers with vouchers on request, to prove that the materials are as specified and to indicate the rates at which the materials are purchased in orders to work out the rate analysis of the non-tender items which he may be called upon to carry thereafter.

23. **Consultant's decisions are final & binding on both the parties:**

For all matters not specifically provided for herein the provisions of General and Special Tender Documents shall apply and the rights and liabilities of the parties shall be decided accordingly. The decision of the Consultant in this regard shall be final and binding, provided that decision is based on contract clauses executed.

24. **Settlement of dispute:**

Wherever, in any of the document forming part of the contract, the Consultant has been vested with final powers, his decisions, opinion, certificate or any other discretion shall be final, conclusive and binding on the parties and shall be without appeal. All other matters shall be subject to the right of arbitration.

25. **TYPE OF CONTRACT:**

The Contractor shall be paid for the actual quantity of Work done, as measured at Site, at the Item- rate quoted by him in the Contract Bills.

26. **Schedule of Quantities:**

The schedule of Quantities given in the Contract Bill is provisional and is meant to indicate the intent of the Work and to provide a uniform basis for tendering. The OTPL reserves the right to increase or decrease any of the quantities or to totally omit any item of Work and the Contractor shall not claim any extras or damages on these grounds.

27. Contract Sum (Consideration):

The rates quoted by the Contractor in the priced bill of quantities (Contract Bills) shall be treated as firm and the contract sum shall be deemed to have been calculated with reference to the cost of execution of Works as set out in price bid of Contract Documents and shall not be adjusted or altered for any reason.

28. Idle Labour/Machinery:

Whatever the reason may be, **no claim** for idle labour, additional establishment cost of hire and labour charges of tools & plants would be entertained under any circumstances, even if the work is delayed / abandoned for any reason.

29. Provisional Completion of works:

The Works shall be deemed to have been provisionally accepted after fulfillment of all the following by the Contractor:

of the OTPL under these conditions or any of them as to the final settlement and adjustment of the accounts or otherwise or in any other way vary or affect the contract. The final bill shall be submitted by the Contractor within one month of the date fixed for completion of the Work or of the date of certificate of completion furnished by the Engineer and payment shall be made within six (6) weeks from the date of receipt of final Certificate from the Consultant.

- (i) Sewer drainage approval upto drainage completion including required submission drawings, certificates and required follow up with Authorities/Authority – Concern Department of statutory authority.
- (ii) Storm water drainage approval upto storm water drain completion including required submission drawings, certificate and required follow up with Authorities/Authority – Concern Department of statutory authority.
- (iii) All required approval/permission for temporary structures, temporary water connection and temporary electrical connection for construction purpose from the authorities/authority – Concerned Government Authority.

(b) Submitting As-Built drawings (Contractor shall mark all the services on drawings issued by the Engineer), Catalogues, Brochures, Data Sheets, manuals as directed by the Engineer.

(c) Obtaining certificate of Completion from the Consultant and the local Authorities.

(d) Handing over of the Works to the OTPL as directed by the Consultant.

30. Non-compliance of instructions:

If within seven days after receipt of a written notice from the Consultant, requiring compliance with an instruction the Contractor does not comply therewith, then the OTPL may employ and pay other persons to execute any Work whatsoever which may be necessary to give effect to such instructions and all cost incurred with such employment shall be recoverable from the Contractor by the OTPL as a debt or may be deducted by him from any monies due or to become due to the Contractor under this Contract.

Upon receipt of what purports to be instruction issued to him by the Consultant the Contractor may request the Consultant to specify in writing the provision of these conditions which empowers the issue of the said instruction. The Consultant shall forthwith comply with any such request, and if the Contractor shall thereafter comply with the said instruction, then the issue of the same shall be deemed for all purposes of this Contract to have been empowered by the provision of these Conditions specified by the Consultant in answer to the Contractor's request.

31. Certification of Bills in absence of 'Claimant's Engineer:

If the Contractor fails to attend or neglects or omits to send his agent at the time of taking measurement or for examining the records or drawings then the measurements so taken by the Consultant, the records and drawings as prepared by the Engineer shall be taken to be correct, final and conclusive.

32. Interim payment as adhoc against final bill:

All the interim 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 shall not preclude the requiring of 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 any respect or the accruing of any claim, nor shall, it conclude, determine or affect in anyway the power

33. Cessation of OTPL's liability:

The OTPL shall not be liable to the Contractor for any matter or thing arising out of or in connection with the Contract or the execution of the Works, unless the Contractor shall have made **a claim in writing** before the giving of Certificate of Final Completion.

34. In respect of building cleaning:

On completion the Contractor shall clean all windows and doors including the cleaning and oiling if necessary, of all hardware, inside and outside, all floors, staircases, and every part of the building. He will leave the entire building neat and clean and ready for immediate occupation and to the satisfaction of the OTPL.

35. In respect of extension and claims of contractor:

The Contractor, in his application for grant of time shall clearly bring out the **financial effect** of extension of time requested by him. In case no financial effect is stated in the request for grant of extension of time, the same shall be taken as zero and it shall be presumed that the Contractor has mitigated whole of the losses due to the delays of all kinds.

36. In respect of contractor cannot claim extracost:

Provided that the Contractor shall **not be entitled to recover** any such extra cost unless he gives written notice to the Consultant of his intention to claim within twenty-eight days of the Consultant's order. The Consultant shall in consultation with the OTPL settle and determine such extra payment and/or extension of time to be made to the Contractor in respect of such claim as shall, in the opinion of the Consultant, be fair and reasonable, and provided the Contractor has taken all steps to mitigate the losses.

37. In respect of no compensation to contractor for increasing work progress:

If for any reason, we doesn't entitle the contractor to an extension of time, the rate of progress of the works or any section is at any time, in the opinion of the Consultant, too slow to ensure completion by the prescribed time or extended time for completion. The Consultant shall so notify the contractor in writing and the contractor shall there upon take such steps as are necessary and the Consultant may approve to expedite progress so as to complete the works or such sections by the prescribed time or extended time. The contractor shall **not be entitled to** any additional payment for taking such steps.

38. In respect of no additional cost for scheduling and programming:

The contractor shall mobilize or remobilize or adjust his resources according to the priorities set by the OTPL **at no extra cost** to the OTPL

1.	Name of Contractor	:	
2.	Name of the work as given in the Agreement	:	
3.	Agreement No.	:	
4.	Estimated tender amount	:	
5.	Date of Commencement of work as per Agreement	:	
6.	Period allowed for completion of work as per Agreement.	:	
7.	Date of Completion stipulated in Agreement.	:	
8.	Period for which extension of time has been give previously	:	
a)	1 st extension vide Engineer's /OTPL's letter	:	
	No.	Dated	Month Days
b)	2 nd extension vide Engineer's /OTPL's Letter	:	
	No.	Dated	Month Days
c)	3 rd extension vide Engineer's /OTPL's Letter	:	
	No.	Dated	Month Days
d)	4 th extension vide Engineer's /OTPL's Letter	:	
	No.	Dated	Month Days
	Total extension previously given	:	
9.	Reason's for which extensions have been previously given (Copies of the previous applications should be attached)	:	
10.	Period for which extension is applied for	:	

16.PROFORMA FOR APPLICATION FOR EXTENSION OF TIME PERIOD

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 (e) above		
g)	Net extension applied for		
h)	Remarks, if any		
12.	Extension of time required for extra work	:	
13.	Details of extra work and the amount Involved	:	
a)	Total value of extra work		
b)	Proportionate period of extension of time on estimated amount put to tender.		
14.	Total extension of time required for 11 & 12	:	

Submitted to the Engineer/OTPL

Date:

Signature of Contractor

17.PARTICULAR SPECIFICAIONS PART-I

Section I - Excavation Earth Work and Anti-termite Treatment

1. **General**: The work shall be carried out strictly in accordance with particular specifications and drawings. The drawings, specifications and BOQ shall be taken complementary and also supplementary to each other and shall form part this contract. Any work or material shown on drawings and not specifically included in BOQ/specification or vice versa shall be executed and deemed to be included in the scope of work for Item-rate.
Incase there are no specifications for items shown on the drawings or where items are not exhaustively described, the general specifications of CPWD shall be followed for which nothing extra shall be paid.

All loose boulders, semi-detached rocks, not directly in excavation but so close to the area to be excavated as to be liable, in the opinion of the Engineer, to fall or otherwise endanger the workmen, equipment or the work, etc., shall be stripped off and removed away from the areas of excavation. The method used shall be such as not to shatter or render unstable or unsafe the portion, which was originally sound and safe. Any materials not requiring removal as contemplated in the work, but which, in the opinion of the Engineer, is later to become loose or unstable shall also be promptly and satisfactorily removed as directed by the Engineer.

The rough excavation may be carried upto a maximum depth of 150 mm above the final level. The balance shall be excavated with special care. If directed by the Engineer, soft and undesirable spots shall be removed even below the final level and filled up with 1:4:8 ordinary concrete or as directed by the Engineer. In formation of rock requiring blasting, those overcuts which are unavoidable will be made up by ordinary cement concrete 1:2:4

2. **Scope of works**The scope of work for Plant&buildings under this contract includes for full & final and entire completion of all works including all internal services in all respects described in particular specification
3. Although all the details of construction have been by a large covered in these documents, any item or details of construction not specifically covered but obviously implied and essential to consider. Civil works and all internal services complete and functional shall be deemed to have been covered in the Item- Rate. The cost of external development works pertaining to a particular contract shall also be carried out on a final price based on the rates quoted for each item. The tenderer may however, consider a minimum level of specifications conforming to IS code or National Building Code to over these missing details.
4. **Excavation in Ordinary & Hard Soil and Soft & Decomposed Rock**
The excavation in ordinary soil, hard soil, soft and decomposed rock will be carried out as per the approved drawing. In certain cases, where deterioration of the ground, upheaval, slips, etc. are expected, the Engineer may order to suspend the work at any stage and instruct the Contractor to carry out the balance work just before the foundation work of the structure can be started.

5. **Slopes** : Adequate slope shall be provided in areas where there is likelihood of ingress of water such as toilets, balconies, verandah, kitchens, terraces, top of chajjas, window sills, plinth protections etc. though these may not be expressly shown in drawings.
6. **Protection**
The Engineer shall be notified by the Contractor as soon as the excavation is expected to be completed within a day so that it may be inspected by him at the earliest. Immediately after approval of the Engineer, the bottom surface of the excavation must be covered up with blinding concrete in the shortest possible time. Excavated material shall be placed beyond 1.5 metres from the edge of the pit or trench or the depth of the pit or trench whichever is more. Excavation shall not be carried out below the foundation level of structure close by until required precautions have been taken. Adequate fencing is to be made enclosing the excavation. The Contractor shall protect all under-ground services exposed by excavation. The Contractor shall also divert all surface drains, etc. affected by the excavation to maintain the working area neat and clean.
7. **Dealing with Surface water & Dewatering:**
All working areas shall be kept free of surface water as far as reasonably practicable. Works in the vicinity of cut areas shall be controlled to prevent the ingress of surface water.
No works shall commence until surface water streams have been properly intercepted, redirected or otherwise dealt with. Where works are undertaken in the monsoon period, the Contractor may need to construct temporary drainage systems at his own cost to drain surface water from working areas

All excavations shall be kept free of water and slush. Grading in the vicinity of excavations shall be controlled to prevent surface water running into excavated areas. The Contractor shall remove by pumping or other means approved by the Engineer any water inclusive of rain water and subsoil water accumulated in excavation and keep the trench dewatered until the construction of foundation structure and backfilling are complete in all respects. Sumps made for de-watering must be kept clear of the foundations. Method of pumping shall be approved by the Engineer but in any case, the pumping arrangement shall be such that there shall be no movement of subsoil or blowing in due to differential head of water during pumping.
8. **Site Clearance:** Before the start of work, the area of the plot shall be cleared of all shrubs, vegetation, grass, bush wood, shrubs etc. All the building shall be laid out to ensure that the layout plan fits at site. After completion of the work, the entire area of the plot shall be cleared from all debris, unwanted materials and level/slope of ground as required at site upto peripheral roads. The debris and unwanted material shall be disposed off away from the land without extra cost.
9. **Site Levels:** After site clearance and before commencement of excavation or filling, the contractor shall take levels at 3.0 Mtr. intervals in either directions or at lesser intervals as considered necessary at site for the entire plot. A record of these levels shall be signed jointly by tenderer and Site Engineer/Engineer. These records shall be kept by the Site Engineer.

On handing over the site contractor should take levels at 50 cm intervals of height. A clear bench mark of levels as reference should be established. It should be in such a way that it should be intact till the completion of the work.
10. **Setting out of works:** The tenderer shall set out the works and shall provide and fix all

setting out apparatus required and solely be responsible for the true and perfect setting out the same and for the correctness of the position, levels, dimensions and alignment of all buildings as per the drawings. The tenderer shall take in writing the approval of the Engineer/Site Engineer for setting out and levels before starting the works. These approvals shall be recorded in the stage passing register and signed by the Engineer and contractor and countersigned by the Site Engineer.

11. **Surface Excavation**: The surface area to be occupied by the building shall be cleared of all debris, shrubs and plants, grass and thereafter excavated, if required to an average depth in 150mm including 3.0mtr.all round the building including ramps if any. All roots and organic material shall be cleared from the filling area inside thebuilding.

12. **Excavation inTrenches**

- (a) Earth work in excavation in any type of soil as existing at site for foundations of columns and walls shall be carried out as indicated on drawings.
- (b) The finished floor level of stilt area and ground floor units of each block/other buildings shall be fixed at site by the Engineer and Site Engineer The work shall be executed at site as per levels shown on drawings/approved by the Engineer/Site Engineer.
- (c) Immediately after the execution of the foundation work and before covering the same the record of the following levels as actually executed at site separately for each unit block/other buildings shall be recorded in the measurement books and jointly signed & dated by the Engineer, contractor/ SiteEngineer.

Existing groundlevel

Level of bottom of lean concrete, under footings of columns andwalls.

Finished floor level of stilt area and ground floor units.

- (d) If trenches or foundations are excavated beyond the specified dimensions due to bad workmanship of contractor, the extra excavation shall be filled with lean concrete 1:5:10 (1 cement: 5 coarse sand: 10 graded stone aggregate of 40 mm nominal size) without any extra cost toOTPL.

13. **Excavation over Areas**:Excavation over areas shall be carried out to the required depths and profiles. Suitable arrangements shall be made by the contractor. The sides of the trench shall be kept vertical upto a depth of 2 mtr. from the bottom. For a greater depth, the excavation profiles shall be widened by allowing steps of 50 cm on either side after every 2 mtr. from the bottom. Alternately the excavation can be done so as to give slopes of 1:4. Where the soil is soft, loose or slushy, the width of steps shall be suitably increased or side sloped or the soil shored up as directed by Engineer/OTPL. It shall be the responsibility of the contractor to take complete instructions in writing from Engineer/OTPL regarding the stepping, sloping or shoring to be done for excavation deeper than 2mtr.

14. **Slips**: The contractor shall take all necessary precautions to prevent slips in excavation and shall at his own expense make good any damage or defect and remove top soil dumps and any surplus material caused byslips.

15. **PlinthFilling**

- Earth obtained from excavation (or approved earth brought from outside for which no extra payment shall be made) shall be filled in layers not more than 20cm. in depth at a time, spread, leveled, watered and well consolidated around foundations, under floors and other locations. The earth used for filling shall be free from all grass, roots debris etc. In case extra earth filling is required for under floors, verandah and court yards/open to sky area within the perimeter of the unit block/ other building the contractor will do so at their own cost. The quoted rate shall be deemed to include the earth filling required under floors for the locations indicated hereinbefore.

- Testing of filling layers: After the compaction of each layer, samples shall be taken from the compacted layer and tested for dry density as per IS practice. The next layer of filling shall not be permitted to be deposited until the Engineer/Site Engineer is satisfied that the previous layer has achieved required compaction. The contractor shall inform the Engineer/Site Engineer in writing for inspection after filling and compaction of each layer. If any particular layer fails to meet the required compaction, it shall be re-compacted as directed by the Engineer/Project Engineer and fresh samples shall be taken to ascertain the compaction density. Such re-compaction shall be continued till the desired compaction is achieved.
16. **Sand Filling:** Sand shall be free from dust and organic and foreign matters and corresponding to approved grading meeting the approval of the Engineer/Site Engineer. Fine sand filling under floors of stilt and ground floor units and other buildings shall be provided with specified thickness as shown on drawing. This shall be dry River fine sand watered and consolidated including dressing and leveling.
17. **Disposal of Surplus Soil/Material:** Surplus soil/earth if any shall be disposed off within the site of OTPL site as directed by the Engineer/Project Engineer. The same shall be spread out evenly. All excavated material not so used shall only be disposed off in areas approved by the Engineer/site Engineer.

The excavated soils will be disposed of in any or all the following manners:

- a) By using it for backfilling straightway.
- b) By stacking it temporarily for use in backfilling at a later date during execution of the Contract.
- c) i) By either spreading, or ii) Spreading and compacting at designated filling areas.
- d) By selecting the useful material and stacking it neatly in areas designated by the Engineer for use in backfilling by some other agency.

18. Testing & Acceptance Criteria:

Excavation:

On completion of excavation, the dimensions of the pits will be checked as per the drawings after the pits are completely dewatered the work will be accepted after all undercuts have been set right and all over excavations filled back to required lines, levels and grades by placing ordinary concrete of 1:4:8 proportion and/or richer and/or by compacted earth at the Contractor's cost. Over excavation of the sides will be made good free of cost by the Contractor while carrying out the backfilling. The excavation work will be accepted after the above requirements are fulfilled and all temporary approaches encroaching inside the required dimension of the excavation have been removed.

Backfilling:

The degree of compaction shall be sufficient to achieve a dry density of not less than 90% of proctor's dry density at optimum moisture content as per IS-2720 (Part - vii) or a relative density of 75% as per IS-2720 (Part-xiv) as applicable depending on the nature of backfilling material. The work of backfilling will be accepted after the Engineer is satisfied with the degree of compaction achieved.

19. AntitermiteTreatment

- (a) This shall be provided to bottom of trenches sides, including treating the back fill, under floors and other locations as specified in IS-6313 Part II for pre construction soil treatment with any of the following:-

<u>Chemical</u>	Concentration byweight/Percent
(i) Chlorpyriphos emulsifiable concentrates to IS 8944-1978	1.00
(ii) Heptachlor emulsifiable concentrates conforming to IS 6436 – 1978	0.50
(iii) Chlordane emulsifiable concentrates conforming to IS 2682 – 1966	1.00

- (b) The work of anti termite treatment shall be got executed by a specialist firm which must be member of IPCA and approved by the Engineer/Site Engineer and shall be carried out as per IS 6313 Part II of 1981 for pre construction soil treatment. The firm shall render a ten year guarantee to the OTPL through the contractor who will be the principal guarantor. The period of ten year shall be reckoned from the date of completion of thecontract.
- (c) Such guarantee shall be given by directly given by the specialist agency to the OTPL in all form approved by the OTPL. In the event of reinfestation at any time during guarantee period, the specialist agency shall undertake to the OTPL to carry out such treatment as may be necessary to render the structure free form termite infestation including breaking and reinstalling any other work that may necessary for the treatment at no extracost.

FORMAT OF GUARANTEE TO BE
EXECUTED BY THE FIRM / CONTRACTOR
IN RESPECT OF THE WORK OF PRE
CONSTRUCTION ANTI-TERMITE
TREATMENT

This agreement made this _____ day of Two thousand five hundred between OTPL of India, a body corporate constituted under the (Name of the Act) Act, 19, having its Regional Office at Ottathingal India Pvt Ltd (OTPL) ,61/3731, Ravipuram Road, Valanjambalam, Ernakulam, 682016, Kerala , (hereinafter called "the OTPL") of the one part and (name of firm / contractor (hereinafter called "the Guarantor" of the other part.

WHEREAS THIS AGREEMENT is supplementary to a contract (hereinafter called the contract dated and made between the OTPL of the one part and the Guarantor of the other part) where by the firm / contractor inter alia undertook to render the building / structure completely free from any infestation of termite. And whereas the guarantors agreed to give guarantee to the effect that the said building / structure shall remain free from any infestation of termites for a minimum period of ten years from the date of completion of pre-construction anti-termite treatment carried out as per the relevant I.S.Code.

Now the guarantor hereby agrees to make good all defects and render the building / structure free from any infestation of termites, during this period of guarantee and to the satisfaction of the OTPL. The guarantor also agrees to take up such rectification work at his own cost, and within one week from the date of issue of notice from the OTPL, calling upon him to rectify the defects. The decision of the OTPL as to the cost payable by the guarantor will be final and binding, in case the guarantor fails to commence the work as per above notice and the work is got done through some other contractor. That if the guarantor fails to execute the pre-construction anti-termite or commits breach thereunder then the guarantor will indemnify the principal and his successors against all loss, damage caused, expense or otherwise which may be incurred by him by any reason of any default on the part of the guarantor in performance and observance of this agreement. As to the amount of loss and/or damage and/or cost incurred by the OTPL the decision of the OTPL will be final and binding.

In witness where of these presents have been executed by the obligator
_____ and _____ by
_____ and for on behalf of the OTPL on the day, month and year first above written.

Signed, and delivered by OTPL of India by the hands of Shri _____ in the presence of _____

Signed and delivered by the hand of _____ (contractor) _____
_____. in the presence

SECTION II -CONCRETE (PLAIN ANDREINFORCED)

Contractor shall carry out the concrete in PCC & RCC work, the approximate quantity calculated is in BOQ. Bidders shall quote the unit cost for material and Labour in the BOQ separately. After the negotiation with party, OTPL will award the contract either Labour part or both Material and Labour.

1. **General:** This section covers the requirements for furnishing of cement concrete including materials proportioning batching, mixing, testing, placing, compacting, finishing, jointing, curing and all other work as required for cast-in-place/plane cement concrete and furnish all labour, supervision, services including facilities as may be required under statutory labour regulations, materials, forms, templates, supports, scaffolds, approaches, aids, construction equipment, tools and plants, transportations, etc. required for the work.
2. **Confirmity With Design:**
The Contractor will prepare check lists in approved proforma, which will be called 'Pour Cards'. These Pour Cards will list out all items of work involved. The Contractor will inform the Engineer, sufficiently in advance, whenever any particular pour is ready for concreting. He shall accord all necessary help and assistance to the Engineer for all checking required in the pour. On satisfying himself that all details are in accordance to the drawings and specifications, the Engineer will give written permission on the same 'Pour Card' allowing the Contractor to commence placement of concrete. Details of all instructions issued by the Engineer and the records of compliance by the Contractor, deviations allowed by the Engineer and any other relevant information will be written on accompanying sheets attached to the Pour Cards. These sheets, termed as 'Progress Cards', will be prepared by the Contractor on approved proforma. The Pour Cards along with accompaniments will be handed over to the Engineer before starting placement of concrete. One of the mix designs developed by the Contractor as per the IS Specifications and established to the satisfaction of the Engineer by trial mixes shall be permitted to be used by the Engineer, the choice being dictated by the requirements of designs and workability. The methods of mixing, conveyance, placement, vibration, finishing, curing, protection and testing of concrete will be as approved or directed by the Engineer.
3. **Submittals**
 - a) **Materials Reports:** Prior to start of delivery of materials required for cement concrete the following shall be submitted by the contractor to the Engineer/Site Engineer for approval.
 - (i) Recommended suppliers and/or sources of all ingredients for making concrete including cement fine and coarse aggregates, Water and additives.
 - (ii) Quality Inspection Plan to ensure continuing quality control of ingredients by periodic sampling, testing and reporting to the Engineer/Site Engineer on the quality of materials being supplied.
 - b) **Plant & Equipment**
 - (i) The contractor shall submit the following to the Engineer/Site Engineer well in advance.
 - (ii) The proposed Programme, methods and details of plant and equipment to be used for batching and mixing of concrete.

- c) **Reports for Inspection and Testing:** During concreting operations, the contractor shall conduct inspection and testing as described above and all reports thereon shall be submitted in summary form to the Engineer/Site Engineer.
- d) **Schedules:** The contractor shall prepare working schedule for dates and rate of placing of concrete for each item of work and submit the same to the Engineer / Site Engineer when requested. Pour card for each concreting should be retained a site office duly signed.
4. **Materials:** Before bringing to the site, all materials for cement concrete shall be approved by the Engineer/Site Engineer all approved samples shall be deposited in the office of the Engineer/Site Engineer. The Engineer/Site Engineer shall have the option to have any of the materials tested to find whether they are in accordance with specifications at the contractor's expenses.

a. **Cement:** Generally, the following type of cement shall be used with prior approval of the Engineer it shall be blended and shall be stored in a dry waterproof godown

- a) 43 Grade ordinary Portland Cement conforming to IS: 8112
 b) 53 Grade ordinary Portland Cement conforming to IS: 12269.

b. **Fine Aggregate:** For all concrete work, it shall be coarse sand/coarse stone dust

IS Sieve Designation	Percentage Passing for Grading Zone I	Percentage Passing for Grading Zone II
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conforming to the grading given below :- (Zone I or II only applicable to concrete). Silt content not to exceed 8% by weight. The grading of fine aggregate shall be within the limits given in the following table and shall be described as fine aggregate grading Zone I and II the two types shall be combined to meet the requirements of a particular zone of IS:383:-

10mm	100	100
4.75mm	90-100	90-100
2.36mm	60-95	75-100
1.18mm	30-70	55-90
600micron	15-34	35-59
300micron	5-20	8-30
150micron	0-10	0-10

b. Coarse aggregate: Aggregate of sizes ranging between 4.75 mm and 150 mm will be termed as Coarse Aggregate. Only Coarse Aggregate from approved quarries and conforming to IS: 383 will be allowed to be used on the works. Aggregates shall be washed to make it free from deleterious materials, if necessary. The grading of coarse aggregates by sieve analysis shall be as per IS:383. If by the analysis the deficiency of a particular grain size is found, which could affect the density of the concrete, the Engineer may ask the contractor to avoid such quantities of aggregate of the particular size or and such quantity of aggregate of any particular size to achieve the required grading as per IS:383. for concrete it shall be crushed stone graded coarse aggregate. Grading shall be within the limits as given in the following table:-

Coarse aggregate of all grades shall be from the crushers of approved source)

IS Sieve Des	ignation 40mm	Percentage Passing for graded aggregate of Nominal size			
		20mm	16mm	12.5mm	
80mm	100	-	-	-	
63mm	-	100	-	-	
40mm	95-100		100	-	-
20mm	30-70	95-100		100	100
12.5mm	-	-	-		90-100
10mm	10-35	25-55	30-70		40-85
4.75mm	0-5	0-10	0-10		0-10
2.36mm	-	-	-		-

- a. **Broken Brick aggregate:** - Broken brick aggregate shall be prepared from well burnt bricks. These shall be free from under burnt particles and adherent coating of soil or silt.

Note: If directed by Engineer/Site Engineer, the aggregate (fine as well as coarse) shall be washed at contractor's expense.

Water

Water for use in Concrete shall be clear and free from injurious oils, acids, alkalis, organic matter, salt, silts or other impurities. Normally potable water is found to be suitable. Generally, IS: 3550 will be followed for routine tests. Acceptance test for water shall be as per IS: 3025, and Table - I of IS: 456. In case of doubt regarding development of strength, the suitability of water for making concrete shall be ascertained by compressive strength and initial setting time tests as per method of tests in accordance with the requirements of IS:516 & IS: 4031 respectively. The PH value of water shall generally be not less than 6

- b. **Admixture & Additives:** Chemically admixtures are not to be used until permitted by the Engineer/Site Engineer in case their use is permitted, the type amount and method of use of any admixture proposed by the contractor shall be submitted to the Engineer/Site Engineer.

Only admixture of approved quality will be used when directed or permitted by the Engineer. The different types of admixtures which may be necessary to satisfy the concrete mix and the design requirement shall be as per the following I.S. Standards:

IS: 2645 - Integral cement water proofing compound

IS: 9103 - Indian standard specification for Admixtures for Concrete

- a) Accelerating admixtures:
Set accelerating admixtures like "Sigunit Powder"/"Sigunit LN10" or approved equivalent.
- b) Retarding admixtures
Modified ligno sulphonate based set retarding concrete admixture like, "Plastiment R" or approved equivalent.

- c) Water reducing admixtures :
Modified sulphonated melamine formaldehyde based water reducing concrete admixture like, "Sikament" or approved equivalent.
- d) Air entraining admixtures :
Modified lingo-sulphonate based air entraining concrete admixture like "FLOMO AEP" or surface - active agents like "Sika AER" or approved equivalent.
- e) Water proofing admixtures:
Modified lingo-sulphonate based waterproofing admixture like "Plastocrete Super" or approved equivalent. However, the Contractor shall furnish following technical information about the admixtures (along with the manufacturer's Catalogue) which he is planning to use in different areas within the scope of work for the approval of the Engineer:
- f) Type of admixture

Mix proportion & mode of application in concrete/mortar

Manufacturer's specification and necessary quality assurance certificates (mainly on chloride & sulphate content, PH value, infra red analysis & solid content).

5. Grades of concrete:

Concrete shall be in any of the grades designated in IS: 456. Grade of concrete to be used in different parts of work shall be as shown on the drawing or as per the Engineer's instructions. In case of liquid retaining structures, IS: 3370 will be followed.

6. Strength Requirement:

The strength requirements of both design mix and nominal mix concrete where ordinary Portland cement or Portland slag cement is used shall be as per Table-2 of IS: 456. All other relevant clauses of IS: 456 shall also apply.

7. Minimum Cement Content:

The minimum cement content for each grade of concrete shall be as follows:

T A B L E - I	
MINIMUM CEMENT CONTENT SPECIFIED FOR DIFFERENT GRADES OF	
Grade of Concrete	Minimum Cement Content/Cu M of finished Concrete
M - 15	310 Kg
M - 20	360 Kg
M - 25	410 Kg
M - 30	450 Kg
M - 35	490 Kg
M - 40	540 Kg

The minimum cement contents mentioned above are for average conditions and for 20 mm size aggregate. For 40 mm size aggregate the cement content may be reduced. In case the cement content can be reduced due to continuous and consistent favourable conditions, on account of better quality of cement control or by the addition of suitable plasticizer/super plasticizers, then the Engineer may instruct lower cement content, and the Contractor shall abide by the stipulations laid down hereunder:

- a) The Contractor shall design the mixes for 10% (Ten per cent) higher strength over and above those specified in Table-I, for the various grades of concrete and

different slump requirements.

b) Sufficient number of trial mixes (to be decided by the Engineer) will be taken at the laboratory for the various designs and graphs of w/c ratio Vs crushing strengths at various ages will be plotted.

c) All tests will be done in presence of the Engineer who shall be the final authority to decide upon the adoption of any revised minimum cement content. The Contractor will always be responsible to produce quality concrete of the required grade as per the acceptance criteria of IS: 456.

d) The Engineer will always have the unquestionable right to revise the minimum cement content as decided above, if, in his opinion, there is any chance of deterioration of quality on account of use of lower cement content or any other reason.

In case there is a downward revision of the minimum cement content from that specified in the contract, the particular unit rate of concrete will be reduced by an amount equal to the cost of cement saved, calculated at the issue rate. The relevant cost of wastage and handling on the cement saved, which is inherent in the total cost of structure, will not be deducted from the unit rate and will thus pass on to the Contractor

8. Placing&Compacting Concrete:

Where specifically covered, the relevant I.S. Code will be followed for the procedure of surface preparation, placement, consolidation, curing, finishes, repairs and maintenance of concrete. If, however, there is no specific provision in the relevant I.S. Code for any particular aspect of work, any other standard Code of practice, as may be specified by the Engineer, will be adopted. Concrete may have to be placed against the following types of surfaces:

- a) Earth foundation
- b) Rock foundation
- c) Formwork
- d) Construction joint in concrete or masonry

The surface on or against which concrete is to be placed has to be cleaned thoroughly. Rock or old construction joint has to be roughened by wire brushing, chipping, sand blasting or any other approved means for proper bond. All cuttings, dirt, oil, foreign and deleterious material, laitance, etc. are to be removed by air water jetting or water at high pressure. All excavated areas for foundations, ring beams, plinths, pile caps etc. shall be rammed & consolidated properly before blinding with nominal mix plain concrete, as per drawing and / or direction of the Engineer and shall be allowed to cure prior to setting out steel fixing, shuttering and concrete pouring for the main structural element.

Formwork, reinforcement, preparation of surface, embedments, joint seals etc., shall be approved in writing by the Engineer before concrete is placed. As far as possible, concrete shall be placed in the formwork by means approved by the Engineer and shall not be dropped from a height or handled in a manner which may cause segregation. Any drop over 1500 mm shall have to be approved by the Engineer.

Rock foundation or construction joint will be kept moist for at least 72 hours prior to placement. Concrete will be placed always against moist surface but never on pools of water. In case the foundation cannot be dewatered completely, special procedure and precaution, as directed by the Engineer will have to be adopted Formwork will be cleaned thoroughly and smeared lightly with form oil or grease of approved quality just prior to placement.

A layer of mortar of thickness 12 mm of the same or less w/c ratio and the same proportion as that of the concrete being placed and cement slurry will be spread thoroughly on the rock foundation or construction joint just prior to placement of concrete. The cost of application of such cement slurry and mortar will be deemed to be included in the unit rate of concrete. After concrete has been placed, it shall be spread, if necessary and thoroughly compacted by approved mechanical vibration to maximum subsidence without segregation and thoroughly worked around shape. Vibrators shall not be used for pushing concrete into adjoining areas. Vibrators must be operated by experienced workmen and the work carried out as per relevant IS Code of Practice. In thin members with heavy congestion of reinforcement or other embedments, where effective use of internal vibrator is, in the opinion of the Engineer, doubtful, in addition to immersion vibrators the contractor may have to employ form vibrators conforming to IS: 4656. For slabs and other similar structures, the contractor will additionally employ screed vibrator as per IS: 2506. Hand tamping may be allowed in rare cases, subject to the approval of the Engineer. Care must be taken to ensure that the inserts, fixtures, reinforcement and formwork are not displaced or distorted during placing and consolidation of concrete.

The rate of placement of concrete shall be such that no cold joint is formed and fresh concrete is placed always against green concrete which is still plastic and workable. No concrete shall be placed in open, during rains. During rainy season, no placement in the open is to be attempted unless sufficient tarpaulins or other similar protective arrangement for completely covering the still green concrete from rain is kept at the site of placement. If there has been any sign of washing of cement and sand, the entire affected concrete shall be removed immediately. Suitable precautions shall be taken in advance to guard against rains before leaving the fresh concrete unattended. No accumulation of water shall be permitted on or around freshly laid concrete.

The size of the concrete pours must be carefully considered prior to commencement to ensure the structural elements are poured in on continuous shift to avoid cold joints. Slabs, beams and similar members shall be poured in one operation, unless otherwise instructed by the Engineer. Moulding, throating, drip course, etc., shall be poured as shown on the drawings or as directed by the Engineer. Holes shall be provided and bolts, sleeves, anchors, fastenings or other fixtures shall be embedded in concrete as shown on the drawings or as directed by the Engineer. Any deviation therefrom shall be set right by the Contractor at his own expense as instructed by the Engineer.

In case the forms or supports get displaced during or immediately after the placement and bring the concrete surface out of alignment beyond tolerance limits, the Engineer may direct to remove the portion and reconstruct or repair the same at the Contractor's expense.

The Engineer shall decide upon the time interval between two placements of concrete of different ages coming in contact with each other, taking in consideration the degree of maturity of the older concrete, shrinkage, heat dissipation and the ability of the older concrete to withstand the load imposed upon it by the fresh placement. Once the concrete is deposited, consolidated and finished in its final position, it shall not be distributed.

9. **Mixing:** All cement concrete (plain or reinforced) shall be mixed in mechanical mixers.
10. **Consolidation:** Concrete for all reinforced concrete works in column footings, columns, beams, slabs and the like shall be deposited and well consolidated by vibrating, using portable mechanical vibrators. The rest of the concrete such as chajjas and shelving etc. shall be deposited and well consolidated by pouring and tamping. Care shall be taken to ensure that concrete is not over vibrated so as to cause segregation.

Form Work

11. **General:** The steel/ply wood form work shall be designed and constructed to the shapes, lines and dimensions shown on the drawings. All forms shall be sufficiently watertight to prevent leakage of mortar. Forms shall be so constructed as to be removable in sections. One side of the column forms shall be left open and the open side filled in board by board successively as the concrete is placed and compacted except when vibrators are used. Maximum height of column for which concrete can be placed at a time shall not be more than 1.5mtr.
12. Props may be hard wood/steel. Timber used in centering and props should be suitable & strong. Premoulded cement cubes or plastic blocks will be placed between formwork and reinforcement to achieve uniform cover of concrete.
13. **Cleaning and Treatment of Forms:-** All rubbish, particularly chippings, shavings and saw dust, shall be removed from the interior of the forms (steel/ply) before the concrete is placed. The form work in contact with the concrete shall be cleaned and thoroughly wetted or treated with an approved composition to prevent adhesion between form work and concrete. Care shall be taken that such approved composition is kept out of contact with the reinforcement.
14. **Verticality of frame structure:** All the outer columns of the frame will be checked for plumb by plumb-bob as well as by the Theodolite as the work proceeds to upper floors. Internal columns will be checked by taking measurements from outer row of columns for their exact position.
15. **Stripping time:** Forms shall not be struck until the concrete has attained a strength at least twice the stress to which the concrete may be subjected at the time of removal of form work. The strength referred to shall be that of concrete using the same cement and aggregates with the same proportions and cured under conditions of temperature and moisture similar to those existing on the work. Where so required form work shall be left longer in normal circumstances and where ordinary portland cement is used, forms may generally be removed after the expiry of the following periods:-
 - (a) Walls, Columns and Vertical faces of all structural members 2days
 - (b) Removal of props under slabs:
 - (i) Spanning upto 4.5mtr. 7days
 - (ii) Spanning over 4.5mtr. 14days
 - (c) Removal of props under beams:-
 - (i) Spanning upto 6.0mtr. 14days
 - (ii) Spanning over 6.0mtr. 21days
 - (d) In case of cold weather these periods may be increased at the discretion of the Engineer/Site Engineer. For other cements (like pozzolana etc.) Stripping time recommended for ordinary Portland cement may be suitably modified. The number of props left under, their size and disposition shall be such as to be able to safely carry full dead load of the slab, beam or arch, as the case may be together with any live load likely to occur during placing of concrete, curing or further construction.
16. **Removal of Form Work:** - Form work shall be removed in such a manner as would not cause any shock or vibration that would damage the concrete. Before removal of soffits and props, concrete surface shall be exposed to ascertain that the concrete has sufficiently hardened.

17. Where the shape of element is such that form work has re-entrant angles, the form work shall be removed as soon as possible after the concrete has set, to avoid shrinkage cracking occurring due to the restraint imposed.
18. **Finish to concretework:**
- a. All concrete while being poured against form work shall be worked with vibrators rods & trowels as required so that good quality concrete is obtained.
 - b. All exposed surface of RCC lintels, beams, columns etc. shall be plastered to match with adjoining plastered face of walls after suitably hacking the concrete surface.
 - c. All soffits of RCC slabs, loft slab, cup board slab, shelves and working platform in kitchen etc. and other exposed surfaces of RCC work not continuous to brick work shall be plastered (6mm thick) with cement mortar 1:3 (1 cement:3 fine sand) to give an even and smooth surface.
 - d. The top of loft slabs and shelves shall be smooth finished while the concrete is green with a floating coat of neat cement to give a smooth and even surface. The exposed front face shall be finished in cement plaster 1:3 (1 cement:3 coarse sand) to bring it in line and level and finished in neat cement. Such thin slabs shall be carefully cast so that they can be finished within 12mm of their specified thickness. Additional thickness of plaster which makes these elements look unnecessarily heavy will not be allowed.
 - e. Chicken wire mesh 24 gauge and 20mm mesh will be provided all along RCC surface adjoining brick work giving 150mm lapping on either side using nails etc for fixing mesh while plastering.
 - f. The rate shall be deemed to include for small and incidental labour such as chamfer splays, rounded or curved angles, grooves, rebate and drip moulds/courses.
19. **Sampling and testing of concrete:** Samples from fresh concrete shall be taken as per IS-1199- 1959 (method of sampling of concrete) and cubes shall be made, cured and tested at 28 days in accordance with IS 516- 1959 (method of test for strength of concrete). For testing cement concrete the contractor shall arrange for all the tools/moulds for making necessary cubes and shall bear all the charges for making the cubes, curing and testing through an approved laboratory. Further the contractor shall make available laboratory equipment. A temporary room of adequate size having these facilities, shall also be constructed by the contractor at his expense. After completion of work the contractor shall remove the equipment, dismantle the room and clear the site:-
20. Compressive strength test at 7 days may be carried out in addition to 28 days compressive strength test for a quicker idea of the quality of concrete. In all cases the 28 days, compressive strength alone shall be the criteria for acceptance or rejection of the concrete.
21. **Test Specimen:** Three test specimens shall be made from each sample for testing at 28 days. Additional cubes may be required for such purposes as to determine the strength of concrete at 7 days or to check the testing error.

22. Test strength of samples: The test strength of the sample shall be the average of the strength of three specimens. The individual variation shall not be more than + - 15 percent of the average.

- (a) Cement concrete in floors (self finished) and concrete as under layer for terrazzo floor cast in situ shall be PCC 1:2:4 (1 cement:2 coarse aggregate:4 graded stone aggregate 12.5 nominal size).
- (b) Cement concrete for RCC work in raft, wall, columns footings, columns, beams/ Roof/ floor slabs, landing, fins, lintels, chajjas, shelves, staircases, balconies, Loft slabs and in any other situation shall be of mix cement concrete 1:2:4 (1 cement: 2 coarse sand: 4 stone agg. 20mm nominal size).
- (c) Cement concrete in PCC filling for pressed steel frames, hold fast blocks and rain water pipes etc. shall be 1:3:6 (1 of cement:3 of coarse sand:6 stone aggregate 20mm nominal size).
- (d) The mix 1:2:4 shall conform to M 15(nominal) and mix (1:1.5:3) shall conform to M 20 (nominal) as per IS 456-1978 for the purpose of testing and acceptance based on 28 days strength.
- (e) Lean cement concrete below raft columns/walls footings and in sub flooring of stilt floor shall be of mix 1:5:10 (1 cement: 5 coarse sand: 10 stone aggregate 40mm nominal size).

23. Construction Joints: Construction joints shall be made only where shown in the drawings. Vertical constructed joints shall be formed against a stop board and horizontal construction joints shall be level.

24. Contraction Joints: Contraction joints required will be as shown on the drawings. Contraction joints shall not be hacked, wetted or mortared before concrete is placed against them.

25. Expansion Joints: Expansion joints shall be provided where shown on the drawings. They shall be constructed with an initial gap between the adjoining parts of the works of the width specified in the drawings. The contractor shall ensure that no debris is allowed to enter expansion joints. Expansion joints shall be provided with joints filler, a joint sealing compound and in water proof concrete a waterbed.

26. Open Joint Fillers: Where shown on the drawings, open joints in the structure shall be filled with one of the following of expansion joint fillers:

- (a) In internal areas a material conforming to IS: 1838 containing bitumen emulsion fibers of cork granules bound together with natural resin.
- (b) In external areas a material comprising closed cell rubber or containing cork granules bound together with natural resin.

The Joints filler shall be easily and uniformly compressible to its original thickness, tamable, easily cut of sawn, robust, durable, resistant to decay due to termite or weathering, unaffected by water and free of any constituent work) will be into or stain the concrete. The joints filler shall be of same thickness of the joint width, it shall extend through the full thickness of the concrete unless otherwise specified and shall be sufficiently rigid during handling and placing to permit the formation straight joints.

27. **Joint Sealing Compounds:** Joints sealing compounds shall seal joints in concrete against the passage of water prevent the ingress of grit or other foreign material and protect the joint filler. The compound shall have good extensibility and adhesion to concrete surfaces and shall be resistant to flow and weathering.

Poly sulfide joints where specified on the drawings shall be sealed with poly sulfide liquid polymer, stored, mixed, handled applied and cured strictly in accordance with the manufacturer's written instructions. Such joints shall be formed to the correct dimensions, thoroughly cleaned and treated with recommended primer strictly in accordance with the manufacturer's written instructions prior to sealing. The contractor shall use only competent personnel experienced in the application of poly sulfide for such work.

28. **P.V.C. Water Bars/Water stop:** -Where water bars are shown on the drawings, the joints shall incorporate an approved PVC external type, water bar complete with all necessary moulded or prefabricated intersection pieces assembled in accordance with the drawings with bends and butt joints in running lengths made by heat welding in an electrically heated jig. Joining and fixing of water bars shall be carried out strictly in accordance with manufacturer's written instruction.

29. **Inserts:** The contractor shall fix all necessary inserts such as steel plates, pipe sleeves, bolts etc. and make holes, pockets, dowels etc., in the form work to enable efficient fixing of supports in the form work to enable efficient fixing of supports, brackets, ceilings, precast members etc. as indicated on the drawings, called for in the schedule of quantities or as required by the Engineer/Site Engineer. In-situ concrete inserts shall be as per IS: 1946 and of a type approved by the Engineer/ Site Engineer.

30. **Bearing Plaster:** This shall consist of cement plaster 1:3 (1 cement:3 fine sand) 20mm thick finished with a coat of neat cement laid on top of walls as bearing for RCC lintels, beams and slabs, when dry, a thick coat of lime wash shall be given before starting, shuttering. The shuttering shall be started after minimum one day of bearing plaster so that it is set.

31. **Concrete filling for sunken and lowered portions of slab:** This shall be cement concrete 1:5:10 (1 cement:5 coarse sand:10 brick ballast 40mm nominal size) in the entire sunken portions irrespective of what is shown on the drawings over this sub base, flooring as per specifications shall be provided.

32. **Damp Proof Course:**

- a) This shall consist of 40mm thick PCC 1:2:4 (1 cement: 2 coarse sand:4 graded stone aggregate :12.5mm nominal size) with water proof compound conforming to IS-2645) as per manufacturer's specifications)
- b) DPC as specified above shall be provided 40mm thick at level with finish floor to the full width of walls (Ground floor only)
- c) No DPC shall be provided over dwarf walls but floors shall be carried over to the width over the dwarf wall finished 10mm projecting over from the wall.
- d) The dried up surface of DPC shall be cleared with brushes and finally with a piece of cloth soaked in kerosene oil and then applied with hot bitumen using 1.7 kg per sqm. of DPC area.

e) Vertical Damp proof course shall be provided at ground floor on common walls between floors at different levels and shall consist of 20mm thick plaster of mix 1:4 (1 cement:4 coarse sand) with water proofing compound at the rate as unused in as in (d) above before filling earth /sand is carried out.

33. Plinth Protection:

PCC 1:3:6 (1 cement:3 coarse sand:6 graded stone aggregate 20mm nominal size) 50mm thick of width as shown on drawing shall be provided and laid in alternate bays in slope over 75mm hard core of rammed dry brick aggregates of 40mm nominal size over well rammed and consolidated earth base with brick edging all around the buildings except in portions covered by steps, ramps and platforms. A joint of 10mm shall be left through depth of concrete all along with junction between wall and plinth protection at all turnings and across at every 2.5m. These joints shall be filled with a mixture of blown grade Bitumen 85/25 and sand. The surfaces shall be finished smooth without using extracement. Bricked edgings shall be laid on header with cement mortar 1:4 (1 cement : 4 Coarse sand) as per detail as shown on drawing.

16. **CURING:** Exposed surfaces of all cement works viz. cement concrete, brick work, flooring, plastering, pointing and the like shall be cured by keeping the surface adequately and continuously wet as directed by Engineer and Site Engineer for at least seven days where ordinary portland cement (OPC) has been used and minimum 10 days where pozzolana portland cement (PPC) has been used. Approved curing compound may be used in lieu of moist curing with the permission of Engineer and Site Engineer. Such compound shall be applied to all exposed surface of cement works as soon as possible after the initial setting of cement. This shall be without extra cost. The work to be done under this section comprises of supply of all labour, plant, materials and other performance of all work necessary for excavation with necessary close timbering, strutting, shoring & bailing/pumping out water including disposing of all surplus excavated material from the side as directed by Engineer/ Site Engineer.

34. Curing & Protection:

Newly placed concrete shall be protected by approved means from rain, sun and wind. Concrete placed below the ground level shall be protected against contamination from falling earth during and after placing. Concrete placed in ground containing deleterious substances, shall be protected from contact with such ground, or with water draining from such ground, during placing of concrete and for a period of at least three days or as otherwise instructed by the Engineer. The ground water around newly poured concrete shall be kept to an approved level by pumping out or other adequate means of drainage to prevent floatation or flooding. Steps, as approved by Engineer, shall be taken to protect immature concrete from damage by debris, excessive loadings, vibration, abrasion, mixing with earth or other deleterious materials, etc. that may impair the strength and durability of the concrete.

As soon as the concrete has hardened sufficiently, it shall be covered either with sand, polythene sheet, hessian, canvas or similar materials & kept continuously wet for at least 14 days after final setting. Curing by continuous sprinkling of water will be allowed if the Engineer is satisfied with the adequacy of the arrangements made by the Contractor.

If permitted by the Engineer, curing compound like "ANTISOLE (WP)" or approved equivalent may be used for prevention of premature water loss in concrete and thereby effecting curing of concrete. This type of curing compound shall be sprayed on newly laid concrete surfaces to form thin film barrier against premature water loss without disturbances to normal setting action. The curing compound shall comply with ASTM requirements for acceptance.

The curing compound shall be applied following the final finishing operation and immediately after disappearance of water sheen from concrete surface. It is important not to apply the curing compound when standing water is still present on concrete. The contractor shall arrange for the manufacturer's supervision at no extra cost to the owner. The Contractor shall remain extremely vigilant and employ proper equipment and workmen under able supervision for curing. The Engineer's decision regarding the adequacy of curing is final. In case any lapse on the part of the Contractor is noticed by the Engineer, he will inform the Contractor or his supervisor verbally or in writing to correct the deficiency in curing. If no satisfactory action is taken by the Contractor within 3 hours of issuance of such instruction, the Engineer will be at liberty either to employ sufficient means through any agency to make good the deficiency and recover the cost thereof from the Contractor, or pay for the part where adequate curing was noticed at a reduced rate, entirely at the discretion of the Engineer.

Cold Weather Concreting

When conditions are such that any operation of concreting may be expected to be done at 5 Deg C atmospheric temperature or below the work shall conform to the requirement of Clause 13 of IS: 456 and IS: 7861(Part. II).

Hot Weather Concreting

When depositing concrete in very hot weather, the Contractor shall take all precautions as per IS:7861 (Part-I) and stagger the work to the cooler parts of the day to ensure that temperature of wet concrete used in massive structures does not exceed 40 Deg C while placing. Positive temperature control by precooling, postcooling or any other method, if required, will be specified and paid for separately.

Concreting under water

When it is necessary to deposit concrete under water it shall be done in accordance with the requirements of clause 13 of IS: 456.

FORM WORK:

Formwork shall conform to the shape, grade, lines, levels and dimension as shown on the drawings. The contractor shall prepare design & working drawings for formwork & temporary support system for important structures and get them approved by the Engineer prior to commencement of actual work.

Materials used for the formwork inclusive of the supports and centering shall be capable of withstanding the working load and remain undistorted throughout the period it is left in service. All supports and scaffolds should be manufactured from structural or tubular steel except when specifically permitted otherwise by the Engineer.

The centering shall be true to vertical, rigid and thoroughly braced both horizontally and diagonally. Reckers are to be used where forms are to support inclined members. The forms shall be sufficiently strong to carry without undue deformation, the dead weight of the concrete as a liquid as well as the working load, in case the Contractor wishes to adopt any other design criteria, he has to convince the Engineer about its acceptability before adopting it. Where the concrete is vibrated, the formwork shall be strong enough to withstand the effects of vibration without appreciable deflection, bulging, distortion or loosening of its components. The joints in the formwork shall be sufficiently tight to prevent any leakage of slurry or mortar.

To achieve the desired rigidity, tie bolts, spacer blocks, tie wires and clamps as approved by the Engineer shall be used but they must in no way impair the strength of concrete or cause stains or marks on the finished surface. Where there are chances of these fixtures being embedded, only mild steel or concrete of adequate strength shall be used. Alternatively, except in case of water retaining structures through rods and the tie bolts shall be sleeved with PVC conduits to allow retraction of the ties on removal of the shutters. Where required, the annulus of the conduits will be

filled with expanding mortar to seal the void. Bolts passing completely through liquid retaining walls/slabs for the purpose of securing and aligning the formwork shall not be used.

The formwork shall be such as to ensure a smooth uniform surface free from honeycombs, air bubbles, bulges, fins and other blemishes. Any blemish or defect found on the surface of the concrete must be brought to the notice of the Engineer immediately and rectified free of charge as directed by him.

For exposed interior and exterior concrete surfaces of beams, columns and wall, plywood or other approved form shall be thoroughly cleaned and tied together with approved corrosion-resistant devices. Rigid care shall be exercised in ensuring that all column forms are plumb and true and thoroughly cross braced to keep them so.

All floor and beam centering shall be crowned not less than 8 mm in all directions for every 5 metres span. Unless specifically described on the drawings or elsewhere to the contrary, beveled forms 25 mm by 25 mm shall be fixed in the form-work at all corners to provide chamfering of the finished concrete edges without any extra charge. The formwork should lap and be secured sufficiently at the lift joints to prevent bulges and offsets.

Temporary openings for cleaning, inspection and for pouring concrete shall be provided at the base of vertical forms and at other places, where they are necessary and as may be directed by the Engineer. The temporary openings shall be so formed that they can be conveniently closed when required, during pouring operations without leaving any mark on the concrete.

Cleaning and Treatment of Forms

All parts of the forms shall be thoroughly cleaned of old concrete, wood shavings, saw dust, dirt and dust sticking to them before they are fixed in position. All rubbish, loose concrete, chippings, shavings, saw dust etc. shall be scrupulously removed from the interior of the forms before concrete is poured. Compressed air jet and/or water jet along with wire brushes, brooms etc. shall be used for cleaning. The inside surface of the formwork shall be treated with approved nonstaining oil based shutter release agent like "Separol/Sika form oil/ Siparol Concentrate" or approved equivalent before it is placed in position. Care shall be taken that oil or other compound does not come in contact with reinforcing steel or construction joint surfaces. They shall not be allowed to accumulate at the bottom of the formwork. The oiling of the formwork will be inspected just prior to placement of concrete and redone wherever necessary.

Inspection of Forms

Casting of Concrete shall start only after the formwork has been inspected and approved by the Engineer. The concreting shall start as early as possible within 3 days after the approval of the formwork and during this period the formwork shall be kept under constant vigilance against any interference. In case of delay beyond three days, a fresh approval from the Engineer shall be obtained.

Removal of Forms

Before removing any formwork, the Contractor must notify the Engineer well in advance to enable him to inspect the concrete if he so desires.

The Contractor shall record on the drawing or in any other approved manner, the date on which concrete is placed in each part of the work and the date on which the formwork is removed there from and have this record checked and countersigned by the Engineer regularly. The Contractor shall be responsible for the safe removal of the formwork and any work showing signs of damage through premature removal of formwork or loading shall be rejected and entirely reconstructed by him without any extra cost to the Owner. The Engineer may, however, instruct to postpone the removal of formwork if he considers it necessary.

Forms for various types of structural components shall not be removed before the minimum periods specified herein and the removal after the minimum periods shall also be subject to the approval of the Engineer in each case.

TABLE – II SCHEDULE OF REMOVAL OF FORM

Part of Structure	Ordinary Portland Cement Concrete				Rapid Hardening Portland Cement Concrete			
	Temperature Deg. C				Temperature Deg. C			
	> 40	40-20	20-5	<5	>40	40-20	20-5	<5
	Days	Days	Days	Days	Days	Days	Days	Days
a) columns & Walls	2	1	1	Do not remove forms unit site cured test specimen develop at least 50% of the specified 28 days strength	1	1	1	Do not remove forms until site cured test specimen develop at least 50% of the specified 28 days strength
b) Beam sides	3	2	3		2	1	1	
c) Slabs, 125 mm	10	7	8		7	4	5	
d) Slabs over 125 mm thick and soffit of minor beams	18	14	16		12	8	9	
e) Soffit of main beams	24	21	22		14	10	12	

Wherever exposed surfaces of concrete can be effectively sealed to prevent loss of water, the periods specified for temperature above 40O C can be reduced to those of the temperature range of 20O to 40O C subject to approval of Engineer.

Construction joints in beams, if required to be provided, will be located within the middle third of span according to clause 3.13.1(b) of this specification. In such cases, however, entire span of beam shall have to be kept supported by formwork till its removal for the portion of beam, cast at a later date, is due and so approved by the Engineer.

If any type of cement other than ordinary Portland cement and Rapid hardening Portland cement is used the time of removal or forms shall be revised as approved by the Engineer such that the strength of this cement at the time of removal of forms match with strength of Portland cement at the time of removal of form as mentioned above. This has to be supported by regular tests

TOLERANCE

The formwork shall be so made as to produce a finished concrete, true to shape, lines, levels, plumb and dimensions as shown on the drawings subject to the following tolerances unless otherwise specified in this Specification or drawings or directed by the Engineer:

For a)	Sectional	-	(+_) 5 mm
b)	Plumb	-	1 in 1000 of height
c)	Levels	-	(+_) 3 mm before any deflection has taken place

The tolerance given above are specified for local aberrations in the finished concrete surface and should not be taken as tolerances for the entire structure taken as a whole or for the setting and alignment of formwork, which should be as accurate as possible to the entire satisfaction of the Engineer. Any error, within the above tolerance limits or any other as may be specially set up by the Engineer, if noticed in any lift of the structure after stripping of forms, shall be corrected in the subsequent work to bring back the surface of the structure to its true alignment.

SECTION III – CEMENT GROUTING

General:

The part shall carry out the Cement Grout as per the consultant/Project Engineer requirement. Injection under pressure of cement or grout to fill voids or fractures in the soil, rock unit or concrete structure. It aims the cement is injected under pressure to fill fractures and voids in concrete structures. This type of grout will be used, in general, in prefabricated concrete structures, compressors, and other heavy equipment subject to vibration and for column bearing plates of heavy structures. The grout will be a proprietary non-compressible cemented high strength grout, e.g., **FOSROC's** Conbextra GP2 ' , Sikka and MC-Beauchemie Emckrete or likewise approved by the Site Engineer. The minimum compressive strength of grout will be 50 N / mm² in 7 days and 60 N / mm² in 28 days. Only a machinery mixed and pressured injection of grouting to be allowed.

Thickness of Grout

The thickness of the grout layer that is used in the constructions depends on the gap between base plate and footing and commonly is not less than 25mm. Also, ACI 351.1R-99 recommends the minimum mentioned thickness for hydraulic cement grouts in similar values.

The minimum grout thickness depends significantly on the practicality of pouring concrete under the base plate. Therefore, the minimum thickness must be sufficient to place the grout in a realistic manner. In engineering practice, and also, ACI 351.1R-99 recommends the minimum preferred grout thickness is 25 mm. When the flow length is larger than 300 mm, the thickness should be increased by 13 mm for each additional 300 mm to a maximum of 100 mm.

Washing Grout Holes:

When authorized by the engineer and prior to grout injection, grout holes shall be washed with water and air to remove mud, drill cuttings, and other materials that will interfere with the grout take of the hole. Grout holes to be washed and the sequence of washing shall be approved by the engineer. Washing under pressure using packers or pressure testing shall be performed when specified. Washing time for each hole shall be approved by the engineer.

If mud is moved into a hole by grouting nearby holes after the hole has been washed, the mud will be removed by rewashing the hole.

The air and water pressure will be adjusted to provide the maximum cleaning condition for the holes as determined by the engineer. Water and air shall be introduced simultaneously under pressure and at the same elevation in the hole.

Cleanup

After grouting is completed, the contractor shall remove the grouting plant and all related parts, equipment, and supplies from the site. The cleanup includes unused materials and waste.

SECTION IV - BRICK WORK

MATERIAL

1. **Sand for Masonry Mortars:** - Unless otherwise indicated, sand for masonry mortars shall consist of natural sand (generally termed as coarse sand) crushed stone sand or crushed sand or a combination of any of these conforming to IS 2116-1965 specifications for sand for masonry mortars. Sand shall be hard, durable, clean and free from adherent coatings and impurities such as iron particles, alkalies, salts, coal, mica, shale or similar laminated or other materials exceeding the specified limit. Grading of sand shall be as under:-

ISSieve	<u>Percentage passingbyweight</u>	
	<u>Unreinforcedmasonry</u>	<u>Reinforcedmasonry</u>
4.75 mm	100	100
2.36 mm	90-100	90-100
1.18 mm	70-100	70-100
600 micron	40-100	40-100
300 micron	5-70	5-70
150 micron	0-75	0-10

2. The maximum quantities of clay, fine silt and fine dust in sand shall not be more than 4 percent by weight, Organic impurities shall be below that obtained by comparison the standard solution on specified in 6-2-2 of IS-2386 (Part II 1983).The coarse/fine sand shall be from riverGaggar.

3. **Common Burnt clay building brick:**- Common burnt clay building bricks (herein-after termed as bricks shall conform to the requirements laid down in IS-1077-1976 for common burnt clay building bricks. Bricks shall be class designation 75, sub Class 'A' as per parameters given in the IS regarding edges, dimensions etc. The overall dimensions shall however be as per local practice of moulds. Water absorption after immersion in cold water for 24 hours shall not exceed 20% and grading for efflorescence shall be less than moderate. Bricks shall be free from cracks, flaws and nodules of free lime. Dimension shall be all within tolerance. Under/over burnt bricks and warped bricks shall be totally rejected.
4. Test check on random samples from each lot of bricks brought at site shall be carried out for compressive strength and water absorption test. Results of these tests duly signed and dated by Contractor; Engineer and Site Engineer shall be recorded in a separate register, which shall be kept with the Site Engineer.

WORKMANSHIP - MASONRY MORTARS

5. **Preparation of Cement Mortars:**-Mortar shall be of mix as indicated. The mixing specified is by volume. Mixing shall be done in a mechanical mixer. The mortar shall be mixed for atleast three minutes after adding of water. Cement mortar shall be freshly mixed for immediate use. Any mortar which has commenced to set shall be discarded and removed from the site.
6. **Bond:**-All brick works shall be built in English bond., unless otherwise indicated. Half brick walls shall be built in stretcher bond. Header bond shall be used for walls curve on plan for better alignment, header bond shall also be used in foundation, and stretchers may be used when the thickness of wall renders use of header impracticable. Where the thickness of footings is uniform or a number of courses, the top course of the footings shall be of headers. Brick courses at DPC level and at all slab levels below the bearings of slab shall be as bricks on edges.
7. Half or cut brick shall not be used except where it is necessary to complete the bond.
8. Overlap in stretcher bond is usually half brick and is obtained by commencing each alternate course with a half brick. The Overlap in header bond which is equally half the width of the brick is obtained by introducing a three quarter brick in each alternate course at quoins. In general, the cross joints in any course of brick work shall not be nearer than a quarter of brick length from those in the course below or above it.
9. **Curing:**The bricks shall be adequately wet before use and brickwork shall be constantly kept wet for atleast seven days.
10. **Half Brick Walls:** - The bricks shall be laid in stretcher bond in cement and sand mortar 1:4 (1 cement : 4 coarse sand) or as indicated. The reinforcement shall be 2 Nos. MS round bars or as indicated and as described in section VII steel and Ironwork. The diameter of bars shall be 6mm. The first layer of reinforcement shall be used at second course and then at every fourth course of brick work. The bars shall be properly anchored (min. 150mm) at their ends where the portions and or where these walls join with other walls columns. The inland steel reinforcement shall be completely embedded in mortar. Overlap in reinforcement if any, shall not be less than 30cm. The cover i.e. the mortar interposed between the reinforcement bars and brick shall not be less than 6mm. The mortar covering in the direction of joints shall be not less than 15mm.
11. **Brick work in foundation upto plinth:** Brickwork in foundation shall be with brick of class designation 75 upto plinth level in cement mortar 1:6(1 cement: 6 coarse sand).

12. **Brick work in Super structure:** Brickwork in superstructure including parapets etc. shall be bricks of class designation 75 in cement mortar 1:6 (1 cement: 6 coarsesand).
13. **Brick work in steps of staircase:** Brick work in steps of staircase shall be in bricks of class designation 75 and in cement mortar 1:6 (1 cement :6coarsesand).
14. **Parapets and Railings:** Parapets and railing shall be provided to balconies, Terraces, roof tops and stair landing etc. of upper floors as per details shown on drawings.
15. **70mm Thick Brick Work:**70mm thick brick work shall be provided with bricks of class designation 75 in cement mortar 1:3 (1 Cement: 3 coarse sand) wherever shown in the drawings

SECTION V - PRESSED/COLD ROLLED FORMED STEEL FRAMES FOR DOOR, WINDOWS AND VENTILATORS

Pressed/Cold Rolled Formed steel frames for doors including combined door cum window frame sand Ventilators.

1. Frames shall be conforming to IS-4351 and shall be manufactured from mild steel sheet of 1.25mm thickness conforming to IS 513-1973 (second revision). The overall size and types of doorframes (four/double/single rebated) shall be made in the following profiles as shown on drawings:
 - a) 50x100 - Singlerebated
 - b) 50x120 - Doublerebated
 - c) 125x 60 - Mullion fourrebated
2. Each doorframe shall consist of hinge jamb, lock jamb and head mullions where shown on drawings. The whole shall be welded. Two base tie of MS angle 25x25x3 mm shall be welded to the feet of frame in order to form a rigid unit. The tie shall not be removed after fixing the frame in position. This shall get embedded in the floor concrete. There shall be three MS holdfasts 30cm long out of MS Flat 40x3 mm with one end split into fish tail for each jamb. One end of the hold fast shall be bent and welded to frame and the other end (split fish end) shall be embedded in wall in cement concrete block 1:3:6 mix of size 230x230x150 .MS flat 35mm x 6mm shall be welded on inner face of the frame at the position of the lock plate. Three number 125mm long heavy duty hinges shall be provided for each shutter leaf. These shall be welded to the pressed steel frame. For fixing the hinges a slit shall be cut at the corner edge of the rebate and the hinge shall be welded to the back side of the jamb of the frame as per sample. Necessary provision/slots shall be made for fixing locks, tower bolts, sliding bolts etc. The work shall conform to the sample available for inspection. Suitable sizes of flat 6mm in thickness and mortar guards are to be welded at the rear of frame where slots, holes etc. are to be provided.

3. Vertical members of door frames shall be 40mm more than the specified height and shall be embedded in floor at all floor levels. All members of the frame shall be sand papered to remove all scale and rust. A coat of red oxide zinc chromate primer shall be applied as primer coat all round as per manufacture's specifications. Thereafter, the frame shall be filled with cement concrete 1:3:6(1 cement:3 coarse sand:6 stone aggregate 12mm down gauge). The concrete shall be compacted very carefully to ensure that no area is left loose, and cured for at least 5 days. The cement concrete shall not have a slump more than 1cm.
4. In case of doors cum window the size of profile of the complete frame shall be as para-1 above other details for door portion shall be as per para-2&3 above and for window portion other detail shall be as per para-7below.
5. Each window frame shall consist of jambs (sides), heads (tops) sills (bottom) and mullions (central members etc.) The whole shall be welded as described in para 2 and 3above
6. There shall be two MS hold fasts 20cm long out of MS flat 40mmx3mm with one end split into fish tail to each jamb upto1650mm length and three holdfasts for jamb above 1650mm in length. One end of the hold fast shall be bent and welded to the frame and other embedded in wall in cement concrete block 1:3:6 of size 230 x230x 150mm. Before erection, the frame shall be sand papered and provided a coat of primer and filled with concrete (1:3:6) as in the case of door frames. 100mm long MS flats 35mm x 6mm shall be welded on inner face of the frame at the position of the hinges. Two number 75mm long heavy duty Butt hinges shall be provided to each leaf of window shutter at a distance of 150mm from top and bottom welded to the pressed steel frame. Necessary provision/slots shall be made for fixing tower bolts,etc.
7. Frames shall be fixed in position true to line and levels. Necessary opening shall be left in the walls to receive frames. During construction of masonry lay dry bricks in mud mortar in position that they can be removed subsequently for providing cast in situ concrete blocks for holdfasts.
8. Whenever frames are required to be fixed adjacent to RCC columns the frame shall be fixed with MS size of straps and Anchor (dash) fastener in lieu of holdfasts. The strap shall be concealed in plaster after covering with chicken wire mesh 150mmwide.
9. Overall dimensions of the doors/windows and ventilator frames shown in the drawing shall be maintained.
10. Door/Window/ventilators frames shall be from one of the following manufacturers listed on page:-
11. If Excise duty is applicable then Excise duty gate passes shall be submitted by the contractor for each consignment of Door/Window frames dispatched by the factories and brought at site for incorporation in thework.
12. The contractor shall submit the fabrication (shop) drawings from the manufacturers for the approval of Site Engineer/ Engineer before starting the fabrication. On getting approval of the shop drawing the contractor shall produce the sample piece of each profile with required fittings for final approval of Site Engineer and Engineer before mass production by the manufacturer.
13. **GLAZING FOR WINDOW & DOOR FAN LIGHT**All window and Door fan light where fixed glass is to be provided to the pressed steel frames, M.S. beading 12x12mm (made out of 1.25mm thick. M.S. sheet) shall be provided with the pressed steel frames. The beading shall be fixed to the frames with machine screws (steel). Thickness and quality of glass shall be as specified.

SECTION – VI - JOINERY

1. **General:** The type of shutters for doors, windows, ventilators etc. viz. paneled glazed wire gauzed and flush shall be as indicated and detailed in the drawing.
2. **Flush Door shutters:** Door shutters shall be 35 mm thick flush door shutters/solid core type non decorative factory made confirming to IS- 2202 and ISI marked with block board core (confirming to the requirements as per IS-1659 1969) with internal hard wood clippings and both faces commercial ply veneered. Adhesive used shall be phenyl form aldehyde synthetic resin conforming to BWP types specified in IS-848-1974.
3. Contractor shall obtain the approval for the name of the manufacturer of the flush door shutters from the Site Engineer/Engineer before placing the supply order. While asking for the approval, copy of the "Bureau of Indian Standard" letter under which manufacturer has been authorised to mark the product with ISI marking should be attached. Site Engineer and Engineer before giving the approval shall ensure that the validity date of license has not expired.
4. **Testing of Flush Door Shutters:** On receipt of the shutters at site the Site Engineer or the Engineer shall be entitled to get the samples of door shutters tested in any approved laboratory. From each lot of approximately 100 shutters, one shutter shall be selected at random by the Site Engineer/Engineer. The cost of replacement of the door shutters selected as samples, their transportation to the laboratory and cost of testing by the laboratory shall be borne by the contractor.
5. **Glazed & Gauzed Door Shutters:** Shutters shall be 35mm thick. These shall consist of first class i.e. champ, haldu, hillock, jamun, mango wood styles, top, bottom and lock rails as per details shown on drawings. Timber to be used for these shutters shall be of good quality, seasoned of material growth and conforming to IS-4021-1963. Seasoning and ASCU treatment shall be done as per IS-402-1962. Styles and rails of shutters shall be in one piece only. Styles and rails shall be jointed to each other by tenon or mortice at right angles. Mountings and glazing bars shall have joints and shall be shrub tanned to the maximum depth, which the size of member would permit.
6. **Wire gauge shutters:** Provisioning and fixing of wire 35mm thick gauge shutters to all external doors including main entrance door and all openable windows is in the scope of work of this contract. Wire cloth shall be securely housed in rebates by giving a right angled bend and fixing by means of suitable staples at intervals of 75mm. Over this wooden bead of specified size shall be fixed with nails, or screws, where indicated to cover the rebate fully. The space between the beading and the rebate shall be filled with putty to give it a neat finish. Exposed edges of the beads shall be rounded.
7. Door and windows shutters shall be provided as per details shown on the drawings.
8. The bottom of door shutters shall be 5mm above the finished floor level.
9. The glass panes shall be free from flaws, specks or bubbles and shall have square corners and straight edges. The glass panes shall be so cut that it fits slightly loose in the frames. The glass pane shall be fixed to the shutter with first class hardwood beading of size as indicated properly screwed to the shutter with steel nails and necessary adhesive as per details as shown on drawings.
10. Glazing to windows/doors shutters shall be as follows of quality as approved by Project Engineer & Engineer.
 - (a) Fan light of Door shutters : 4 mm thick plain sheet glass.

- (b) Door Shutters fully glazed : 5.5mm thick plain sheet glass.
 (c) Windows (openable & fixed) except for toilets: 4 mm thick plain sheet glass.
 (d) Windows openable and fixed for toilets : 4 mm thick pin head glass.

NOTE: On all toilet door shutters, aluminum sheet 18 gauge bent to U shape shall be provided at the bottom of the flush shutters. This sheet shall be upto 30cm height on the inner face of the shutters and upto 20cm height on the outer face of the shutters. This shall be fixed with 12mm steel Nails.

Section – VII - Aluminium Doors, Windows & Ventilators.

1. The Aluminium extruded sections shall conform to Designation 63400 given in IS 737-1986 and shall be of manufacturers such as JINDAL or Hindalco or INDAL or equivalent manufacturers to be approved by the Engineer/ Site Engineer.
2. The Aluminium Doors, Windows, Ventilators and Glazing sections shall be anodised (anodic coating shall conform to IS 1868) as per colour approved by the Engineer and Site Engineer.
3. The fabrication shall be carried out having mechanical joints, accurately machined and fitted to form hair-line joints, with the vertical and horizontal sections at the corners to meet in 45 degrees mitered. The jointing shall be either with accessories such as cleats and cleating screws or by crimping with Hydraulics Press on to heavy duty extruded Aluminium cleats. The relevant arrangement shall be got approved by the Engineers. The Glazing shall be fabricated and anchored to withstand wind pressures as per the Indian Standards.
4. Before proceeding with any manufacture, Shop Drawings for each typical elevation shall be submitted for the approval of the Engineer and no work shall be performed until the approval of the shop Drawings is obtained.
5. All Glazing shall be airtight and watertight, using appropriate extruded EPDM gaskets/as manufactured by Anand Lescuyer Pvt.Ltd., or equivalent; and sealant which shall be of high quality and performance requirements.
6. Each Glazing shall be tailor-made as per openings at Site. No cutting and making good of exposed grit wash plaster surfaces shall be permitted.
7. All the Aluminium sections shall be wrapped with self-adhesive non-staining thick layer of PVC tapes as Manufactured by M/s Bhor Industries or equivalent as approved by the Engineers, and shall be duly packed for avoiding scratches or blemishes to the powder coated surface of the sections till the installation is completed.
8. The frames shall be fixed to concrete/masonry /brick work with dash fasteners and the method of fixing shall be got approved by the Engineers before installation. The drilling of holes for inserting the dash fasteners shall be carried out with drilling machines and the frame shall be fixed in plumb, line and level at jambs, sills and heads.
9. The perimeter gap between the outer frame and the masonry shall be sealed with poly sulphide sealant as per the make approved by the Engineer.
10. **Glazing:** The glass panes shall be free from flaws, specks or bubbles and shall have square corners and straight edges. The glass panes shall be so cut that it fits slightly loose in the frames. The glass pane shall be fixed to the shutter with Aluminium beading and E. P.D.M gasket properly shaped as per the drawing. The glass panes shall be of make as specified.

SECTION VIII - BUILDERS HARDWARE

Manger shall be provided to all doors/windows/ventilator/shutters with necessary matching screws of suitable size. Fittings and fixtures to all doors window and ventilators etc. shall be Aluminium anodised Matt finish ISI marked of make as specified. These shall be ISI marked where manufacturer contractor shall obtain the approval of the name of the manufacturer and brand of fittings from page of Director/Engineer before placing the supply order. While asking for the approved copy of bureau of Indian Standard letter under which the manufacturer has been issued the license and authorised to make the items of builder hardware with ISI marking should be attached and one sample of each fillings of the particular brand duly ISI marked shall be given by contractor.

Butt hinges for doors shall be ISI marked cold rolled mild steel heavy quality of size as specified with mild steel pin and shall be oxidized finish. These shall be welded to pressed steel frames as specified.

Handles for window shutters shall be 75mm long & door shutters shall be 125 mm D-Type Aluminium anodised.

Link chain and sliding channel shall be sturdy of CP brass and shall be provided to main entrance door of all units as specified.

Magic eye for entrance door shall be wide-angle best quality. This shall be fixed at 1400mm height from finished floor level.

One sample piece of each fitting shall be produced for approval of Site Engineer /Engineer. The bulk supply order shall be placed by the contractor only after approval is accorded by Site Engineer/Engineer.

Schedule of Builder's Hardware: Schedule of Hardwares/fittings to door, window and ventilator shutters shall be as per drawing.

9. **Mortice Latch (Vertical Type):** Mortice latch (Vertical type) shall conform to IS 5930-1970. Specification for mortice latch (Vertical type). These latches shall be capable of being operated inside and outside and shall be provided with a pair of Aluminium anodised lever handle fitted on the handle plate in order to close the door. The latches shall be of brass alloy. Faceplate shall be provided in front of the ease plate, size of latch shall be 65mm.
10. **Mortice Locks:** These shall conform to IS 2209-1976. Specification for Mortice locks (Vertical Type). These shall have body, body covers, cast plate, faceplate, skirting plate lever, follower of cast brass and locking bolt and latch bolt extruded brass. Lever spring and latch spring shall be of phosphor bronze. The locks shall be supplied with 2 Nos. stainless steel keys. Locks shall be 6 lever. The lock shall be easy working with lever and shall be capable of being opened with from both inside and outside and shall be provided with a pair of Aluminium anodised lever handles on the handle plate in order to close the door from both side.
11. **Hydraulic Door Closer (Floor Type) :** The Contractor shall provide double acting Hydraulic Door Closer model No.F-32, Cat No.1204 with SS Plate, Capacity to carry door weight upto 380Kg of EVERITE brand or Cat No.OFS 9621 of OPEL brand. These shall be of approved brand and manufacturer as above (Confirming to IS-6315) for Aluminium door including cost of cutting floor as required, embedding in floors and cover plate etc.

NOTE:

- i) It shall insure that all builder's hardware are from one manufacturers only for the entire work, However, if due to any reason contractor progress to provide part quantity from other manufacturer approved in Para 2 above, then he may be permitted but he will have to obtain specific approval of Project Engineer/Engineer for this change in brand. This will be subject to that all items and fixtures in any particular blocks shall be always of one manufacturer only. In no circumstances items of two manufacturers shall be used in all of the particular blocks.
- ii) Project Engineer before giving the approval of the name of the manufacturer and brand shall ensure that the validity date of license for making the fittings, as ISI marked has not expired.
- iii) Those fittings which are not manufactured, as ISI marked shall also be of the one brand of which the ISI marked fittings are approved by Project Manager.

SECTION IX-STEEL AND IRON WORK(INCLUDING STEEL DOOR AND ROLLING) SHUTTERS

1. Steel and ironwork shall be executed as indicated in drawing and as per standard practice.
2. Quality of steel shall conform to the following specifications:-
- | | |
|----------------------------|---------------------|
| (a) Mild steel (Misc.) | IS 432-1966 Part I |
| (b) MS reinforcement bars | IS 432 Part II 1962 |
| (c) Structural steel works | IS 226-1962 |
| (d) Steel Deformed Bars | IS-1786/1979 |

3. **Reinforcement:**

Reinforcement shall be as per relevant IS Specification as mentioned in the Contract / Drawings / Instructions. All bars shall be of tested quality

- (a) Reinforcement bars 6mm dia shall be MS bars.
- (b) All reinforcement bars 8mm and above shall be deformed twisted steel bars.
- (c) Laps and crossing shall be tied with mild steel binding wire of size not less than 0.9mm dia.
- (d) The contractor shall be responsible for accurate fixing and placing of reinforcement shown in drawing and shall not place the concrete until the reinforcement has been checked, passed and recorded by the Engineer and Project Engineer.
- (e) Reinforcement shall be bent and fixed as per IS-2502-1963.
- (f) Laps in reinforcement for columns, beams and slabs etc. will be as stipulated in IS.

Bar Bending Schedule of Reinforcement: The Contractor shall submit to the Engineer for approval Bar Bending Schedules with working drawings in triplicate, showing clearly the arrangements proposed by the Contractor to match available stock of reinforcing steel, within one month of receipt of the Letter of Intent or of the receipt of the relevant design drawings, whichever is later. Upon receipt of the Engineer's final approval of the Bar Bending Schedule and drawings, the Contractor shall submit 6 prints of the final drawings with one reproducible print after incorporating necessary modifications or corrections, for final record & distribution.

Approval of such detailed drawings by Engineer shall not relieve the Contractor of his responsibility for correctness nor of any of his obligations to meet the other requirements of the Contract. The bar bending schedule of reinforcement and shall be got approved from the Site Engineer / Engineer / OTPL in advance before starting the work.

4. **Cleaning:**

All steel for reinforcement shall be free from loose scales, oil, grease, paint or other harmful matters immediately before placing the concrete.

5. **Cutting & bending of Reinforcement:** Before steel reinforcement bars are cut, the Contractor shall study the lengths of bars required as per drawing and shall carry out cutting only to suit the sizes required as per drawings so that the wastage is minimum.

Unless otherwise specified, reinforcing steel shall be bent in accordance with the procedure specified in IS: 2502 or as approved by the Engineer. Bends and shapes shall comply strictly with the dimensions corresponding with the approved Bar Bending Schedules. Bar Bending Schedules shall be rechecked by the Contractor before any bending is done.

No reinforcement shall be bent when already in position in the work, without approval of the Engineer, whether or not it is partially embedded in concrete. Bars shall not be straightened in a manner that will injure the material. Rebending can be done only if approved by the Engineer. Reinforcing bars above 16 mm diameter shall be bent by machine producing a gradual and even motion. Bars of 16 mm or below may be bent by hand. All the bars shall be cold bent unless otherwise approved. Bending hot at a cherry-red heat (not exceeding 845 Deg C) may be allowed under very exceptional circumstances except for bars whose strength depends on cold working. Bars bent hot shall not be cooled by quenching.

Reinforcing bars, whether high yield or mild steel shall be cut using either hand held shears, guillotines or foot operated pneumatic cutters. Cutting bars using cold chisels may be allowed by the Engineer at exceptional cases.

6. **Placing in position:**

All reinforcements shall be accurately fixed and maintained in position as shown on the drawings by such approved and adequate means like mild steel chairs and/or concrete spacer blocks irrespective of whether such supports are payable or not. Bars intended to be in contact at crossing points, shall be securely tied together at all such points by No. 20 G annealed soft iron wire. Tack welding of bars should not be done unless permitted by the Engineer. Binders shall tightly embrace the bars with which they are intended to be in contact and shall be securely held. The vertical distance between successive layers of bars shall be maintained by provision of mild steel spacer bars. They should be spaced such that the main bars do not sag perceptibly between adjacent spacers. Before actual placing, the Contractor shall study the drawings thoroughly and inform the Engineer in case he feels that placement of certain bars is not possible due to congestion. In such cases he should not start placing any bar before obtaining clearance from the Engineer.

7. **Control:**

The placing of reinforcements shall be completed well in advance of concrete pouring. Immediately before pouring, the reinforcement shall be examined by the Engineer for accuracy of placement and cleanliness. Necessary corrections as directed by him shall be carried out. Laps and anchorage lengths of reinforcing bars shall be in accordance

with IS: 456, unless otherwise specified. If the bars in a lap are not of the same diameter, the smaller will guide the lap length. The laps shall be staggered as far as practicable and as directed by the Engineer. Arrangements for placing concrete shall be such that reinforcement in position do not have to bear extra load and get disturbed.

The cover for concrete over the reinforcements shall be as shown on the approved drawings unless otherwise directed by the Engineer. Where concrete blocks are used for ensuring the cover and positioning reinforcement, they shall be made of mortar not leaner than 1 part cement to 2 parts sand by volume and cured in a pond for at least 14 days. The type, shape, size and location of the concrete blocks shall be as approved by the Engineer.

8. **Stock Piling of Steel:** Steel required shall be stock piled well in advance of need in the work. Bars should be stacked off the ground so that they do not get covered with mud.
9. **Rates quoted for reinforcement, addition to any factors mentioned elsewhere, shall also include for**
 - All cutting to length, labour in bending and cranking, forming hooked ends, handling, hoisting and everything necessary to fix reinforcement in work as per drawings.
 - De-coiling, straightening (coiled bars, bars to facilitate transporting)
 - Cost of binding wire required as described.
 - Cost of pre-cast concrete cover blocks of proper size or nylon spacers to maintain cover and holding reinforcement in position.
 - For fabricating and fitting reinforcement in any structural member irrespective of its location, dimensions and level.
 - Removal of rust and every other undesirable substances, using wire brush, etc. as described.
 - Work at all levels
 - Stock piling of reinforcement as described.
10. **Holdfasts:** Holdfasts shall be made out of MS flats of size as specified with split fish tail ends coated with anti corrosive paint/tar. Holdfast shall be welded to door/windows frame as specified.
11. **Steel Door frame and shutters:** Size of door and locations shown on drawing and shall comprising of frame and shutter fabricated and welded out of MS angle, plate & sheet and 10mm square tie bar. The door shall be painted with two or more coats of synthetic enamel paint of approved quality & shade over one coat of steel primer. Each MS gate shall have hold fast - 6 Nos, Butt hinges 125mm - 3 Nos, MS handles 100mm - 2 Nos and MS sliding bolts 300 x 16 mm - 2 Nos (1 inside and 1 outside). Hold fasts shall be embedded in PCC block (1:3:6) of size 23 x 23 x 15cm.
12. **Grills:** MS grills manufactured out of flat iron, MS square tubes and round bars and of pattern as shown on drawing shall be provided to all windows openable/fixed, glazed portion of doors and fanlight of doors. All Grills shall be fabricated and welded to the pressed steel frames in the factory where the pressed steel frames are manufactured and shall be brought to site as welded. Grills to fully glazed door shutters shall be fixed with steel screws.
13. **Railing to staircases, landings, passages, balconies & parapets:-**
 - (a) Railing to staircase, landing etc. shall be fabricated with square M.S. tubes and square MS bars etc. with vertical supports & top handrail made of M.S. pipe (medium grade) welded at joints fixed into floor/steps as shown in drawing.

- (b) Verandah/Balcony Railing shall be fabricated with MS flat, M.S. tubes MS bars with vertical supports & top handrail made of M.S. pipe (medium grade) welded at joints fixed into floor/steps as shown indrawing.
 - (c) The fixing details and dimensions for 7 (a), 7(b) above shall be as shown in drawings. All welded joints shall be grounded properly before painting. The finished railing shall be true to plumb, line and levels as called for. The mild steel blusters and other exposed mild steel members shall be painted with approved shade and brand synthetic enamel paint.
8. **Exhaust Fan opening**: In kitchen, toilets, WC, bath etc. provision for fixing of exhaust fan shall be made by fixing 19mm thick BWP grade commercial board with a circular hole 300mm dia in window as shown on drawings. This opening shall be covered by bird guard fabricated out of galvanised iron sheet 18 gauge as shown on drawing.
 9. **Welding**: This shall be done by electric process with precautions for health and safety. The places to be welded be cut angularity so that the welding material does not protrude and the members to be welded join properly. The welds shall be ground clean to give a one piece appearance. The welds shall run around the contact surfaces of two meeting sections. Throat thickness should not less than 4mm.
 - 10 **Steel Rolling Shutters:-** Shall be of approved make and shall conform to the requirement of IS 6248 – 1979 specification for metal rolling shutters and rolling grills. The size of rolling shutters shall be as indicated in drawing. It shall be self coiling type shutters (push pull type manual type with ball bearings,. It shall be built-up of inter-locking lath section formed from cold rolled steel strips of size 80 x 1.25mm. or rolling grills. Rolling grill shutter and rolling shutters-cum-grill shall be fabricated with 8mm dia meter mild steel round bars. It shall be complete with locking arrangement with lock plates hoods cover, springs Guide channels, and bracket plate, rollers and other accessories. Complete in all respect including applying a coat of steel primer of approved quality and two or more coats of synthetic enamel paint of approved quality.

SECTION – X - ROOF COVERING, WATER PROOFING & RAIN WATER PIPES

1. **Exposed roof at terrace floor level:-** Roof slabs shall be cleaned thoroughly and following treatment/covering shall be provided:-
 - (a) Clean the RCC slab surfaces including sides upto 30cm high by wire brush. Chisel out any mortar sticking to the surface and then rendering rough/ uneven surface with cement mortar 1:4 (1 cement:4 coarse sand)
 - (b) Providing and laying 100mm thick (average consolidated thickness) mud phaska terracing shall be prepared as per CPWD specification.
 - (c) Providing and laying 40mm thick brick tiles of class designation 100 grouted and pointed with cement mortar 1:3 (1 cement:3 fine sand). The joints shall be finished flush with the brick surface neatly. Brick tiles shall be of uniform colour, free of cracks and flaws with uniform and straight edges and surfaces. Entire roof surface to be kept wet for seven days after this operation.
 - (d) Providing & laying FPS brick tiles of class designation 100 over mummy roof grouted with cement mortar 1:3 (1 cement : 3 fine sand) mixed with 2% of integral water proofing compound by weight of cement over 12mm layer of cement mortar 1:3 (1 cement : 3 fine sand) & finished neat.
2. **Gola**: Providing Gola 75x75 in cement concrete 1:2:4 (1 cement :2 coarse sand:4 stone aggregate 10mm and down gauge) at the junction of RCC slab and wall and junction of tiles and parapet/wall including finishing exposed surfaces with cement mortar 1:4 (1 cement :4 fine sand) as per drawing. Gola shall be done before the plaster of parapet.

Khurras: Making khurras 450 x 450mm with average minimum thickness of 50mm

3. cement concrete 1:2:4 (1 cement :2 coarse sand:4 stone aggregate 10mm nominal size)finished with 12mm cement plaster 1:3 (1 cement : 3coarse sand) mixed with water proofing compound and coat of neat cement including rounding of edges and making and finishing the outlets complete as per standarddesign.
4. **Balconies:** Finishing of balconies shall be terrazzo cast in situ with matchingskirting.
5. **Chajjas:** Slab shall be cleaned thoroughly and following treatment/covering shall beprovided:-
 - a) Apply treatment as per para 1.(a)above.
 - b) Finishing with 12mm plaster in cement mortar 1:4(1 cement: 4 coarse sand) mixed with water proofing compounds per manufacturer's specifications OR @ 5% of amount by weight. This shall be applied after treatment as 7 (a)above
6. **Sunken/Lowered slabs:**Water proofing treatment shall be provided to all sunken/lowered portions of slab. This shall consist of thefollowing:-
 - (a) Clear the sunken/lowered portion of RCC slab surface (including vertical total depth) by wire brush. Chisel out any mortar sticking to the surface including rendering 6mm thick over rough uneven surfaces with cement mortar 1:4 (1cement:4 coarsesand).
 - (b) Wash it with water and dust it clear andclean.
 - (c) Apply one coat of water soluble Epoxy-TECHOXY and two coats of coal tar epoxy to bottom and vertical sides upto skirting height of the sunken portion as per manufacturer'sspecifications.
 - (d) Plastering the bottom and sides with 12mm thick cement mortar 1:4 over 8(c) above with water proofing compound as per manufacturer's specifications including rounding of corners andjunctions.
 - (e) When the treatment set dry fill with water for seven days and ensure that the treated area is fully waterproofed.
 - (f) All CI/GI pipes laid in sunken portion shall be covered by 50mm thick PCC 1:3:6 around after painting with anticorrosive paint (Japan black) G.I.pipes in sunken portion shall also be protected against corrosion by providing and applying two coats of bitumen paint covered with polythene tape and finished with a final coat of bitumenpaint.
 - (g) Filling with PCC 1:5:10 aspecified.
 - (h) One 50mm dia GI pipe spouts with wire gauge on inside mouth shall be provided to each sunken portion irrespective of what is shown ondrawings.

NOTE:All CI/GI pipes and fittings passing through the wall of the sunken portion shall be laid/fixed before the treatment as specified in para 8 above is carried out.

7. Water proofing treatment to raft/floor, walls and roofs of overhead water storage tanks & pump room etc. shall be as per drawing &BOQ.

8. Rain Waterpipes:-

- a) The rain water pipes and fittings shall be provided sand cast iron. All pipes and fittings shall conform to IS 1729 - 1979 and ISI marked. These shall have uniform wall thickness for the entire length, free from surface and other defects. The pipes shall be coated externally and internally with coating material Tar or any other suitable materials. The coating material should set quickly with good adherence and should not scaleoff.
- b) Cast iron rain water pipes and accessories shall be provided as shown on the drawings. The joints in cast iron rain water pipes shall be with cement mortar 1:3. The CI pipe will start from 150mm above plinth protection with bend and a tee junction shall be provided at all terraces levels to collect water from khurras and vertical pipe shall be extended upto 150mm above top of parapet wall. At top cast iron COWL shall also be provided.
- c) Cast iron chamber and grating at the top and outlet of every rain water pipe shall be provided and shall fit in snugly on the socket end of the pipe. The perforations in the gratings shall be atleast 60% of the total area of gratings.
- d) Where the rain water pipes are to be provided concealed within masonry the pipes shall be embedded in the walls with PCC 1:3:6 (1 Cement:3 coarse sand:6 stone aggregate 20 mm down gauge) encasing allround.
- e) Rain water pipes running down along the walls/columns shall be firmly fixed with MS holder bat clamps at alljoints.

ON STAMP PAPER OF ADEQUATE

VALUE FORM OF GUARANTEE FOR

WATERPROOFING

Name of the project:

Free Maintenance Guarantee – Waterproofing work:

By _____

We, Hereby guarantee that the surfaces treated by us for waterproofing in the above work, for M/s the general building contractor for the above work, shall remain entirely water tight. Should, however, due to any unforeseen defect left out in the work carried out by us at the time of execution of the work, there be any leakage from any surface treated by us during the period of ten years from the date of virtual completion of the work i.e. from to the same shall be rectified by us without any extra cost to the OTPL of India.

However, we shall not be responsible in any way work is tampered with or if the body of the structure is damaged due to sinking, cracking and/or by any other act of God beyond our control.

Signature of the general
builders

SECTION – XI – FLOOR FINISHING, SKIRTING & DADO

1. General

- a) This section shall cover all flooring and wall tiling work as shown in the drawing. No work under this section shall be started until specifically allowed by the Engineer/Site Engineer and until all other major works such as plastering, embedding of conduits and pipes, channels, windows fixing etc. have been completed. Samples of adequate size representing the nature of variation including quality, size, texture after polishing of the tiles to be used in the flooring work fully shall be prepared for all work and got approved by the Engineer/Site Engineer before proceeding. The approved samples shall be retained up to the end.
- b) Floor shall be laid to level and or to slope as shown on drawings and as required and directed by Site Engineer/Engineer. Floor shall be carried through all the doors and other openings and over dwarf walls. Exposed edge of floors shall be finished in the same manner as for top surfaces. Skirting shall match with the floorfinish.

2. SubFlooring

a) For Groundfloor:

Sub floors (base concrete under floor finish) 100mm thick lean concrete in 1:5:10 (1 cement:5 coarse sand & 10 brick aggregate 40mm nominal size) for all locations except stilt area. In stilt area instead of brick aggregate it shall be stone aggregate) shall be laid over a layer of fine sand 150mm thick at ground floor only.

b) For Upper Floors:

- Sunken/lower portion of slabs: Sub base shall be in lean concrete in 1:5:10 (1 cement: 5 coarse sand and 10 brick ballast 40mm nominal size).
- Other floors: Where ever required/directed lean concrete 1:5:10 (1 cement: 5 coarse sand: 10 brick aggregate 40mm nominal size) of required thickness laid over RCC slab.
- Floors under cupboards/book shelves/kitchen counters etc. in 1:5:10 lean concrete (1 cement: 5 coarse sand & 10 brick aggregate 40mm nominal size).

3. **Plain cement concrete flooring:** Cement concrete 1:2:4 (1 cement: 2 coarse sand:4 graded stone aggregate 12.5 mm nominal size) flooring of specified thickness. The thickness of flooring finished shall be 40mm/50mm as specified in schedule of quantities with grooves of 10mm wide shall be left through depth of the flooring (finishes) to form bays as specified in para 5 (b) hereinafter OR . The top surface shall be finished with floating coat of neat cement using steel float while the concrete is green. With 3mm thick 38mm wide glass strips, as specified in Schedule of quantities.

4. **Skirting:** To match PCC floors 18mm thick plaster in cement mortar of mix 1:3 (1 cement: 3 coarse sand) finished with a floating of neat cement shall be applied to skirting. The skirting shall be 100 high and it shall be projecting uniformly from the plastered surfaces of walls and columns and separated with a horizontal groove of 10mmx10mm

5. Terrazzo Cast in situ flooring:

- (a) Terrazzo cast in situ shall consist of 10mm thick (top layer) over 40mm (Avg.) thick PCC (under layer) with 4mm thick 38mm wide PVC strips and shall be provided conforming to the specifications given hereafter.
- (b) 3mm thick and 38mm wide glass dividing strips shall be placed in position to form bays. Generally these shall be at 750mm centers for internal floors. Extra strips shall be provided on both sides of door sills. The strips shall be kept in position with cement concrete fillets 1:1:2 (1 cement: 1 coarse sand: 2 stone aggregate 6mm gauge) and as few fillets as possible shall be used. The top of the strips shall be so kept that it will flush with floor finish it should neither project above the floor finish nor be depressed.
- (c) Base concrete shall be cleaned, moistened and brushed with cement slurry at 2.5kg/sq.mts. A layer of 30/40 mm thick PCC 1:2:4 (1 cement: 2 coarse sand: 4 stone aggregate 12.5mm nominal size) as specified shall then be laid between the strips. This layer shall be thoroughly worked and leveled with screening board to leave slightly rough surface.
- (d) Terrazzo cast in situ topping 10mm thick shall be of following description and mix proportions. This topping layer shall be laid between 24-28 hours after laying the underlayers:-

A mixture of ordinary grey cements and approved white marble dust/powder mixed in proportion of 4 parts of cement and 1 part of marble dust/powder by volume.

Marble Chips: Size of marble chips shall be 4mm to 8mm and of size 1 B for skirting and dados.

Proportion of white marble chips shall be 75% out of white, coloured and black as per approval of Site Engineer and Engineer.

Mix one part by volume of mixture vide (d) (i) above with 1.25 parts by volume of (iii) above.

- (e) The terrazzo mixture shall be thoroughly mixed dry. First apply cement slurry to under layer, make the terrazzo mix wet to make a stiff mixture and lay in position over PCC under layer (in bays between the PVC strips). The terrazzo layer shall be tamped to bring maximum amount of marble chips to the surface. After allowing for air curing for 24 hours the surface shall be cured well for 3 to 4 days. The surface of terrazzo shall then be cut with machine at least four times with different coarse and fine graded carborundum stone as per details given below:-
 - (i) The first grinding should be done with No.60 grit stone after 3-4 days. During grinding, keep the floor wet all the time.
 - (ii) Clean the floor with water. The floor should then be grouted with neat cement to fill up all holes and imperfections.
 - (iii) Air dry the grouted floor for day and then cure for 3-4 days for hardening.
 - (iv) The second grinding should be done after 7 days of laying with grit No.80 and repeat grouting as above.
 - (v) Third grinding is done after 14-15 days of laying with carborundum stone of grit blocks No.120.

- (vi) The final grinding and polishing should be done with carborundum stone of grit block No. 320
After final grinding is over, scrub the floor thoroughly with soft soap solution made in water to clean the floor, when the surface is adequately dry slightly moistened with oxalic acid powder at the rate of 5 gm per square metre of floor surface and finally polished with wax polish of approved brand (mansion) to the entire satisfaction of Engineer/Site Engineer.
After the floor is polished fully saw dust shall be spread over the floor for protection after which no moisture will be allowed to avoid stains on the floor.
- (f) The mixing shall be done in tubs and the whole operation shall be carried out in absolutely clean conditions so that there is no staining due to dirt and other materials.
- (g) The terrazzo flooring of treads of steps and landings of staircase shall be projected 10mm in front and sides to form nosing and shall be finished as directed by Site Engineer and Engineer..

6. Glazed tiles

- (a) The tiles/ceramic shall be of first quality and shall generally conform to IS: 777. These shall be flat, and true to shape and free from cracks, crazing, spots, chipped edges and corners. The glazing shall be of uniform shade and shall be provided in Dado of kitchen and toilets. The tiles shall be set over screed/ plaster 12mm thick with cement mortar 1:3 (1 cement :3 coarse sand) to all surface, set and jointed with neat white cement slurry. The joints shall be neat and fine. Tiles face shall be kept flush with the skirting below.
- (b) Size of glazed tiles both for toilets, Baths, WC and kitchen shall be as shown on drawings.
- (c) The colour of tiles shall be white/coloured.
- (d) Height of glazed tiles dado above skirting in toilets and in kitchen, above kitchen platform shall be as shown on the drawings.

7. **Finish of working platforms in kitchens:** Finish of the working platform in kitchen shall be in tiles finished.

PRECAST CEMENT CONCRETE TILES: - The cement concrete tiles shall be of nominal size of 0x30 Cum with equal sides. The overall thickness of tiles shall not be less than 22mm. The tiles shall conform to the method of manufacture, the mix of

- a) backing and wearing layers Where full tile can not be fixed, tile shall be cut (Sawn) from full tile to the required size and their edges rubbed smooth to ensure straight and true joint to be approved by the Project Engineer/Engineer before installing at site.
(1 cement:3 coarse sand), jointed with white cement slurry including grinding smooth and polishing.

8. (a) **Red or White Fine Dressed Sand Stone Filling:** The stone slabs shall be hard, sound, durable and tough, free from crack decay and weathering. In case of red sand stone, white patches or streaks shall not be allowed. However, scattered spots upto 10mm diameter will be permitted. Before starting the work the contractor shall get samples of slabs approved by the Engineer/Project Engineer. The slabs shall be hand or machine cut to the requisite thickness along planes parallel to the natural bed of stone and should be of uniform size as required.

- (b) **Dressing:** Stone slab shall be cut to the required size and shape and chisel dressed on all sides to a minimum depth of 20mm. The top and the joints shall be fine tooled so that straight edge laid along the face is fully in contact with it incase machine cut stone are used chisel dressing and fine tooling of machine cut surface need not be done provided a straight edge laid anywhere along the machine cut surfaces is in contract with every point on it. The thickness of the slabs after dressing shall be as specified in the description of items.
- (c) **Preparation of surface and laying:** The sub base concrete or RCC slab on which the stone slabs are to be laid shall be cleaned, wetted and mopped. The bedding shall be with cement mortar of an average thickness of 20mm and mix 1:5(1 cement: 5 coarse sand), over this bedding, neat grey cement slurry of honey like consistency shall be spread over the same @ 4.4 Kg/Sqm. The edges buttered with white cement admixed be with pigment to match the shade of the slabs. The joints shall be kept as thin as possible. The points shall be done with cement mortar as specified in the items. The joints shall be raked out uniformly to a depth not less than 12mm thickness when the mortar is green. The pointing shall be cured for a period 7 days(minimum).

9. **NON - SKID CERAMIC TILES:** Where indicated in Schedule of finishes shall be laid asunder:

- (i) It shall be 6 mm to 8 mm thick of size 300x300mm, conforming to IS 13755 hydraulically pressed, high temperature fires (around 1200°C) in single operation having breaking strength 350 to 400 Kg per Sqm. & weighing 17 Kg per Sq.M of approved make and shall be laid & jointed in white cement paste pigmented to tile shade over 20 mm thick cement & sand screed (1:4) over subbase.
- (ii) **NON-SKID CERAMIC TILES SKIRTING:** where shown/indicated in the drawing / schedule of finishes shall be provided 100mm height over 10mm thick cement mortar (1:3 (1Cement: 3 coarse sand) and Jointed with white cement paste pigmented to the tile shade.
- b) **LAYING:** Base concrete or RCC slab on which the tiles are to be laid shall be cleaned wetted and mopped. The bedding for the tiles shall be 20mm thick cement mortar 1:4 (1cement: 4 coarse sand). Over the bedding neat grey cement slurry shall be spread @ 4.4 Kg of cement per squaremeter.
- c) **CURING, POLISHING & FINISHING**
- i) The day after the tiles are laid all joints shall be cleaned of the grey cement grout with a wire brush or trowel to a depth of 5mm and all dust and loose mortar removed and cleaned. Joints shall than be grouted with grey or white cement mixed with or without pigment to match the shape of the topping of the wearing layer of the tiles. The same cement slurry shall be applied to the entire surface of the tiles.
- ii) The grinding, curing, polishing & finishing shall be done as specified above for terrazzo flooring

SECTION – XII - WALL FINISHES

Plastering in Annexure

1. General

- a) **Scope:** This section shall cover internal and external plastering/rendering works as shown in the drawings.
- b) **Mortar:** The mortar of specified mix shall be used.
- c) **Scaffolding:** Stage scaffolding shall be provided for plastering work as per standard practice and as directed by Engineer/Site Engineer. This shall be independent of the walls.
- d) **Preparation of Surfaces:** Joints of brickwork walls shall be raked-out properly. Dust and loose mortar shall be brushed out. Efflorescence if any shall be removed by brushing and scraping, shuttering imperfections of all concrete shall be roughened by hacking with chisel and all resulting dust and loose particles cleaned and the surface shall be thoroughly hacked or bush hammered to the satisfaction of Engineer/Project Engineer. The surface shall be thoroughly washed with water, cleaned and kept wet before plastering is commenced.
- e) **Approval of Engineer/Project Engineer to be taken:** No plastering work shall be started before all conduits, pipes fittings and fixtures clamps, hooks etc. are embedded, grouted and cured and all defects removed to the satisfaction of Engineer/Project Engineer. Special approval shall be taken from Engineer/Project Engineer before starting each plastering work. No cutting of finished plaster shall be allowed. No portion shall be left out initially to be patched up later on.
- f) **Mixing:** The ingredients shall be mixed in specified proportions by volume. The mixing shall be done in a mechanical mixer on water-tight platform. The cement and sand shall first be mixed thoroughly dry in the mixer. Water shall then be added gradually and wet mixing continued for at least a minute until mortar attains the consistency of a stiff paste and uniform colour. Mortar shall be used within 30 minutes of addition of water. Mortar which has partially set shall not be used and removed from the site immediately.

2. Internal Surfaces

- i) Plastering shall be started after the completion of ceiling plaster from top and gradually worked down towards floor. It shall not, at any place be thinner than as specified. To ensure even thickness and a true surface plaster of about 15cm x 15 cm shall be first applied horizontally and vertically at not more than 2m interval over the entire surface to serve as gauges. The mortar shall then be applied to the wall/surface between the gauges and finished even. All corner junctions and rounding shall be truly vertical or horizontal and finished carefully. Inspecting the work at the end of the day plaster shall be cut clean to line, where recommencing the plastering, edge of old work shall be cracked, cleaned and wetted with cement putty before restarting plastering
- ii) Cement plastering internally on all internal surfaces including soffits of RCC slabs, chajjas, lintels, around shelves, inner side of parapets and around of parabolas etc. shall be as shown on drawing. Wherever not shown it shall be as under:-

- (a) 12mm thick plaster in cement mortar 1:6 (1 cement: 6 parts 75%: fine sand & 25% coarse sand) mixed with 10% of lime water over brick and concrete surfaces. Dubbing out wherever required (i.e. bringing up the undulation on the rough face of brick work in level with proudest points) shall also be executed in the same mix along with rendering coat.
- (b) 6 thick plaster in cement mortar 1:3 (1 cement: 3 fine sand) on soffits of RCC slabs, chajjas, lintels and kitchen platforms and around of shelves and paragolas.
- (c) 10mm x 6mm grooves shall be provided in ceiling plaster at junction of wall and ceiling.
- (d) 12mm thick plaster in cement mortar 1:4 (1 cement: 4 parts 75% fine sand & 25% coarse sand) mixed with water proofing compound CICO-1 (liquid) as per manufacturer's instruction to be done on the inside face of the book shelves and cupboards.
- (e) 15mm thick plaster in cement mortar 1:4 (1 Cement: 4 coarse sand) mixed with water proofing compound CICO-1 (liquid) as per manufacturer's instruction to be done on the internal surfaces of parapet walls including dubbing wherever required.
- (f) Before plastering it should be ensured that brick masonry joints are raked out (at least on even surfaces) to a depth of 12mm and all concrete surfaces are rough enough for proper adhesion of plaster. If not they shall be made rough by hacking or bush hammering at intervals of 2". Efflorescence if any and dust/dirt shall be removed. The surfaces shall be wetted adequately before plastering.
- (g) G.I. Chicken wire mesh of 24 gauge and 20mm mesh shall be fixed all along RCC Surface adjoining brick work given 150mm lapping on either side of the junction in double fold or as called for using nails etc and cement slurry before plastering. Ensuring equal thickness of plaster on both sides of the mesh.
- (h) Sand used in plaster shall be within the grading zones as stipulated in the IS silt contents shall not exceed 4% by weight. Brick surface shall be raked out at the end of day brick work to afford key to plaster. Plaster surface shall be hard and even without patchy appearance. If they flake or show scratch marks if rubbed by appointed nail the plaster shall be rejected, dislodged and redone.

3. **Drip course:** Drip course shall be provided to all projections as per details shown in drawings.

4. **EXTERNAL SURFACES:**

A. **Washed Grit Finish:**

Surfaces as shown on the drawings shall be finished with washed grit plaster with necessary grooves and pattern as shown on the drawings.

- (a) Washed grit plaster shall be provided in two layers.
- (b) Apply under layer of 12mm thick plaster of cement mortar 1:4 under layer (1 cement : 4 badarpur sand/Jamuna sand 50:50) after thoroughly wetting the surface. The surface shall be kept wet till top layer is applied.
- (c) Make the surface broom finish by steel brush or scratching tool.
- (d) Grooves of size 15mm wide and 15mm deep (slightly tapered for easy removal) to be formed of uniform size in top layer of plaster using hard wood battens nailed to under layer, to desire patterns of panels truly vertical and horizontal as shown on drawings or as directed by the Engineer/Site Engineer.
- (e) All stone chippings to be washed in a clean tub by clean water before use.

- (f) Top layer shall be 15mm thick comprising cement marble powder and marble chips in proportion of 1:0.5:2 (1 cement: 0.5 coarse sand:2 marble chippings 10 mm nominal size) mixed with suitable quantity of approved shade of pigment for 2 shades (dark green or light green) from approved manufacturers as approved by the Site Engineer and Engineer for shade pattern as shown on drawings and approve by the Site Engineer and Engineer. Before application of top coat at the surface of the under coat shall be cleaned and a coat of cement slurry @ 2 Kg. of cement per Sqm. shall be applied. The top layer shall be applied in uniform thickness and sufficiently pressed with wooden float for proper bonding with the under coat and finished to a true and plumb surface. Finished surface of top coat after the mix has taken the initial set shall be scrubbed.
- (g) Scrub and wash the top layer by clean water with brushes to expose the stone chippings to its natural colour.
- (h) Marble chippings of size 10mm of approved colours, coarse sand of approved quality and pigment of approved colour shall be used.
- (i) The wooden battens to be removed very carefully by a special tool so that the edges of grit wash are not damaged.
- (j) Suitable scaffolding to be used shall have sound and strong supporters tied together with horizontal pieces over which scaffolding planks shall rest to ensure that for horizontal support no holes are made in the walls.
- (k) Before application of under coat of plaster the surfaces shall be prepared by racking out joints properly and brushing out the dust and loose mortar and washed thoroughly with water and kept wet.
- (l) Contractor to get a sample approved prior to start the work by the Engineer/Site Engineer.

B. 18mm thick plastering with terrazzo finish

- (a) 18mm thick plastering with terrazzo finish shall be provided as shown on drawings. It shall be provided in two layers. Underlayer
- (b) Under layer shall be 12mm thick plaster of cement mortar 1:3 (1 cement:3 coarse sand) and shall be brought to truly level and plumbs by using wooden float. The surface shall be further roughened by furrowing with a scratching tool. The surface shall be kept wet till top layer is applied.
- (c) Top layer shall be 6mm thick terrazzo topping consist of cement marble powder and hand marble chips shall be white or pink, black, yellow, green or any approved colour. Size of marble chips shall be 1B
- i) A mixture of ordinary grey cement and approved white marble dust/powder mixed in proportion of 4 parts of cement and 1 part of marble dust/powder by volume.
- ii) Marble Chips: Size of marble chips shall be 3mm to 4mm.
- iii) Proportion of white marble chips shall be 75% out of white, coloured and black as per approval of the Site Engineer and Engineer.

- iv) Mix one part by volume of mixture vide (i) above with 1.25 parts by volume of (iii) above.
- v) Cutting & polishing shall be done by hand or by machine till a smooth polish surface is obtained after final grinding is over scrubbing, polishing & finishing to be done as per para 5 (e).

1) Glass Mosaic Tiles

- (i) 5mm thick glass Mosaic tiles fixed with cement slurry shall be provided as shown on drawings.

SECTION – XIII - WHITE WASH, DISTEMPER AND PAINTING

1. White wash shall be provided to all ceiling, and internal surfaces of lofts, staircase, stair lobby and stilt area of all unit blocks /other building as shown on drawings.
2. Dry distemper of approved shade shall be provided to all internal surfaces of walls as shown on drawings.
3. Before application of white wash and distemper the surfaces shall be prepared to a clean and even surface.
4. White wash (lime wash) shall be carried out in three coats.
5. White wash shall be prepared from lime slacked on site, mixed and stirred with sufficient water to make a thin cream. This shall be allowed to stand for 24 hours and shall be screened through clean cloth. Four kg. of gum dissolved in hot water shall be added to each cubic meter of the cream (115gm/cft). Blue shall be added to give required whiteness. The approximate quantity of water to be added in making cream shall be five liters per kg. of lime. 10% Zinc Oxide shall also be added to obtain a desired shining in the whitewash.
6. Dry distemper shall be carried out in two or more coats over one coat of suitable cement primer as per manufacturer instructions to give even shade.
7. White wash and dry distemper shall be applied in specified coats by using flat brushers or spray pumps. Each coat shall be allowed to dry before next coat is applied, if additional coats than what have been specified are necessary to obtain uniform and smooth finish it shall be given at no extra cost.
8. The finished dry surface shall not show any signs of cracking and peeling nor shall it come off readily on the hand when rubbed.

PAINTING

9. **Cement Base Paint:** Two or more coats of cement base paint shall be applied to give even shade on all external cement plaster surfaces, internal cement plaster surfaces of parapets, soffits of chajjas, lintels, beams, and cills as shown on drawings. The shade of the paint shall be used as approved by the Site Engineer /Engineer. Each coat shall be cured well by wetting surfaces for at least three days. This shall apply to all buildings i.e. unit blocks/other buildings.

10. **Painting to wooden surfaces:** All exposed wooden surfaces shall be prepared and given a primer coat of approved quality as approved by the Engineer. The surface shall then be bodied in with liquid wood filler of approved make, allowed to dry and rubbed with sand paper after moistening the surface with water, the surface cleaned then two or more coats of synthetic Enamel paint applied to give an even shade of approved quality. Tint/shade of synthetic enamel paint shall be as approved by the SiteEngineer/Engineer.
11. **Painting to Steel Surfaces:** All exposed steel surfaces shall be prepared, cleaned with sand paper to completely remove scales and rusts and shall be painted with two or more coats of synthetic enamel paint to give an even shade over one coat of steel primer. The shade of synthetic enamel paint shall be as approved by Project Engineer/Engineer.
12. **Painting to CI and GI Pipes:** All exposed CI and GI pipes shall be painted by applying two or more coats of oil paint. The shade and quality shall be as approved by the Site Engineer/Engineer.
13. Synthetic enamel paints and primer manufactured by the following:-

Mode of Measurements:

The method of measurement for various items in the tender shall be generally in accordance with IS: 1200 subject to the following:

1. Excavation:

- (a) Footings: Area of excavation for footing shall be measured equal to the area of the lowest concrete course as shown on the drawing. Depth shall be measured vertically from ground level to bottom of concrete course or dry rubble packing as the case maybe.
- (b) Plinth beams: Depth of excavation for plinth beam shall be measured from ground level upto bottom of beam and width equal to width of beam. If a leveling course is ordered, it shall be measured upto the bottom of the leveling course.
- (c) Where excavation is made in trenches, measurements for cutting shall be taken by means of tape and staff and the width of concrete or rubble packing as shown on the drawing shall be considered as width of excavation.
- (d) Where excavation is made for leveling the site, levels shall be taken before start and after completion of work and total quantity of excavation computed from these levels in manner approved by the Engineer.

2. Earthfilling:

In open space: filling shall be measured from cross sections of OTPL, levels of which are recorded by means of levels before start of work and after completion of work. When it is not possible to measure filling from cross sections, it may be measured from loose stacks or lorry measurements with previous written permission from the Engineer and 20% deduction shall be made from the measured quantity to arrive at the net quantity payable.

3. Cement concrete (plain & reinforced):

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

Item like R.C.C. precast jalli, RCC pipes and other such items which are normally manufactured in factories as well as those items which have been specifically mentioned in schedule of quantities shall be measured inclusive of reinforcement.

No deduction will be made for openings upto 0.1 sq.m. and no extra labour for forming such openings or voids shall be paid.

Columns shall be measured from the top of the footing and shall be measured through, including flare of the column in case of flat slab construction.

Beams shall be measured from face to face of columns/beams and shall include haunches, if any. The depth of the beam shall be measured from the top of the slab to bottom of the beam.

In case of combined footings with connecting beams or strap beam the exposed portion of beam rib shall be measured as beam and the remaining portion measured in footing.

Slabs shall be measured in bays (clear of beams) with deductions for column

portion. Chajja: Only projected portion shall be measured in sq.mts.

Staircase: Measurements shall be in cu.m. Staircase comprising of step, soffit slab, landing slab shall be measured and paid under this item. Side parapet walls, failings, finishing of risers and trades M.S. reinforcement and plastering etc. shall be paid separately under respective items.

4. Reinforcement:

Reinforcement shall be placed as shown in the structural drawings and payment will be made on the net measurements from drawings. Only such laps, dowels, in reinforcement shown on drawings shall be paid for. The contractor shall allow in his quoted rates for all wastage and rolling margin which will not be paid separately. The measured length of all the bars shall be converted into weight as per latest IS schedule.

5. Brickwork:

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

Walls of half-brick thickness or less shall each be measured separately and given in sq.mts. stating the thickness.

Deductions:

No deductions or additions shall be made on any amount for.

- (i) ends of dissimilar materials (i.e. joists, beams, lintels, lofts, girders, rafters, purlins, trusses, corbels, steps, etc.) upto 500 sq. centimeter in section.
- (ii) Openings upto 0.1 sq.mt. in section.
- (iii) Wall plates, bed plates and bearing of slabs, chajjas and the like where the thickness does not exceed 10 cm. And the bearing does not extend over the full width of the wall.

6. Stonemasonry:

Except where otherwise described, stone work and stone walling generally shall be given in cubic meter and facia work in sq.mts. When measuring walls, the thickness shall be measured to the nearest one centimeters. Deductions shall be made as described under brick work.

7. Woodwork:

All work shall be measured not as fixed. No extra measurement will be given for shape, joints, splayed, meeting stiles of doors and windows and shall be measured in sq.meters.

Area over one face inclusive of exposed frame thickness (excluding width of cover mould) shall be measured in case of doors, windows and ventilators when frames are included in the item. Portions embedded in masonry or flooring shall not be measured. Where frames are measured separately mode of measurements shall be as per CPWD practice.

8. Steel doors, windows, ventilators, louvers:

Clear area over one face inclusive of exposed frame shall be measured. Holdfasts or portions embedded in masonry or flooring shall not be measured. Steel rolling shutters and rolling grilles:

Clear width between side jambs and clear height between floor and bottom of lintel / beam shall be measured. Hood shall not be measured separately. The rate should be inclusive of the cost of hood.

10. Flooring, skirting, dado:

Flooring shall be measured from skirting to skirting and where the wall surfaces are plastered or provided with dado it shall be measured from plaster to plaster or dado to dado.

The skirting and dado shall be measured clear from the floor to the top of tile, and the length shall be between finished tile faces measured along the floor.

11. Plastering & pointing:

All plastering and pointing work shall be measured in sq.mts. unless otherwise described.

Net area of surface plastered shall be measured. No deductions will be made for ends of joists, beams, posts, etc. and openings not exceeding 0.5 sq.mt. each and no addition shall be made for reveals, jambs, soffits, sills, etc. of these openings nor for finishing the plaster around openings, ends of joints, beams and posts, etc.

12. Painting, White washing Colour Washing & Destempering ;All painting work shall be measured in Square Meters.

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

SECTION – XIV - INTERNAL PLUMBING WORK - INTERNAL WATER SUPPLY PLUMBING, INTERNAL DRAINAGE

GENERAL

The form of Contract shall be according to the "Conditions of Contract". The following clauses shall be considered as an extension and not in limitation of the obligation of the Contractor

Work under this contract shall consist of furnishing all labour, materials, equipment and appliances necessary and required. The Contractor is required to completely furnish all the plumbing and other specialised services as described hereinafter and as specified in the schedule of quantities and /or shown on the plumbing drawings.

2. Scope of internal water supply, plumbing, internal sewerage and drainage shall consist of providing and fixing of the following for each unit of each unit blocks/other buildings as shown on drawings.
3. The entire work shall be carried out by plumbers:
 - (a) GI pipe with fittings and valves for cold and hot water supply.
 - (b) Sanitary fixtures, CP fittings and accessories.
 - (c) Soil, waste, vent, rain water pipes and fittings
 - (d) Overhead water tank at Terrace with supports.
 - (e) Internal Drainage including gully traps.

4. Water supply.

- (a) All GI pipes and fittings from over head tank to all taps, wall mixers, wash basins, cisterns, sinks, geyser points, washing machine and showers as shown on drawings.
- (b) Provision of hot and cold water supply lines in all toilets and kitchen.

5. MATERIALS

6. All GI pipes shall be galvanised steel tubes medium grade conforming to IS-1239 and ISI marked of makes Jindal Hissar/Prakash.
7. All GI fittings shall be conforming to IS-1879 and ISI marked.
8. Valve shall be heavy Gun metal full way conforming to IS-778-1971 class I and ISI marked.

LAYING, FIXING AND FITTINGS OF GI PIPES

9. All GI pipes below ground shall be laid in trenches and shall have minimum cover of 600mm.
10. The runs of the pipes shall be straight and pipes shall not run diagonally. Proper bends, elbows, tees at turnings/corners shall be used.
11. All GI pipes with necessary fittings wherever they are laid on internal faces of the walls shall be concealed in chase. On external faces they will be laid on walls fixed with G.I. clamps or on M.S. angle iron brackets as shown in drawings.
12. In the concealed portion of plumbing no joints shall be provided in the pipeline except in the fittings i.e., bends, elbows, tees and nipples where required.
13. All GI pipes for water supply (Hot or cold) within toilets and kitchen shall be laid on walls only. No GI pipe shall be laid in sunken portion of toilets/kitchen.
14. For each unit the size of down comers, branch pipes from the ring (at terrace) from over head tank and branch pipes from down comers shall be of sizes as shown on drawing.

15. Pipes and fittings shall be jointed with screwed fittings, care shall be taken to remove burrs from the end of the pipe after cutting by a round file. Genuine white/red lead and a few strands of cotton thread shall be applied. All pipes shall be fixed in accordance with layout shown on the drawings. Care shall be taken to avoid air pockets. GI pipes inside toilets shall be fixed in wall chases at least 30cm above the floor.
16. GI pipes in shafts and other locations shall be supported by GI clamps of design as indicated in the typical detail. Pipes in wall chases shall be anchored by iron hooks.
17. **s:** Contractor shall provide adequate number of s on all pipes to enable dismantling later. s shall be provided near each gun metal valve, stop cock, or check valve and on straight runs as necessary at appropriate locations.
18. **Puddle Flanges:** Puddle flanges shall be provided to all connection i.e. inlet overflow, and scour of the over head tank wherever required.
19. **Pipe Protection:** All pipes in chase or under floors or below ground shall be protected against corrosion by applying two coats of bitumen paint, covered with polythene tape and finished with a final coat of bitumen paint.
20. **Painting:** All exposed pipes shall be painted with two coats of oil paint over one coat of primer. Pipes shall be painted to standard colour code as approved by Project Engineer/Engineer.

21. Over Head Tanks

- a. The tanks shall be of moulded HDPE and shall be one of the following make.
 - i) Unitank, ii) Polycon iii) Sintex
 - b. These tanks shall be located on the roof terrace as shown on drawing. Placed on supports as per details shown on drawings.
 - c. Each over head water tank shall be complete with the following.
 - (i) Lid and cover with locking arrangement.
 - (ii) Inlet, outlet, over flow (25mm), scour pipe (20mm) and Air vent pipe with all fittings.
 - (iii) Mosquito proof coupling shall be provided to overflow and air vent pipes.
 - (iv) The inlet pipe to the over head tank shall be provided with ISI marked 25mm brass body ball valve with polythene ball.
 - (v) The inlet pipe to the over head tank shall be provided with 25mm ISI marked full way gunmetal brass valve and each outlet pipe shall be provided with ISI marked full way gunmetal valve of size of out let pipe.
 - (vi) The over flow pipes shall be brought down up to the finished terrace level and laid up to nearest khurra on terrace.
 - d. The water tank will rest over 100 mm thick RCC 1:2:4 (1 cement:2 coarse sand:4 graded stone aggregate 20mm nominal size) platform with nominal reinforcement of 8mm dia 6" c/c both ways, supported over ISMBs resting on brick wall supports over terrace and finished with cement plaster 1:6 all around as shown in drawings.
25. Sanitary Fixture and CP Fittings and Accessories
- All sanitary ware shall be first quality white-vitreous china and shall be inclusive of all fixing devices nuts, bolts and hangers/Brackets.

These shall be from one of the following manufactures:-

- (a) Hindustan Sanitary Ware
- (b) Parry Ware
- (c) CERA
- (d) NEYCER Ceramic

26. It will be ensured that all sanitary fixtures are from one manufacturer only for the entire work i.e. for all the units. However, if due to any reason contractor proposes to provide part quantity from other manufacturer as approved above, then he may be permitted, but he will have to obtain specific approval of Site Engineer/Engineer for this change in brand. This will be subject to that all items and fixtures in any particular block/other buildings shall be always of one manufacturer only. In no circumstances items of two manufacturers shall be used in all of the toilets of particular block/other buildings.

27. **Kitchen sink and draining Board:** Kitchen sink and draining boards shall be of stainless steel (Salem stainless steel ISI-304) 1.0mm thick. The sink and draining board shall be in one piece of following sizes with rectangular compartment/bowl. Each sink shall be provided with one CP brass waste and PVC wastepipe.

Overall size (LxW)	=	1060x510mm
Bowl size (LxWxD)	=	500x400x200mm

28. The Stainless steel sink and draining board shall be of one of the following makes:-

29. Kitchen Sink shall be supported on RCC platform having suitable cut for the bowl of the sink as per the details shown on the drawings.

(A) **Wash Hand Basin**

- (i) Vitreous china first quality wash basin 550 x 400mm wall mounting type on MS Angle brackets.
- (ii) Same as above but Oval Shape under counter WB.
- (iii) CP Brass waste 32mm dia with overflow

(B) **Urinals**

- (i) Range of one and three urinals
- (ii) Chinaware cistern
- (iii) Bottle trap
- (iv) CP brass angle valve with CP copper connecting pipe with nut and washer.

(C) **Shower and Taps**

- i. CP brass wall mixer with bend for over head shower with central control knob for three positions, for supply to spout, second to stop and third for supply to shower.
- ii. 125mm dia CP brass shower rose 15mm with ball joint and 230mm long CP brass extensio pipe.

(D) **Towel Rail :** CP brass towel rail 20mm dia 16 guage 600mm long including brackets.

(E) **Towel Ring:** CP brass towel ring 200 mm dia with CP brass brackets fixed to wall with Flanges & CP brass screws.

(F) Mirror of size as specified in the items and 5mm thickness over every wash hand basin. The mirrors shall be of make Modifloat or Atul Brand made from Tata Ashi float glass. The mirror shall have marine ply backing 6mm thick mounted on kail wood frame 3/4" x 1 1/2" with Aluminium angle 30 x 15 x 2mm around & hung on to wall with key hole hooks.

(F) **Peg Sets: Aluminium Anodized with 3 hooks**

(J) **Gratings:**

- (i) All floor traps (FT) and floor drains (FD) shall be provided with 125mm and 100mm round stainless steel gratings respectively of approved design and shape. The weights of 125mm dia and 100mm dia gratings shall not be less than 130gms and 100 gms respectively.
- (ii) Gratings for floor drain (FD) below sink in kitchen shall have suitable hole for passing GI waste pipe from sink.

a. G.I. pipes. b. RigidPVC

Waste pipes may be exposed on wall or concealed chase as directed by the engineer-in-charge. Specifications for waste pipes shall be same as given in Section II.

- (a) **Urinal Partitions:** Urinal partitions shall be white glazed vitreous chinaware marble or stone of size specified in the schedule of quantities. Porcelain partitions shall be fixed at proper heights with C.P. brass screws with anchor fasteners and MS clips as recommended by the manufacturer and directed by engineer-in-charge.
- (e) All fixtures shall be fixed at proper heights, as shown in drawings and workmanship which shall be of acceptable standards.
30. **Internal Drainage:** Scope of internal sewage disposal and drainage system for all buildings/blocks included in Schedule A part I under this contract will include the following and shall be provided as per the layout/locations shown on drawings:
- (a) GI floor drains in toilets and kitchen
 - (b) HCl waste pipes and their connections upto Gully traps.
 - (c) HCl soil pipes and their connections upto nearest manholes.
 - (d) Vent pipes with vertical stacks
 - (e) All floor traps and gully traps.

Note: SWG sewerage lines from Gully Trap and nearest manholes onwards shall be measured and paid separately under schedule A part III (External sewerage)

31. **Soil, Waste, Vent and Rain Water Pipes:** All pipes shall be sand cast iron and shall comply to IS- 1729 of 1979 and shall be ISI marked. Where shown on drawings the floor drains (FD) shall be of GI pipe medium grade ISI marked.

32. All cast iron pipes fittings like bends, branches, floor traps, tees 'Y' junctions, in waste, soil and vent pipes shall be sand cast iron comply with IS 1729 of 1979 and shall be ISI marked. These shall be spigot and socket "Access door shall be made up with 3mm thick insertion rubber washer and white lead. The bolts shall be lubricated with grease or white lead for easy removal later. The fixing shall be air and watertight".

Urinal Traps: Urinal traps shall be cast iron P&S trap with or without vent and set in cement concrete block specified in para above without extra charge.

Cleanout Plugs: Contractor shall provide cast brass clean out plugs as required. Cleanout plugs shall be thread and provided with key holes for openings. Cleanout plugs shall be fixed to the pipe by a G.I. socket lead caulked.

18.PARTICULAR

SPECIFICATIONS PART II

EXTERNAL WATER SUPPLY & GARDEN HYDRANT SYSTEM

1. **SCOPE OF WORK:**Work of external water supply shall consist of furnishing all labour, material, equipment and appliances necessary and required to install complete external water supply from water supply main of Local Authority upto UG tank and from UGT to OH tanks at terraces. Providing and installation of garden hydrant system including provisioning and installation of pumping sets and pipe connections within the pump house including all control valves, masonry chambers,etc.
2. **SAMPLES OF MATERIALS:** The contractor shall produce samples of all materials and shall obtain approval to these in writing from Engineer/Site Engineer before he places bulk order for the materials for incorporation in the works. Materials to be incorporated in the work shall conform to latest relevant ISI marked goods wheremanufactured.
3. **APPROVAL OF LAYOUT:** The layout of all external water supply lines including valves and chambers shall be marked out on the site and get approved from the Engineer/Site Engineer before execution and also before laying of pipelines.
4. **G.I.PIPS**
 - (a) All pipes, fittings, accessories etc. to be incorporated in the work shall be of standard quality strictly (complying with the current appropriate Indian Standard Specifications) conforming to IS 1239(Part I of 1979) and IS 1239 (Part II of 1969) and ISImarked
 - (b) Water supply tubing, fittings and accessories shall be of galvanised steel. The galvanised steel pipes shall be screwed and socketed of medium grade and manufactured by Jindal Hissar, Prakash and ISImarked.
 - (c) Fittings shall be of Malleable iron galvanised, ISI marked and of approvedmake.
 - (d) Ferrule shall be brass 20mm or of required dia of Leader make with shut offarrangements.
 - (f) Cast iron bell mouth cover for protection of ferrule shall be provided. M.S. addles of suitable size shall also beprovided

PVC Pipes & Fittings

22. Garden hydrant mains shall be rigid uPVC pipes conforming to IS: 4985 of class specified. If class is not mentioned in the schedule of quantities the same shall be class IV (10 kg./Sq.cm).
23. Fittings for UPVC pipes shall be injection moulded fitting with spigot & sockets suitable for solvent weld joints. Fittings must have suitable provision forexpansion.
24. Solvent shall be of make and type approved by pipe and fittings manufacturer. Joint shall be made in an approved manner as recommended by the manufacturer.
25. Provide uPVC flanges at intervals of 20-25 m. for all pipes 65 mm dia andabove.

26. Provide suitable uPVC to thread adaptor for connection between pipes & valves.
27. Provide cement concrete supports and anchor blocks at all bends, tees and other locations as directed by Site Engineer. Connections at garden hydrant outlet, near valves must also be anchored.

G.I. Pipes & Fittings

28. Vertical connection for garden hydrant points shall be galvanized steel tubes to IS : 1239 (medium class) with matching malleable iron fittings of approved make.

Garden Hydrants

29. Garden hydrants shall be 25 mm dia gunmetal valves installed on G.I. pipes as per details.

19. PARTICULAR

SPECIFICATIONS PART III

EXTERNAL SEWERAGE & STORM WATER DRAINAGE

SCOPE OF WORK

1. Work under this section shall consist of furnishing all labour, materials, equipment and appliances necessary and required to completely install the sewerage system as specified herein after shown in the drawings and given in the schedule of quantities.
2. Work of external sewerage shall start from the first manholes of size as shown in Drawings

GENERAL REQUIREMENTS

All materials shall be of the best quality conforming to specifications and subject to the approval of the Site Engineer/Engineer.

All sewerage work shall be done in accordance with the local byelaws.

3. **Storm Water drainage:** Excavation and backfilling

Trenches: The width and depth of trenches for different diameter of SWG and RCC pipes shall be as under:

Width of trenches at bottom upto 150mm diameter shall be 550 mm and for the above diameter from 150 mm dia width of trench shall be nominal dia of pipe plus 400 mm. Additional width shall be provided at the position of sockets.

The depth of the trench shall not be less than 1.00 measured from the top of the pipe to the surface of the ground under road and not less than 0.60 m elsewhere. The required depth to be excavated at any point of the trenches shall be regarded as directed by the Engineer/Site Engineer. Contractor shall not be entitled for any extra payment if he makes the trenches width more than specified.

20.PARTICULAR SPECIFICATION

PART -IV

ROADS, PATHWAYS, RAMPS, KERBS AND EARTH FILLING OVER AREAS

1. **Scope of Work:** The road work in this contract comprises of provision of roads with sub base course 150mm thick consolidated, base courses 100mm thick consolidated 40mm thick Premix Carpet, Kerb stones, and earth filling as described in schedule items and as specified in succeeding paragraphs.

MATERIALS

1. **Sub Base & Base Course:** This shall be water bound macadam with stone aggregates. Stone aggregate shall be quartzite. This shall be crushed/broken stone as per grading requirement given in the table shown below:-

- a) Grading requirements of stone aggregate.

Grading	Size Range Sieve designation	Percent by weight passing the sieve	Test requiremen t
1.	90mm to 40mm	100	One test per 100 cum
	100mm	65-85	
	80mm	25-60	
	63mm	0-15	
2.	63mm to 40mm	100	-do-
	80mm	90-100	
	63mm	35-70	
	50mm	0-15	
	40mm	0-5	
	20mm		

- b) The stone shall be hard, durable and free from excess of flat elongated soft and disintegrated particles, dirt and other objectionable matter.

3. a) Stone Screenings for Sub base and Base Courses:

Screening to fill voids in the stone aggregate shall consist of the same material as the stone aggregate.

- i) The screenings shall have grading shown in the following table:-

Grading	Size of Classification reqd. for	Sieve screenings	Percent by weight passing the sieve	Quantity 10sqm.
Subbase course		12.5mm	100	0.63cum
		12.5mm	90-100	
		10.0mm	10-30	
		4.75mm	0-8	
		150micron		
Base course		10.00mm	100	

4.75mm
150micron

85-100
10-30

0.40cum

- ii) The screening shall be clean, durable, and free from disintegrated pieces and other objectionable material.
- b) Stone chippings for Premix carpet: Stone chippings shall consist of fairly cubical fragment of clean, hard, tough and durable rock of uniform quality throughout. This shall be crushed stone and shall be free of elongated or flaky pieces, soft or disintegrated stone, salt, alkali, vegetable matter and dust. These shall conform to the quality requirements given in para 4 below:-
4. Physical requirements of Stone aggregate and stone chippings

S.No.	Type of Test	Test method	Requirements	Frequency	Constn.
i)	SubBase	Loss Angeles Abrasion	IS:2386(Part IV) 60% max.	One test per	
	course	value or Agg. impact value	IS:2386(Part IV) *50% max.	200cum of	aggregate
ii)	Basecourse	a) Loss Angeles Abrasion value or Agg. impact value	IS:2386(Part IV) IS:2386(Part IV) IS:5640***	50% max. *40%	-do-
		b) Flakiness Index	IS:2386(Part I)	**15% max.	-do-
iii)	Screening / Stone chipping	a) Loss Angeles Abrasion value of aggregate	IS: 2386(Part IV)	One test per 50-100cum of	
		b) Flakiness Index	IS: 2386(Part I)	One test per 50-100cum of aggregate.	
		c) Stripping value	IS:6241	-do-	

* Aggregate may satisfy requirements of either of the two tests.

** The requirements of flakiness index shall be enforced only in case of crushed broken stone and crushed slag.

5. **Binding Material:** The binding material shall consist of fine grained material possessing plasticity index value 4-6 which shall be determined in accordance with IS 2720(Part V). The quantity of binding material required shall be as under:-
Per 10 sqm.

- a) Subbase 0.15cum
b) Basecourse 0.12cum

6. **Bitumen:**

- a) Paving bitumen shall conform to IS:73-1961 and shall be of grade 80-100, solvent like kerosene oil shall be mixed, i.e. 70g/kg. of the bitumen.
- b) The bitumen shall be obtained from approved manufacturers and delivered to site in sealed containers bearing ISI marking. This shall be stacked as directed by the Site Engineer and Engineer on one side of the roadway.

WORKMANSHIP

7. a) **Preparing formation**: The ground shall be formed to proper gradient, camber, super elevation, etc. corresponding to the required surface, by trimming the surface. Surplus soil (if any) shall be thrown clear of the road formation. The formation shall be watered and rolled.
- b) **Preservation of property**: Road side trees, shrubs, poles, fences, monuments buildings pipelines, sewers etc .within or adjacent to the road which are not to be disturbed shall be protected from injury or damage.
8. **Preparation of sub-grade**: The surface of the formation for a width equal to that of base course shall first be cut to the depth below the proposed finished level, equal to the combined depth of base course and wearing courses (due allowance being made of consolidation). It shall then be cleared off all foreign substances and sub-grade dressed off parallel to the finished profile.
9. **Consolidation of sub-grade**: The subgrade shall then be sprinkled with water and rolled with minimum of 5 numbers of passes of 8-10 tonne smooth wheeled roller, till the soil is evenly and densely consolidated.
10. All undulations in the surface that might develop due to rolling shall be made good with earth or quarry soils as the case may be and subgrade re-rolled.

SUB-BASE:

11. The sub-base shall be water bound macadam with stone aggregate of size 90mm to 40mm. This shall be laid on prepared sub-grade in conformity with line, grades and thickness. The consolidated thickness of the sub-base shall be 150mm. Loose quantity of the aggregate shall be 2.02 cum per 10sqm. The stone aggregate shall be mechanically inter locked by rolling and voids thereof filled with screening and binding material with the assistance of water, laid on a prepared sub-grade. The coarse aggregate shall be spread uniformly and evenly upon the prepared sub grade in required quantities with a twisting motion to avoid segregation. In no case shall these be dumped in heaps directly on the area where these are to be laid. This shall be laid on proper profile, grades, by using templates. The surface of the aggregate spread shall be carefully trued up and all high or low spots corrected by removing adding aggregate as required.
12. **Rolling**: Immediately after spreading of the coarse aggregate it shall be compacted to the full width by rolling with a power roller of 8-10 ton capacity. Initially light rolling is to be done which shall be discontinued when the aggregate is partially compacted with sufficient voids to permit application of screening. The rolling shall begin from the edges with roller runner forward and backward and adding the screenings simultaneously until the edges have been firmly compacted. The roller shall then progress gradually from the edges to the centre, parallel to central line of road and over lapping uniformly each preceding rear wheel track by 1/2 width and shall continue until the entire area of the sub base has been rolled by the rear wheel. Slight sprinkling of water may be done during rolling. On super-elevated curves the rolling shall proceed from the lower edge and progress gradually continuing towards the upper edge of the road.
14. **Application of Screening**: After the coarse aggregate has been lightly rolled to the required surface, screening shall be applied gradually over the surface to completely fill the inter sticks. Dry rolling shall be continued while screenings are being spread so that the jarring effect of the roller causes them to settle in the voids of the aggregate. The screening shall be spread

uniformly in successively thin layers, which shall be applied at a slow rate. To ensure filling of all voids, rolling and brooming shall continue with the spreading of screening. Damp and wet screening shall not be used under any circumstances.

15. **Sprinkling and Grouting:**

After spreading the screening and rolling, the surface shall be copiously sprinkled, swept in brooms and rolled, to distribute the screenings evenly, additional screenings be applied wherever necessary, until the stone aggregate is well bonded and firmly set for the entire depth and until a grout has been formed of screening and water and form a wave of grout ahead of the wheels of the roller.

16. **Application of binding material:**

After the application of screening and rolling, the binding material shall be applied at a uniform and slow rate into two or more successive thin layers. After each application, the surface shall be copiously sprinkled with water and the resulting slurry swept in with hand broom to fill the voids. The surface shall then be rolled by an 8-10 tone roller, water being applied to the wheels. This process shall be continued till the slurry forms a wave ahead of the wheels of the roller.

17. **Setting and drying:**

After final compaction of the sub base course, the road shall be allowed to cure over night. Next morning, the defective spots shall be filled with screening or binding material lightly sprinkled with water if necessary and rolled. No traffic shall be allowed till the macadam sets.

Surface Evenness:

The surface evenness of the completed W.B.M. sub base course in the longitudinal and transverse direction shall be as under:-

Longitudinal profile undulation when measured with a 3 meter, straight edge shall not be more than 15mm
Cross profile - undulation when measured with a camber template shall not be more than 12mm.

18. **Rectification of Defects:**

When the surface irregularity of the WBM sub base course exceeds the tolerance specified above, or where the base course is other wise defective due to sub-grade soil mixing with the aggregate, the layer of its full thickness shall be scarified over the affected area, re-shaped with added material and recompacted. The depressions shall not be filled with screenings and binding material.

19. **Base course:** Base course of water bound macadam shall be with stone aggregate of size 63 to 40mm in 100mm consolidated thickness. The base course shall be laid over the prepared sub base course with operations as described in the succeeding paragraphs. The quantities of the loose aggregates required for base course should not be less than 1.33 cum per 10 Sq.m. of roadsurface.

20. **Spreading of stone aggregate:** This shall be as specified above for sub base course Para 11 except that the base course shall be constructed with a consolidated thickness of 100mm thick.
- b) **Rolling:** This shall be as per para 12 of the sub basecourse.
 - c) **Application of Screening:** This shall be as per para 13 of the sub basecourse.
 - d) **Sprinkling and Grouting:** This shall be as per para 14 of the sub basecourse.
 - e) **Application of binding material:** This shall be as per para 15 of the sub basecourse.
 - f) **Setting and drying:** This shall be as per para 16 of the sub basecourse.
- g) **Surface Evenness:** This surface evenness of the completed base course in the longitudinal and transverse direction shall be as under:-
 - i) **Longitudinal profile:** Maximum permissible undulation when measured with a 3.0m straight edge-12mm.
 - ii) **Cross profile:** Maximum permissible undulation when measured with a camber template-6mm.
 - h) The longitudinal profile shall be checked with 3.0m long straight edge at the middle of each traffic line.
 - j) The transverse profile shall be checked with a series of 3 camber boards at intervals of 10m
 - k) Rectification of defective construction-same as for sub base course (para 1 above)

PREMIX CARPET (40mm CONSOLIDATED THICKNESS)

21. **Preparation of base:** Before the carpet is applied on the existing base, the surface shall be ensured free from dust or caked mud or other foreign matters. Pothole or ruts if any in the existing surface shall be filled with premixed chippings and well rammed about a week before the carpets laid.
22. **Priming coat:** The bituminous primer shall be heated to the temperature as recommended by the manufacturer and applied uniformly to the base by means of sprayer just before spreading of the premix.
23. **Preparation of Premix:** Mechanical mixers shall be employed for mixing. For small quantities of work, the aggregates and the bitumen are heated separately upto the required temperature.
24. **Rolling and finishing:** After the premix obtained is a thorough and homogeneous mix, the same is carried out at site for spreading and rolling. Suitable rakes are used for spreading. At one operation 15m of premix is laid and rolled with a power roller of (8-10 tones). The roller/wheels shall be kept damp with water so as to avoid adhesion of the mix. The rolling is continued in a process as explained above till there is no sign of creep or formation of ruts and etc. and a smooth uniform surface is obtained.
25. **Foot path/Pathways and Ramps**
- a) **Under layer:** Earth shall be properly rammed and consolidated in required slope over which PCC of mix 1:5:10 (1 cement :5 coarse sand:10 graded stone aggregate of 40mm nominal size) shall be laid and thoroughly rammed by heavy iron rammers of 4.5 to 5.5 kg. Ramming shall be continued till a skin of mortar cover the surface completely. The cost of ramming of earth is also deemed to be included in the item of PCC. Thickness of under layer PCC shall be as shown on drawings or as approved by Engineer and Site Engineer.
 - b) **Topping:** 75mm thick concrete of mix 1:2:4 shall be laid in pattern as shown on the drawing. Excessing trowelling shall be avoided. Use of dry cement or cement and sand mixture sprinkled on the surface to stiffen the concrete or absorb excessive moisture, shall not be permitted. The surface shall be finished rough and grooves be provided as per the required pattern.
- PCC kerb stone etc.:** These shall be in precast/cement concrete as per drawings and as approved by Engineer and Site Engineer finished even and concrete cured well

26. **Earth filling over areas:** Earth filling over areas shall be by bringing earth from out side OTPL land by the contractor. The entire plot levels shall be taken in a grid of 3.0 x 3.0m and jointly signed before fillings. Earth shall be spread in layers of 20cm in the entire width of the road. Each layer shall be rolled with a roller of minimum 1/2 tonne weight by providing 5 passes. Every 3rd layer and top most layer shall be consolidated with a power roller of minimum 8 tonne weight by giving 5 passes. Light watering shall also be done for each layer while consolidating. Final levels shall be attained as indicated by Site Engineer/ Engineer.
27. Computing the gross filling volume shall be by prismatic formula Simpson's Rule or Trapezoidal formula as the case may be. Area covered by buildings shall be deleted. Any excess excavation in foundation after plinth filling etc. shall also be deducted. The net payable volume shall be arrived after deducting 10% from the gross volume arrived after above procedure. Rate quoted shall be deemed to include all operations and above provisions including for net volume only.

Seal Coat:A premix seal coat shall be applied immediately after laying the carpet. The binder shall be heated in boilers of suitable design in the temperature appropriate to the grade of bitumen. The fine aggregate shall be dry and suitably heated to a temperature as directed by Project Engineer before the same are placed in the mixer of suitable design. Mixing of binder with aggregate to the specified proportions shall be continued till the later are thoroughly

coated with binder. The mix shall be immediately transported from the mixing plant to the point of use and spread uniformly on the bituminous surface to be sealed. As soon as sufficient length has been covered with the premixed material, the surface shall be rolled with 8 to 10 tones roller. Rolling shall be continued till hot premixed material completely seals the void in the bituminous course and a smooth uniform surface is obtained.

Rough Chisel Dressed Stone (CUL – DE - SAC)

Cul-de-sac shall be provided with rough chisel dressed stone of approx. size 20x15x 10cm laid over sub base course (WBM) including filling the earth in joints as per the drawing.

**21.List of
Material Of
Approved Maker/Brands: Civil Works**

The contractor shall quote for the best of the materials specified below with ISI mark wherever applicable. The contractor shall obtain prior approval from the OTPL / Engineer before placing order for the specific materials agencies. During the execution of the work, in case of non availability of any of the approved /specified materials /agency, the OTPL /Engineer may approve suitable equivalent brand/agency and his decision shall be final and binding on the contractor and the price variations. If any, shall be adjusted accordingly.

S.No	Material s	Manufacture rs
1.	Grey Cement (43 or 53 Grade) White Cement Putty	A.C.C, L&T, AMBUJA, Ultratech Birla White, J.K.,India Cement ,Dalmia, Shanker Cements Birla White Putty
2.	Steel (Thermo Mechanically Treated Steel) High strength deformed bars or mild steel reinforcement	TATA, SAIL, VIZAG
3	Cement Blocks	Good quality locally available material approved by Engineer / Engineer
4	Pressed Steel frames for Doors	Fabricated P.S. frames approved by Engineer/Engineer.
4a.	Pressed Steel frames for Aluminium- Windows, Ventilators.	Indal / Jindal of 25 microns approved by Engineer/Engineer.
5	Flush Door Shutters	Century/ Anchor / Archid / Green /
		Samrat / Kenwood or equivalent
6	Particle Boards/Block Boards (Ward robe Shutters and Kitchen Cabinets on with Laminates)	Century / Anchor / Archid / Green /Marino / Multiply or equivalent
7	Glass (Plain / Pin Headed) and Glass Tinted	Modi Float / Triveni / Hindustan Pallington / Asahi / Saint Gobain or equivalent
8	Aluminum Hardware/fittings	Argent / Classic / Shalimar or equivalent
9	Brass Mortice Locks & Latches	Godrej or equivalent
10	Latches with Internal locks	Godrej / Ultra or equivalent
11	Floor Type Hydraulic door closer (Floor spring)	Everite / Hypper / Hemco or equivalent
12	Aluminum door, window and ventilator sections.	Jindal / Indal / Hindalco or equivalent
13	Water proofing material / compound.	Dr. fixit, Mapei / Roff or equivalent
14	Glazed Tiles	Johnson & Johnson / Naveen / Nitco/ Regency / Spartek / Kajaria /Somany
15	Ceramic Tiles (Non-Skid)	Johnson & Johnson /Kajaria / Nitco / Bell / Spartek / Somany

16	Cement Concrete (Chequered) Tiles	Nitco / Bharat or equivalent
17	Vitrified Tiles	Marbonite, / Navin / Bell / Spartek or Equivalent
18	Glass Mosaic Tiles	Italia or equivalent
19	Synthetic Enamel Paint	Jenson & Nicholsan / Asian / Nerolac / Berger
20	Plastic Paint	Jenson & Nicholsan / Burger / Nerolac
21	Panelled Doors	National / Century / Swastik / Kitply
22	P.V.C. Doors	Sintex / Mihir / Fixopan
23	Rolling Shutter & Grills	Good quality locally available material.
24	Hardeners	"Ironite" or equivalent.
25	Red Oxide	"Asian" or equivalent.
26	Waterproof cement paint / acrylic paint	Snocem India, Nerolac, Nitcocem
27	Glazing	"Hindustan Pilkington" Tiveni, Modi
29	Water seal (Epoxy-sterarate) compound.	As approved by Engineer / Engineer
30	Medium density fibre-board in lieu of partitions panelled doors and flush doors.	Nuwood, mangalam or equivalent
31	Screws	GKM/mettle fold or equivalent
32	Brass Hinges	Reliance/Punit heavy duty or equivalent
33	Ironmongeries and brass fittings	Jiranna / CIEF/ Shalimar / Everite.
34	Drawer sliding fitting	Earl bhihari or equivalent
35	Hardware	Shalimar, Everite/ Reliance Brass powder Coated
36	Drawer Shutter Lock	Vijayan/Godrej (3 set of keys or equivalent)
37	Ball Catch	Magnetic (M-2) / Brass or equivalent
38	Veneer	Achor / Kitply / Uro / Durian / Century or Equivalent
39	Adhesive	Fevicol (SH) for furniture, laminates, Araldite of Hindustan Ciba Geigy Ltd. for Steel/Mirror
40	Polish	French/Zinc Oxide / Melamine (Asian) or Equivalent
41	Wood Preservative	Asian paint / British paint or equivalent

PLUMBING WORK : As per Bill of quantities

S.No	Materials	Manufacturers
42	Vitreous china sanitary ware (ISI mark)	Hindustan sanitary ware/parry ware / Cera
43	Seats & Covers solid (W.C.)	Commander / Admiral / Supreme
44	PVC Low level flushing cisterns	Commander / Parryware / Hindustan
46	C P Fittings / Toilet Accessories ISI Marked	Jaquar / Aquel / ESS ESS / Marc
47	UPVC Pipes (S/W/R Pipes)	Diplast / Supreme / Finolex / Prince or Equivalent
48	Centrifugal cast CI Pipes & Fittings	RIF / Neco or equivalent
49	G.I. Pipes (B-Class)	ITC / Tata / Zenith or equivalent.
50	G.I. Fittings (ISI Brand)	Unik / AMCO or equivalent.
51	Gunmetal valves (Full way, check and globe valves)	Leader / Zoloto (with ISI mark) / Sant or equivalent.
52	S.W. Pipes / Fittings & Gully traps	Perfect / Tirmurti / Bharat or equivalent.
53	Ball valves	Voltec / Zoloto or equivalent.
54	Stainless steel sinks	Nirali / Neelkanth or equivalent.
55	HDPE Tanks	Sintex / Polycon / Unitank or equivalent.
56	Mirrors	Modiguard or equivalent.
57	C.I. Manhole Cover	RIF / BIC / Neco or equivalent.
58	Concrete Man holes SFRC	CICO
59	Water lifting Pump	Grund Fos / Crompton or equivalent.
60	Pressure Gauge	H. Guru or equivalent.
61	Level Indicator	RM or Equivalent Approved Make
62	Air Relief Valves	RB / Zolto or equivalent.
63	Water Meter	Dasmesh / Capstain / Kaycee or equivalent.
64	PVC Encapsulated footrest.	KGM or equivalent approved make
65	A.C. Pipes	Everest Ramco or equivalent
66	R.C.C. Pipes	Indian Hume pipe or equivalent
67	Brass & Gun metal globe, gate valves, float valves	Leader NETA or equivalent with ISI marking on the box.
68	Sanitary Fixture	Hindware / Parryware / Cera or equivalent.

69	Fire Hydrant	Approved by local fire Bridges Authority
70	Sand cast soil pipes and fittings	NECO sand cast / B.I.C. or equivalent.
71	Bracket supports	Hi-tech/MS brackets as per drawings
72	Towel rail / ring	Jaquar / ESS ESS or equivalent.
73	Connection pipe-PVC	Kohinoor/Viking or equivalent.
74	Butterfly valve	Intervolve
75	PVC Fittings (Moulded)	Clarion / Finolex / Prince or equivalent.
76	Non-return valve	Intervolve or equivalent
77	UV filter	Alfa-level or equivalent
78	Stainless Steel	Salem Steel or equivalent
79	Marble Mosaic Tiles	Nitco / Bharat / Himalayan or equivalent
80	Fire Door	RDG / Shakti / Metdor or equivalent
81	RCC pipe	Indian Hume Pipe Co. / Spun Pipe Co. or Equivalent
82	Stoneware Pipe and fittings	Trimurti / Perfect Potters / Bharat

INFORMATIONS REQUIRED FROM CONTRACTOR

All Annexures of this specification duly filled in and signed by the contractor.

Transportation/shipping dimensions and weights, space required for handling parts for maintenance.

Foundation details and plan, loading details for all equipment.

Test certificates.

site or approval of running bills in case of erection and commissioning charges, as mentioned in the annexures .

1. TERMS OF PAYMENT Sequence of activities and payments thereof.

a) Successful tenderer has to accept order & sign the Agreement within a fortnight's time.

b) Submission of Billing schedule within 20 days.

Approval from OTPL will be accorded within 10 days from the date of submission and after having discussion / clarifications of points. File : RCC Cement Silo with Feeding System Page :

d) Supply of materials and equipment for civil work viz., Excavation equipment , TMT bars, shuttering material, ready-mix machines / installation etc.

e) Supply of sheet metal and structural steel for site fabrication work.

f) Supply of bought out items at the time of its erection as per PERT CHART.

g) Erection of RCC Silo

i) Hooking up with existing system & trial run and Performance Guarantee test.

1.1 Prices

- a) The price quoted for supply items if any shall include all packing, crating, excise duty, sale tax / Works Contract tax, insurance, freight, loading/ unloading, handling & all other charges.
- b) The price quoted for Civil, structure etc & commissioning shall include cost of all taxes & duties. (if any). No additional taxes/duties shall be payable by OTPL
- c) Prices quoted shall be firm and no variation shall be allowed during contract period.
- d) Contractor shall furnish prices separately for spare parts for two(2) year's Troublefree operation of the equipment and shall furnish the list of the same

The Bank Guarantees as mentioned under different columns (Security Deposit, Performance guarantee etc.) are to be submitted as per OTPL formats from any Nationalized Banks only of equal amount as per validity indicated in the relevant clause with claim period of further three months.

Prices are to be quoted on firm and F.O.R. destination basis inclusive of Packing / Forwarding charges, insurance, GST, freight etc. showing break up as per Price Bid format only. However, GST, freight (against paid LR / GR / RR) and Entry Tax if applicable will be payable as per actual as applicable at the time of dispatch on submission of documentary evidence or as quoted by the tenderer whichever is lower. No escalation during the period of contract / execution of the entire contract / extended period on whatever reasons thereof will be allowed in prices.

The price should be quoted **strictly** in our prescribed **Price Bid Performa only** enclosed with the tender, both in figures and words to avoid ambiguities. In case of any difference in figures & words, the lower amount of the two will be taken into consideration. Award of contract will be solely at the discretion of OTPL.

1.2 PAYMENT TERMS

Civil work; Related to earth work, excavation, concrete work, structural works, foundation Including grouting, reinforcement, inserts, etc. columns, beams, roofing, flooring etc. & **RCC CEMENT STORAGE STEEL SILO WITH FEEDING SYSTEM.** will be released within 20 days on submission of monthly running bills and certification of the work by OTPL. For this purpose, the tenderer should indicate the breakup of prices involved, item wise as per the price bid format and get the same approved by OTPL.

The contractor shall submit his running bill (RA bill) once in 20 days in line with payment terms / billing schedule indicated below. The RA bill complete in all respects accompanied by OTPL's engineers certified / measurement sheet, jointly signed, will be paid after passing of the bill subject to completeness & correctness.

The measurement will be taken as specified in terms & conditions of contract and certified by the OTPL engineer of actual work. However, no extra payment shall be made in the event of delay in release of payment. 95% pro-rata monthly RA payment shall be considered for payment based on monthly work completion certificate to be issued by OTPL engineer as per approved BBU/Price Schedule. The payment shall be released **within 10** days from the date of receipt of complete invoice along with all necessary documents including Engineering Certificate.

The measurement will be taken by OTPL engineer and certify regarding actual work executed in measurement book and bills for work. However no additional payment shall be made in the event of delay in release of payment beyond the stated period. Subject to any deduction which OTPL may be authorized to make under the contract, the contractor shall on the certification of the OTPL engineer at site, be entitled to payment explained hereunder.

The bills will be sent to OTPL's Regional Office at COChin, Kerala Finance department for scrutiny and payment will be made after processing / verification only. Payment shall be made in rupees as per order from OTPL Regional office Cochin, Kerala Since payment shall be made in Kerala , Income Tax shall be deducted, if applicable.

The quoted / accepted price shall remain Firm throughout the contract period including extension period, if any All admissible recovery / adjustment, etc. shall be made from interim payable amount.

OTPL at its discretion may split up percentage break up and effect payment to suit the site condition, cash flow requirement, according to the progress of work The following documents are to be submitted for release of payment. Approval of billing schedule submitted by the successful tenderer one week before the dispatch of the first consignment by the tenderer. The following documents are to be submitted.

a. Three copies of invoice along with document such as gate pass, packing list, Consignment note (consignee copy) as per approved schedule by OTPL and dispatch documents certified by OTPL conforming to the approved schedule / work certified by OTPL in case of erection and commissioning charges.

(i) Copy of insurance policy, clearly indicating the part consignment by underwriter, Inspection report by OTPL certifying acceptance of consignment and value conforming to the schedule of material already certified by OTPL

(ii) Any other documents as required by OTPL Finance Department .

In case of option for Direct payment by tenderer, the same shall be released by

Cheque / DD / RTGS / NEFT on receipt and acceptance of material/ equipment at OTPL

1.3 Balance

5% shall be after completion of warranty period of 3 months from the date of completion of work and handing over back of site / land to OTPL. Contractor shall make their own arrangement for making payment of impending labour wages and other dues in the meanwhile. Contractor have to submit OTPL entry gate pass for cement and other materials required for the work, in absence of which their corresponding RA bills shall not be processed.

1.4 MODE OF PAYMENT

Option given to the tenderer for payment either through RTGS or NEFT e-payment.

1. PROVISIONS AGAINST ACCIDENTS AND SAFETY MEASURES

- a) All safety rules and codes as applicable to work including rules applicable as per factory inspector shall be followed during execution of above work.
- b) All safety appliances and protective devices including hand gloves, aprons, helmets, shields, goggles, **safety** belts etc. shall be provided by Contractor for his personnel.
- c) The Contractor shall arrange to provide guards and prominent display caution notices if access to any equipment / area is considered unsafe and hazardous.

2. SPECIFICATIONS

In the absence of specifications for any work or materials, relevant Indian Standard Specifications shall be applicable. If such codes for a particular subject have not been framed, the decision of the OTPL / Consultant will be final and binding.

3. VARIATION IN QUANTITY

- a) The OTPL shall have right to delete or increase / decrease quantity specified in this specification as specified in preamble to Bill Of Materials.
- b) Quantities indicated in Bill of Materials are based on engineering status of the project as on date. It is necessary that proper engineering is carried out by the contractor before procurement of material.
- c) For procurement of any material & sequential delivery at site from point of view of erection etc. Contractor shall take prior approval from OTPL.
- d) All left over material for which payment has been made by the OTPL, has to be taken back by the contractor. The OTPL shall make necessary deduction from the bills of contractor.

4. SITE VISIT

It is recommended that contractor shall visit site before submission of his offer. Time and date shall be fixed with OTPL.

5. TOOLS FOR HANDLING AND ERECTION:-

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

6. **CO-ORDINATION WITH OTHER AGENCY:-**

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

7. **CARE OF BUILDINGS:-**

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

8. **STRUCTURAL ALTERATIONS TO BUILDINGS:-**

No structural member in the building shall be damaged/ altered, without prior approval from the competent authority through the Engineer-in-charge.

Structural provisions like openings, cutouts if any, provided by the department for the work, shall be used. Where these require modifications, or where fresh provisions are required to be made, such contingent works shall be carried out by the contractor at his cost.

All such openings in floors provided by the department shall be closed by the contractor after installing the cables/conduits/rising mains etc. as the case may be, by any suitable means as approved by the Engineer-in-charge without any extrapayment.

All chase required in connection with the electrical works shall be provided and filled by the contractor at his own cost to the original Engineerural finish of the buildings

9. **WORK IN OCCUPIED BUILDINGS:-**

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

10. **GUARANTEE**

At the close of work and before issue of final certificate of virtual completion by Owner / Consultant, the contractor shall furnish a written guarantee indemnifying the owner against defective materials and workmanship for a period of one year after commissioning. The contractor shall hold himself fully responsible for reinstallation or

replacement of defective material free of cost to OTPLThe tenderer shall guarantee that all the equipments supplied by them whethermanufactured at their works or fabricated at our site or by their sub-suppliers orpurchased from any other source and supplied to the Corporation will be new andfree from all defects and shall be of first class workmanship and quality.

The tenderer shall warranty that to replace, rectify or repair free of cost at our Factory site, the components or the parts of the machinery, including the bought outs which have become unserviceable due to any of the defects within a period of 12 (Twelve) months from the date of successful commissioning of the plant or 18 (Eighteen) months from the date of completion of the delivery whichever is earlier. If the tenderer is not complying with the above within a reasonable time, the OTPL shall have the option to rectify, repair or replace the defective parts / Machinery after expiry of two weeks' notice and at the risk and cost of the tenderer

.....
Bidder'sSignatur

6.0 Bar chart

Bidder shall submit a Bar chart for various activities with time schedule

TIME SCHEDULE

The preliminary time schedule for the new installations have been worked out keeping in mind the commissioning target of --- Months.

The building construction shall be completed and handed over as per the following schedule:-

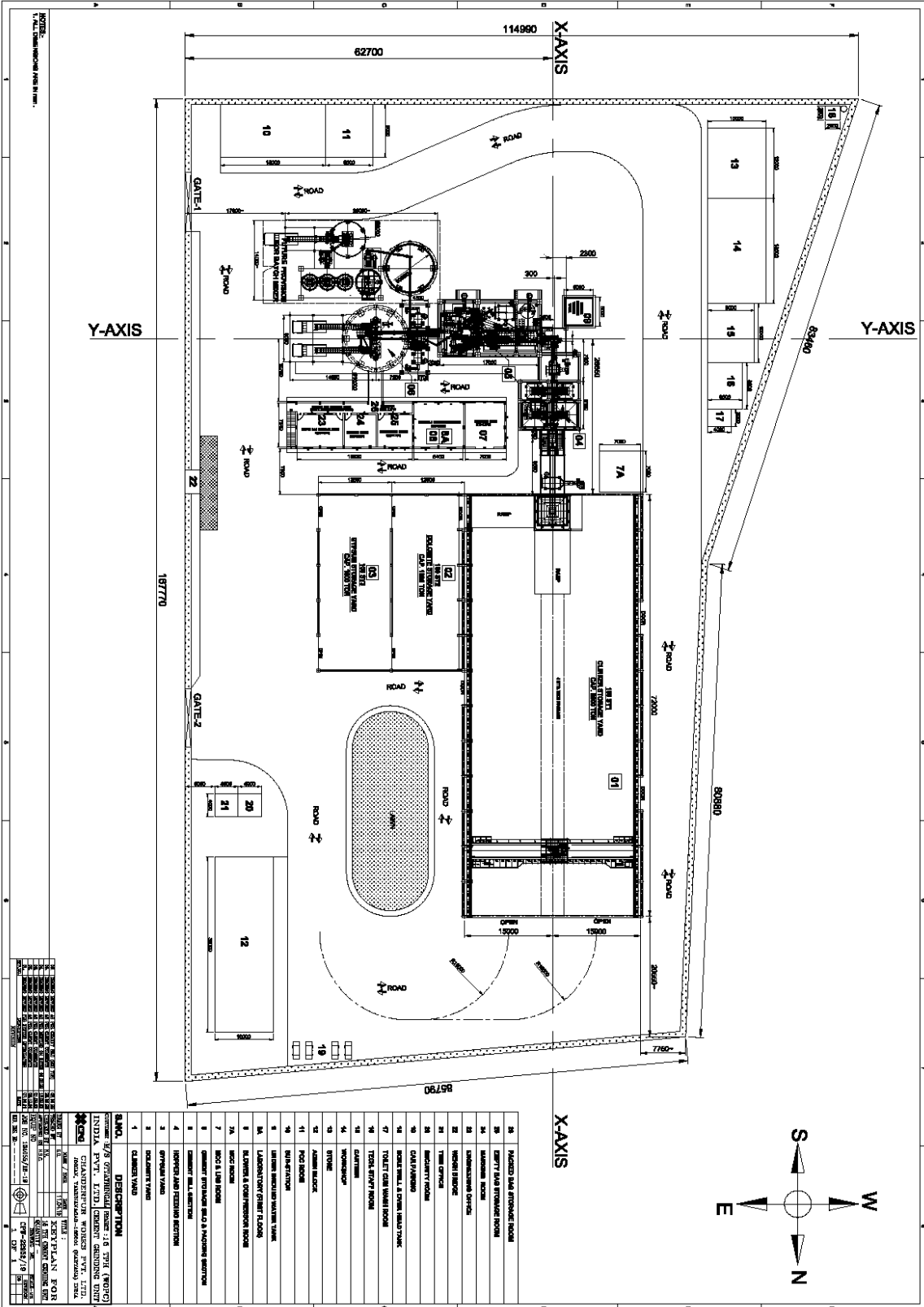
Building/structure	Handing over from date of contract (months)

22.TENTATIVE BOQ

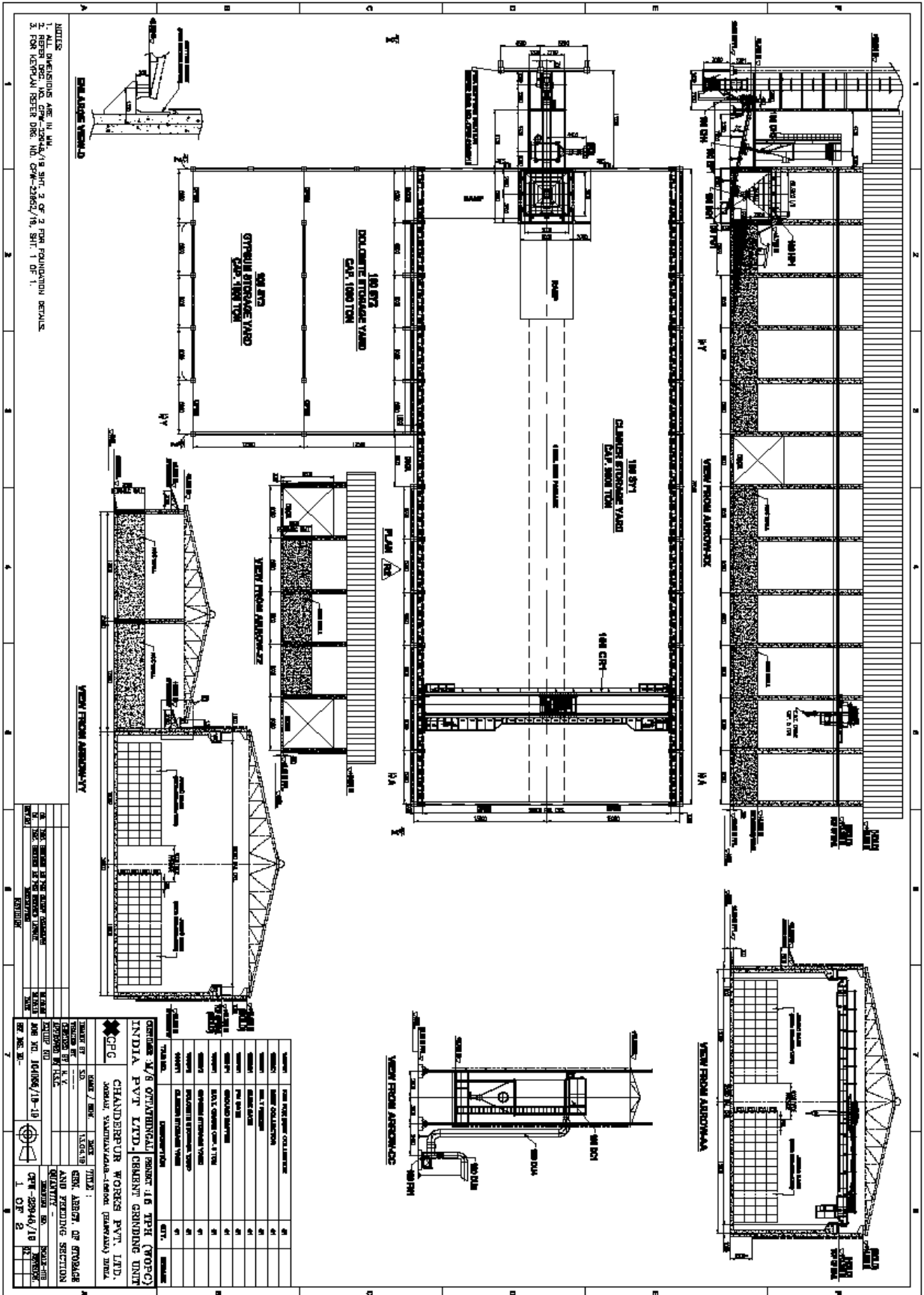
S.NO	DESCRIPTION	UNIT	QUANTIY
1	RCC	CUM	1978.11
2	PCC	CUM	1217.44
3	PLASTERING	SQM	11741.80
4	STEEL	TON's	254.00
5	CLADDING	SQM	11212.00
6	EXCAVATION	CUM	3884.66
7	BACKFILLING	CUM	1942.33
8	SURFACE DRESSING	CUM	4971.43
9	BRICK WORK	CUM	2524.37
10	PAINTING	SQM	11560.52
11	VITRIFIED TILES FLOORING	SQM	1539.49
12	TERRACE FLOORING	SQM	1027.28
13	ROAD	SQM	4222.13
14	DOOR&WINDOWS	NO's	141.00

23-DRAWING ANNEXURES

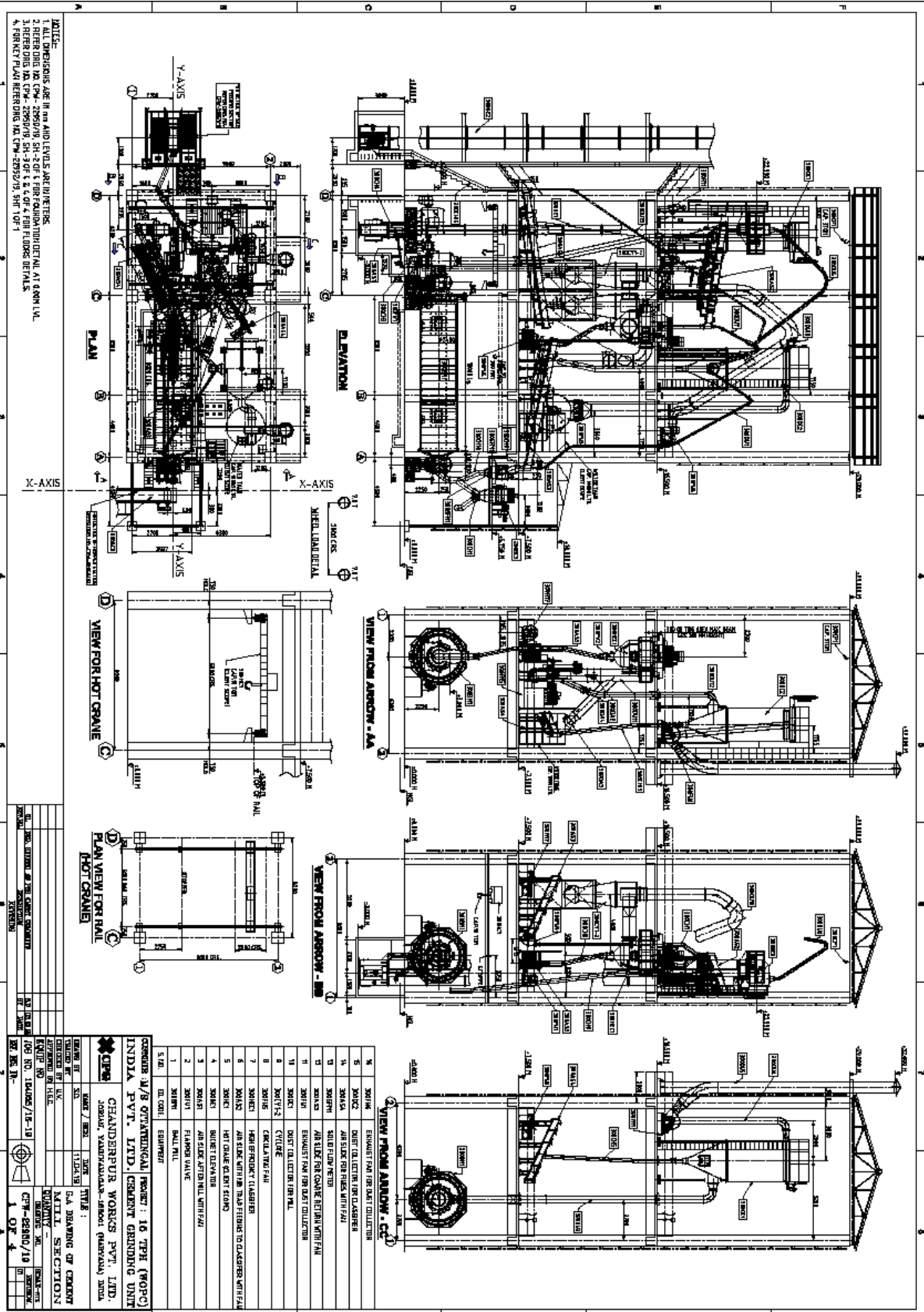
ANNEXURE-I KEY PLAN FOR 15TPH WHITE CEMENT MANUFACTURING UNIT



ANNEXURE-II STORAGE YARD AND FEEDING SECTION

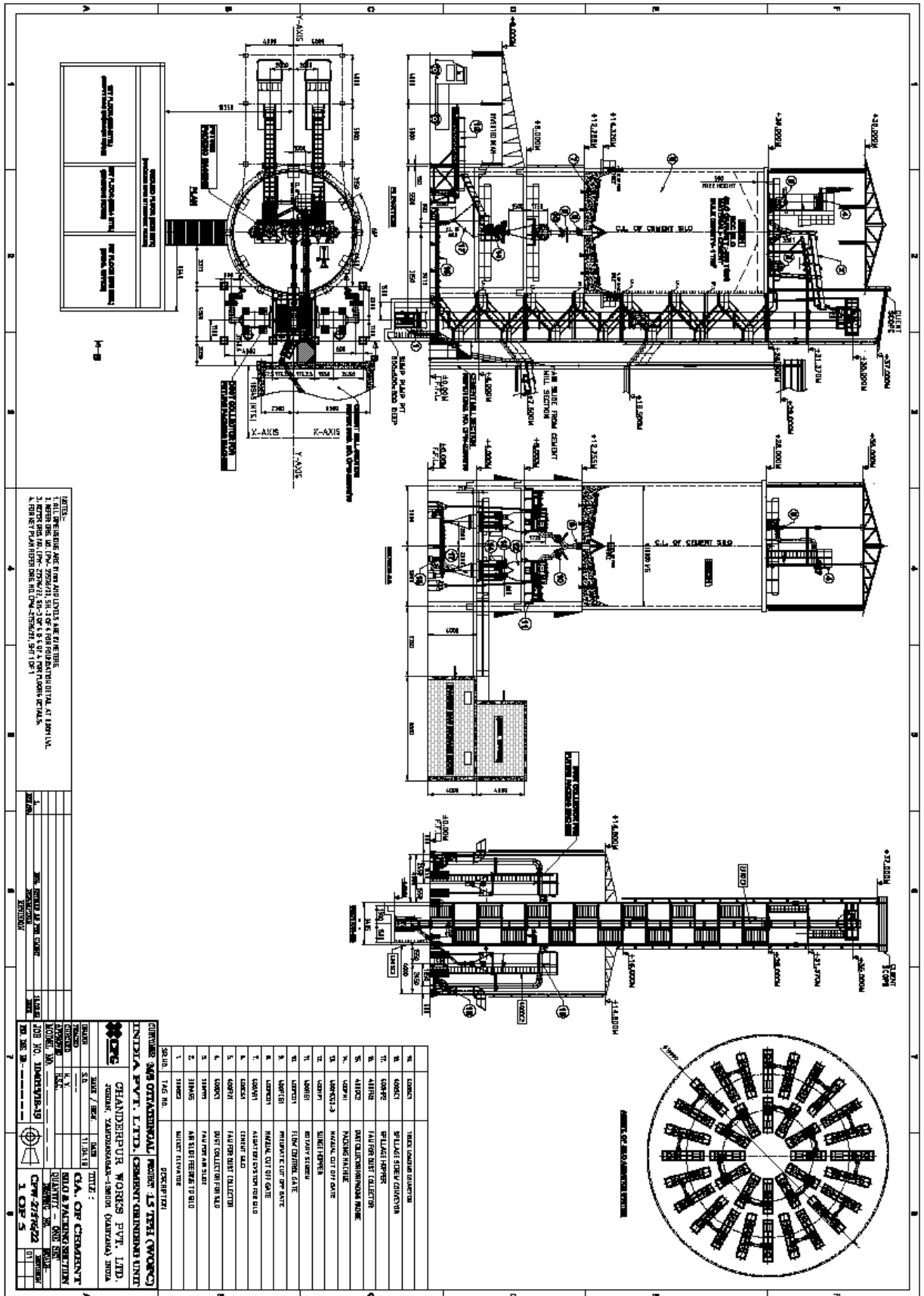


ANNEXURE IV CEMENT MILL SECTION



CEMENT SILO SECTION

ANNEXURE V CEMENT SILO SECTION



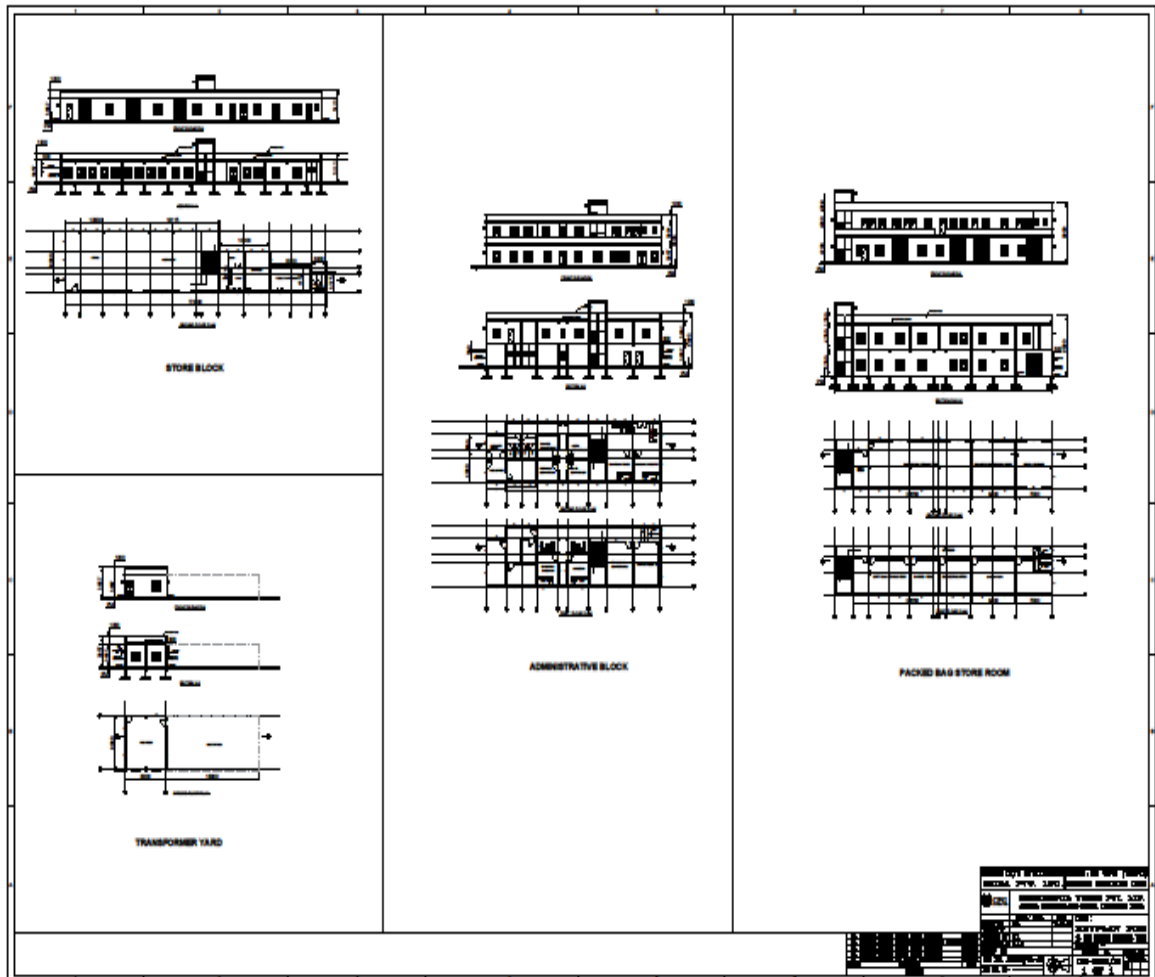
NOTES:
 1. DIMENSIONS ARE IN METERS UNLESS OTHERWISE SPECIFIED.
 2. REFER TO DRAWING NO. 100-2750/11, 100-2750/12, 100-2750/13, 100-2750/14, 100-2750/15, 100-2750/16, 100-2750/17, 100-2750/18, 100-2750/19, 100-2750/20, 100-2750/21, 100-2750/22, 100-2750/23, 100-2750/24, 100-2750/25, 100-2750/26, 100-2750/27, 100-2750/28, 100-2750/29, 100-2750/30, 100-2750/31, 100-2750/32, 100-2750/33, 100-2750/34, 100-2750/35, 100-2750/36, 100-2750/37, 100-2750/38, 100-2750/39, 100-2750/40, 100-2750/41, 100-2750/42, 100-2750/43, 100-2750/44, 100-2750/45, 100-2750/46, 100-2750/47, 100-2750/48, 100-2750/49, 100-2750/50, 100-2750/51, 100-2750/52, 100-2750/53, 100-2750/54, 100-2750/55, 100-2750/56, 100-2750/57, 100-2750/58, 100-2750/59, 100-2750/60, 100-2750/61, 100-2750/62, 100-2750/63, 100-2750/64, 100-2750/65, 100-2750/66, 100-2750/67, 100-2750/68, 100-2750/69, 100-2750/70, 100-2750/71, 100-2750/72, 100-2750/73, 100-2750/74, 100-2750/75, 100-2750/76, 100-2750/77, 100-2750/78, 100-2750/79, 100-2750/80, 100-2750/81, 100-2750/82, 100-2750/83, 100-2750/84, 100-2750/85, 100-2750/86, 100-2750/87, 100-2750/88, 100-2750/89, 100-2750/90, 100-2750/91, 100-2750/92, 100-2750/93, 100-2750/94, 100-2750/95, 100-2750/96, 100-2750/97, 100-2750/98, 100-2750/99, 100-2750/100.

NO.	REVISION	DATE	BY	CHKD.
1	ISSUED FOR TENDER	10/01/2010
2
3
4
5
6
7
8
9
10

NO.	DESCRIPTION	DATE	BY	CHKD.
1	ISSUED FOR TENDER	10/01/2010
2
3
4
5
6
7
8
9
10

DESIGNED AND DRAWN BY: ...
 CHECKED BY: ...
 APPROVED BY: ...
 DATE: ...

ANNEXURE VI BUILDING PLANS



Online link for the drawing annexures with detailed pdf drawings:

<https://drive.google.com/file/d/1DHQbb6c967kddhpo1J1H791Y-oqWbBBk/view?usp=drivesdk>